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## Supply Side Fantasies and Precarious Part-time Academic Labor

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**Abstract:** Reliance upon part-time instructors within U. S. post-secondary institutions has received a great deal of attention, particularly as the percentage of such faculty has become the largest single category of faculty in academia. Understanding how part-time markets operate may allow better policy. Most current studies on the subject examine national markets, and emphasize demand factors motivating expansion of the part-time workforce. Although the subject of supply was once critical to discussions it has received less attention of late in part due to a faulty understanding of how part-time markets operate. Cross sectional regression analysis is performed to explore potential correlations between the number of graduating masters and doctoral students and reliance upon part-time faculty at neighboring institutions of higher education. Where previous researchers have found that institutions in more urbanized settings exhibit greater reliance upon part-time faculty, this analysis indicates that local availability of recently minted masters and PhD degrees within commuting distances of the hiring institution more closely fits staffing data. Policy actors may be able to use these results to better coordinate regional or local demand to supply, which has implications for unions and other policy actors attempting to limit reliance upon part-time faculty.

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### **Fantasmías del “supply side” y trabajo académico precario a tiempo parcial**

**Resumen:** La dependencia de los instructores de medio tiempo dentro de las instituciones postsecundarias de EE. UU. Ha recibido una gran atención, particularmente porque el porcentaje de dicha facultad se ha convertido en la categoría individual más grande de la academia. Comprender cómo operan los mercados a tiempo parcial puede permitir una mejor política. El análisis de regresión transversal se realiza para explorar posibles correlaciones entre el número de maestros graduados y estudiantes de doctorado y la dependencia del profesorado a tiempo parcial en las instituciones vecinas de educación superior. Donde los investigadores anteriores han encontrado que las instituciones en entornos más urbanizados exhiben una mayor dependencia de la facultad a tiempo parcial, este análisis indica que la disponibilidad local de maestros y graduados de doctorado dentro de las distancias de desplazamiento de la institución contratante se ajusta más a los datos de personal. Los actores de políticas podrían utilizar estos resultados para coordinar mejor la demanda regional o local de suministro, lo que tiene implicaciones para los sindicatos y otros actores de políticas que intentan limitar la dependencia de la facultad a tiempo parcial.

**Palabras clave:** Facultad; Trabajo académico precario; Facultad a tiempo parcial; Suministro; Educación superior: prácticas de empleo; Estudio de posgrado; Seguridad en el empleo; La negociación colectiva

### **Fantasmias do “supply side” e trabalho acadêmico precário em meio período**

**Resumo:** A dependência de instrutores de meio período nas instituições pós-secundárias dos EUA. UU. Ele recebeu grande atenção, principalmente porque o percentual desse corpo docente se tornou a maior categoria individual da academia. Compreender como os mercados de meio período operam pode permitir uma política melhor. A análise de regressão transversal é realizada para explorar possíveis correlações entre o número de professores de pós-graduação e de doutorado e a dependência de professores de meio período em instituições de ensino superior vizinhas. Onde pesquisadores anteriores descobriram que instituições em ambientes mais urbanizados exibem uma dependência maior do corpo docente de meio período, essa análise indica que a disponibilidade local de professores e graduados de doutorado nas distâncias de viagem da instituição contratante é mais ajustada para dados pessoais. Os atores políticos poderiam usar esses resultados para coordenar melhor a demanda regional ou local de suprimento, o que tem implicações para os sindicatos e outros atores políticos que tentam limitar a dependência em tempo parcial do corpo docente.

**Palavras-chave:** Faculdade; Trabalho acadêmico precário: professores em meio período; suprimento; Ensino superior: práticas de emprego; Estudo de pós-graduação; Segurança no trabalho; Negociação coletiva

## Introduction

Higher education's reliance upon part-time faculty is a major policy concern in the United States. Since 1970 the percentage of part-time post-secondary faculty has more than doubled from 21.9% of all non-graduate student appointments to 46.8% in 2017 (NCES, 2019, Table 315.10). That latter percentage reflects a fall of three points since the Great Recession peak at 50% in 2011. Other types of faculty such as post-docs, teaching assistants, clinical professors, research professors and other non-tenure track titles such as lecturer or instructor have also increased. However, while such faculty titles define distinct rights and prerogatives regarding employment security and promotion, part-time faculty typically enjoy few benefits (Finkelstein, Conley, & Schuster, 2016). The growth of part-time faculty constitutes a leading edge in redefining academic employment. Its impacts on students and faculty elicit special concerns. We show that part-time faculty markets are local markets, and that a principle determinant in this market is the size of the population holding graduate degrees. Understanding this, policy makers concerned with contingent academic labor may devise new or different policy strategies.

## Literature Review

One important policy concern involves the extent to which academic freedom is undercut by part-time and other non-tenure track employment. A second concern is whether increasing insecurity in academic employment will change the supply of applicants and their qualifications. Part-time employment is almost always substantially less well paid, and much less likely to provide benefits. Although part-time faculty overall report positive job satisfaction (Anthony & Hayden, 2011; Jacoby, 2005; Kramer et al., 2014), discontent is evident in the number of union campaigns that have been waged related to adjunct and lecturer issues. At the same time, a number of research findings indicate that part-time working conditions affect student relationships and outcomes. These findings range from the extent to which insecure faculty are likely to grade higher, use less time-demanding forms of assessment or, be less available for student mentoring (Benjamin, 2003; Johnson, 2011; Umbach, 2011). Other researchers have found that reliance upon part-time faculty reduces student graduation rates (Jacoby, 2006; Jaeger & Eagen, 2009). Outside academia, there is growing concern that the standard employment relationship involving full-time, long-term employment with benefits and social protection is at risk everywhere with deleterious impacts on workers. For example, several researchers now indicate that precarious employment contributes to ill health (Siqueira et al., 2014; Vanroelen et al., 2017). Kalleberg (2011) & Nelson (2015) draw attention to the fact education leads most occupations in its reliance upon part-time faculty.

Given these concerns, an obvious question is, why have part-time positions increased? On this there are two main lines of thought. The first being that part-time faculty add resources and yield greater institutional flexibility (Charlier & Williams, 2011; Frye, 2015; Wagoner, 2007; Zhang & Liu, 2010). There is little doubt that part-time faculty benefit colleges by increasing the pool of working professionals whose expertise and experience becomes available to students (Bettinger & Long, 2010). Other writers, however, make clear that flexibility is often a response to budgetary constraints that undermines faculty autonomy (Bousquet, 2008; Slaughter & Rhoades, 2004). Some part-time faculty argue that, in their desire to protect their own members, unions as well as management find it convenient to have a reserve of exploitable workers (Hoeller, 2014; Ruiz, 2007).

Recent quantitative analyses of the part-time faculty markets emphasize institutional demand, and document factors that incentivize colleges and universities to lower costs by restructuring faculty employment (Charlier & Williams, 2011; Ehrenberg & Zhang, 2005; Frye,

2015; Goldenberg & Cross, 2011; Kezar & Gehrke, 2014; Zhang & Liu, 2010;). These include reduced state funding, tuition reliance, as well as structural factors like the percentage of students attending part-time and institutional size. A small number of these recent studies reference location, and thereby implicitly address labor supply. To further explore the relationship between supply and reliance on part-time faculty, we introduce an explicit proxy for the local supply of part-time faculty by measuring recently graduated masters and doctoral students within various commuting distances of hiring institutions.

Graduate degrees are a potentially controllable policy variable, but exercising such control is controversial. At issue is the autonomy of university communities to set their own admissions targets. Graduate enrollment is typically authorized at the institutional and departmental level with limited stakeholder input. These stakeholders include current and past faculty whose investments in human capital are potentially at-risk through overproduction, university faculty who seek graduate students for their labor as assistants, the larger university itself that realizes revenue from additional graduate students, as well as external employers in and outside academia. This study seeks to inform policy by better documenting the extent to which expanded graduate enrollment may impact faculty employment.

To our knowledge efforts to coordinate university generated supply with the demand for faculty are very limited. Under the title *Preparing Future Faculty*, the NSF, Pew Foundation, and Atlantic Philanthropies developed a decade-long collaboration with the Council of Graduate Schools and various disciplinary associations. Their project coordinated faculty training among 45 doctoral degree institutions with 300 partner institutions stands out as an important innovation. It was motivated by a recognition that graduate education too frequently prepares students for employment at research intensive institutions when, instead, 75% of academic jobs lay elsewhere (Gaff et. al. 2003; Pruitt-Logan et al., 2002). Despite its cognizance of the changing academic labor market, the emphasis here was on preparation for the existing market. Although this program likely sensitized participants to the rise of contingent labor markets, it did not set out to reform either enrollment or employment.

In contrast, academic labor unions are among a relatively few policy actors that do attempt to influence the structure of academic employment. The AAUP is a faculty organization that hosts professional advocacy chapters as well as local unions. It has long been a vocal advocate for the academic freedom that is achieved through tenure (see its 1940 Statement). Forced to grapple with the reality that contingent non-tenure track employment will not soon be altered, the AAUP and other elements of organized labor have joined efforts as advocates for contingent workers and have achieved some success within individual unions. Several efforts have called for the conversion or consolidation of existing part-time positions into full-time faculty lines. Where earlier unions tended to represent only tenure track or full-time faculty, new part-time faculty unions can make it difficult to find common cause, especially when contingent faculty are unsure of their eligibility or prospects for consolidated positions. Joe Berry (2005) outlines a new Metro strategy designed to coordinate unions in urban areas. While this strategy has the potential to address supply conditions, so far that has not been its principal focus. We return to this topic in the paper's conclusion when we utilize our findings to consider limits and possibilities of coordination through collective bargaining or through other means.

This study is innovative because, rather than focusing on national or aggregate supply (Bowen & Sosa, 1989; Roemer & Schnitz, 1982), we examine regional measures critical to the markets for part-time faculty. Charlier & Williams (2011) previously argued that rural institutions face different market conditions for hiring part-time faculty. Their separation of rural from urban markets works as first approximation; however, our analysis shows that within these different markets it is the ready supply of students with graduate degrees that matters most. It is nearly

impossible to precisely delineate the contours of the supply of part-time faculty, as such faculty may be recruited among professional practitioners, current graduate students as well as students who have completed their education with a masters or doctoral degree. However, studies do suggest that vast majority of faculty possess at least a master's degree (Finkelstein, Conley & Schuster, 2016; Laurence, 2013). For that reason our analysis uses annual production of masters or doctoral degrees as an operational proxy for the potential supply of part-time faculty, although more will be said about this when we discuss the data. This measurement is critical to the conceptualization of contingent part-time academic labor markets because, unlike location, graduate degrees constitute a potential policy lever. Moreover, we observe that institutions seldom recruit nationally for part-time faculty, drawing instead primarily upon local or regional candidates.

Possible relationships between the supply of new (or existing) graduate degrees and the rise of precarious academic labor markets are poorly documented. During the late 1980s, as graduate students reported difficulty in obtaining tenure track jobs, Bowen & Sosa (1989) argued that a transitory excess supply of graduate students exceeded job opportunities contributing to an increasingly precarious academic market. In their conceptualization, excess supply nationally intensified competition and undercut existing labor standards. Bousquet (2008) would later argue that Bowen & Sosa were overly optimistic in predicting a reversal when baby boom faculty retired. As that reversal failed to materialize, a new camp of scholars argued that demand for cheap academic labor contributed to an “unbundling” of traditional tenure track professorial labor (Bousquet, 2008; Chronister & Baldwin, 1999; Finkelstein et al., 2016; Kezar & Maxey, 2016). Bousquet goes further, opposite to Say's law, arguing *demand creates its own supply*. He regards attempts to manipulate markets by reducing supply as “fantasy:”

Because the incoming flow of graduates is generally tightly controlled to produce “just enough” labor, graduate departments can't reduce admissions without making other arrangements for the work that the graduate student would have done. Since the restoration of tenure-stream lines is rarely a department-level prerogative, a department with the power to reduce graduate-student admissions will generally be driven to substitute other casual appointments (postdocs, term lectureships, single-course piece workers). In terms of casualization there is clearly no net improvement from this “supply side” fix (pp. 188-89).

Even though he discounts the idea that local supply can or should be a policy lever, we believe Bousquet's greatest insight resides in switching focus from the national supply of graduates towards local supply and demand conditions. More problematic is his almost exclusive focus upon “university” demand as the center of a low wage system. It is far from clear that after adjusting for both the cost of their training or productivity, graduate assistants are necessarily “low wage.” Nor is it clear that other academic institutions are less important sources of demand for contingent academic labor.

While there is general agreement that a structural transformation of academic labor took place over the last half century, several observers locate the origin of this transformation in the massive wave of post-secondary enrollments education in the 1960s and 70s (Baldwin & Chronister, 2001; Finkelstein et al., 2016; Kezar & Maxey, 2016, ). Student growth was principally accommodated through new and expanded community colleges that functioned as specialized teaching institutions. Reduced expectations for publication for teaching faculty opened the door for greater reliance upon part-time faculty. Collectively public community colleges hire 70.1% of their faculty on a part-time basis as compared to 29.1% at public research universities and 45.3% at private research universities (Finkelstein et al., 2016). Part-time faculty comprise 44.9% of appointments at the remaining public four-year institutions and 57.2% at private four-year schools.

Bousquet finds contingent faculty employment at the university similar in level to other four-year institutions once graduate assistants are included among instructional faculty. However, even with graduate assistants, part-time instruction at four-year institutions remains considerably lower than among community colleges (AAUP, 2016).

For Bousquet (2008) the university system is the center of a low wage crisis. He maintains that doctoral students at universities are viewed instrumentally as a source of inexpensive labor, such that completion of the PhD becomes a mere “waste product.” Bousquet addresses the question of supply in the context of his advocacy for a “true apprenticeship” that coordinates student enrollment with faculty opportunities. He does not develop his argument for apprenticeship and instead prioritizes increased wages predicated upon successful organization of part-time and graduate student unions. By contrast, our work here explores university operations not simply as a supplier of cheap labor for their own demand, but as suppliers of academic labor across highly varied academic markets requiring the accommodation varied interests. At the outset, we acknowledge that when considered as a whole, the graduate students who supply these markets are highly heterogeneous in their financial independence, fields of study, career ambitions, opportunities and willingness to relocate or reconsider employment goals. Provisionally, we view all graduate students as potential candidates within precarious academic markets.

Not all employment possibilities have shifted for the worse. Certainly, dividing faculty into non-tenure track, research, clinical and teaching professors and post doctorates generates a mix of opportunities that accompany the more frequently discussed obstacles. Importantly, the market for PhDs has expanded dramatically such that nearly half of PhDs are now employed outside academia (Finkelstein et al., 2016). This cross-sector competition likely shores up compensation at the University. Similarly, the expansion of specialized teaching institutions sustains an active market for current and former graduate students in possession of a master’s degree (Laurence, 2013).

Although the customary form of academic hiring involves an extensive search for tenure track faculty, local or regional search is more common among teaching institutions, and especially so within community colleges and for part-time faculty (Charlier & Williams, 2011). Among some 150,000 appointments for *new* entrants to the labor market in 2004, nearly two-thirds did not have a PhD. Where 90% of doctoral degree holders gained employment at four-year-or-higher degree granting institutions, more than half of those without PhD were hired by community colleges (Conley et al., 2016).

Where graduate students need or seek income, the prospect of teaching prior to completing a PhD may interrupt graduate degree completion. The allures of local, typically part-time, teaching may create a catch-and-trap effect for former students. The local cache of talent absorbed in part-time teaching appears to face significant exit barriers both because their work signals an emphasis on teaching rather than research and because attaining a doctorate is harder under these circumstances. In this way, they become more exploitable (Roemer & Schnitz, 1982).

Several recent studies on institutional demand for faculty have allowed for local or regional effects, typically by including a variable characterizing an institution’s location as urban (Charlier & Williams, 2011; Frye, 2015; Liu & Zhang, 2013; Zhang & Liu, 2010). When tested, urban status is sometimes been found to positive and significant with respect to greater part-time employment at an institution. Even so, most studies give little or no emphasis to location. The exception is a study by Charlier & Williams (2011). Based on over four hundred administrative respondents in rural and urban locations, they find a significant difference in employment, and assert that rural institutions are unable to satisfy their demands for adjunct labor. Rural schools in their sample have somewhat lower Part-time Faculty Ratios (PTR) that is partially made up by requiring full-time faculty to teach more credit hours (Charlier & Williams, 2011). Their model implicitly makes supply contingent upon location, but they do not directly address skills or degrees.

In addition to location, researchers who have looked broadly at the markets for contingent faculty have demonstrated that several demand side variables have significant impact upon part-time employment (Charlier & Williams, 2011; Dobbie & Robinson, 2007; Ehrenberg, 2003; Frye, 2015; Liu & Zhang, 2007; Zhang & Liu, 2010; ). These variables include full-time faculty salaries, operating funds within institutions, reliance upon tuition, the number of part-time students attending an institution, and the presence of full and part-time faculty unions. In contrast, location is the only variable investigated that is squarely related to the supply of potential part-time faculty. As compared to other campus, urban institutions are presumed to have a deeper reservoir of candidates available for part-time employment. To recruit qualified talent, more remotely located schools must offer steadier work and/or better compensation (Charlier & Williams, 2011).

## Methods

Using cross-sectional NCES data reported by colleges for the academic-year 2017, this paper explores spatial relationships between the production of potential academics and reliance upon contingent or precarious faculty employment. We provide evidence showing that where supply is greatest, employment of inexpensive part-time labor is observably higher. Our research does not explore job transformations involving off-track, full-time, clinical, graduate assistants or post-doctoral positions. Although these forms of labor are important, the part-time phenomenon is singular both because it has paved the way for other transformations and because of widely cited negative impacts on faculty and students (Jacoby, 2006; Jaeger & Eagen, 2009; Kezar & Maxey, 2016). As full-time academic positions are more likely to involve national search, our hypothesis is that the supply of graduates within a commutable distance of institutions is closely correlated with part-time faculty utilization rates. Further we suggest that this variable better describes the market than the dummy variable expressing urban/suburban vs. town/rural distinctions. To the extent the data bear out this hypothesis, we are further interested in ascertaining which commutable zone best approximates the market for part-time faculty, and likewise whether masters or doctoral degrees are better predictors of part-time employment.

## Data

Our primary dataset was downloaded from the National Center for Educational Statistics' [NCES] annual comprehensive surveys of post-secondary institutions for the US. We conducted a preliminary unpublished analysis using 2010 data and obtained significant results similar to those presented here for the year 2017. Because 2010 was the height of the US's most serious recession, questions about the representativeness of those data made it important to analyze more recent employment trends. NCES data for 2017 is the latest year in which part-time faculty data is currently available. The correlation between 2658 observations for which we have matching part-time faculty ratios (PTR) is .3953,  $p < .0001$ ), indicating that the 2010 PTR is a statistically significant predictor of 2017 PTR (NCES, 2017).

NCES IPEDS surveys provide needed institutional data, including institutional control, highest degree level awarded, location and numbers of degrees awarded. NCES includes the longitude and latitude for institutions, and this enabled us to use GIS tools to construct 25-, 50- and 100-mile radius areas for every institution in which we summed the number of annual masters and doctoral awards. NCES has constructed and stores a 12-code variable indicating the degree of urbanity (Gerverdt, 2015). It has four major locations (urban, suburban, town and rural) each with three subheads. Table I provides key descriptors of continuous variables. The data is further broken out by level and control as well as degree of urbanization in subsequent tables.

Table 1  
*Descriptive Statistics of Principal Continuous Variables*

Variable	<i>n</i>	<i>Mean</i>	<i>Std. Dev.</i>	<i>Min</i>	<i>Max</i>
PT Faculty %	3,653	42.2	29.2	0	100
Masters Grads '17 50 Mile radius	5,151	11300.8	15593.7	0	65019
PhD Grads '17 50 Mile radius	5,151	2424.1	3012.8	0	11857
Masters Grads 2016 50 Mile radius	5,103	10625.5	14730.6	0	62005
PhD Grads 2016 50 Mile radius	5,103	2386.7	3005	0	11982
Ln MA Grads '17 50 Mile radius	4,945	8.39	1.64	0.00	11.08
Ln PhD Grads '17 50 Mile radius	4,699	6.99	1.66	0.00	9.38
Ln MA Grads 2016 50 Mile radius	4,895	8.33	1.63	1.39	11.04
Ln PhD Grads 2016 50 Mile radius	4,621	7.00	1.70	0	9.40

As shown in Table 1, we downloaded data for over 5000 public, private and non-profit institutions degree granting institutions in 2017. There is significant non-reporting of PTRs, though this occurs most heavily in the for-profit sector. The descriptive data in Table 1 includes the percentage of faculty employed part-time (i.e., the PTR) for academic year 2017 as well as the number of doctoral and master's degree students awarded within a 50-mile radius of each institution in 2016 and again in 2017. Although not reported, we also obtained data on 2015 awards of graduate degrees and found these not materially different. For all three years we generated statistics on graduates degree within 25-, 50- and 100-mile radii from employing institutions. Sample averages reported here do not constitute estimates of national reliance upon part-time faculty for two reasons. First, the data is unweighted so that all institutions are treated equally given our interest in institutions as the unit of analysis. Additionally, the NCES 2017 data is provisional. We considered potential distortion by examining data for 2016 and found that many schools reported *final* data indicating they employed no part-time faculty. While that strikes us as highly unlikely, especially with respect to community colleges, we nonetheless are confident in the meaningfulness of the analysis we report here because our results are consistent with those for 2010. Further, we conducted supplementary analyses for 2017 dropping observations having zero PTRs and obtained higher significance levels than those we report here.

Table 1 reports data on graduate degrees using natural numbers as well as log transformations. Natural logarithmic transformations are useful when skewed data undermines assumptions about data normality. They also permit easier interpretation of results. When no masters or doctoral degrees are awarded for a particular observation, the logarithmic transformation is undefined and becomes a missing value and this explains the disparity in the number of observations reported in Table 1 when degrees are recorded as natural numbers and when they are reported as LnMA or LnPhD. Unless otherwise specified tables and figures in this paper use natural numbers.



Table 2  
*Bivariate Correlations*

Degrees by Year/Distance	PT Ratio
MA100 2015	0.1636
PhD 100 2015	0.1458
MA 50 2015	0.1652
PhD 50 2015	0.1505
MA 25 2015	0.135
PhD 25_15	0.1461
MA 100 2016	0.1617
PhD 100 2016	0.1426
MA 50 2016	0.1656
PhD 50 2016	0.152
MA 25 2016	0.1343
PhD 25 2016	0.1481
MA 50 2017	0.1646
PhD 50 2017	0.1547

To select the best proxy for supply, we compared correlations between each degree measurement and the part-time faculty ratio in 2017. Those correlations, reported in Table 2, support the use of lagged graduates (i.e. 2016) as the single best proxy. 2016 master's degrees had the highest correlation with part-time employment in 2017, though by only a narrow margin. 2017 PhD awards had a slight advantage over 2016 PhD. Given the small differences we chose to use 2016 as the appropriate measure, given the theoretical assumption that most employment follows degree completion, at least with respect to masters awards. Finkelstein, Conley, & Schuster (2016) indicate that 30% of new part-time faculty in 2003 found their positions within three years of their last degree. Our correlations also supported the presumption that commuting distances of 25 miles are likely too small to represent the potential pool of available commuting faculty, whereas commuting times for 100 miles are likely a barrier to part-time employment for many candidates. In sum, we rely upon the measures of 2016 graduate degrees within a 50-mile radius of the hiring institution as our proxy for the supply of part-time faculty candidates.

Table 3A, 3B, and 3C provide detailed descriptions of core data. Table 3A is a snapshot of part-time ratios, as well as doctoral and master's degree awards by NCES locale for public, private and non-profit institutions that award associates or higher-level degrees. We report means, number of observations ( $N$ ), and standard deviations. Where earlier research reports that a dichotomized geographic variable (urban/suburban vs. town/rural) is a significant predictor of PTRs, that is not self-evident in Table 3A Ehrenberg et. al 2004; Liu & Zhang, 2013; Zhang & Liu, 2010). Table 3A reveals a visible relationship for MA and PhD awards at the various major geographic divisions.<sup>1</sup> Table 3B further categorizes the data by adding institutional level and control. To the naked eye there is little additional consistency across geographic regions with regard to either PTRs or graduate degree awards.

<sup>1</sup> For more information on NCES-defined locale codes and boundaries, see Gevertt (2015).

Table 3A  
*Institutional Data by Locale*

	<i>PT Faculty Ratio</i>	<i>n</i>	<i>St Dev</i>
1.City	43.4	1740	29.1
2.Suburb	45.4	928	30
3.Town	33.3	624	26.7
4.Rural	43.2	374	29.2
Grand Total	42.1	3669	29.3
	<i>MA 50 Mile</i>	<i>n</i>	<i>St Dev</i>
1.City	12730	2589	16313
2.Suburb	15382	1434	16071
3.Town	1720	752	3036
4.Rural	3044	447	6316
Grand Total	11037	5225	15233
	<i>PhD 50 Mile</i>	<i>n</i>	<i>St Dev</i>
1.City	2764	2589	3190
2.Suburb	3355	1434	3141
3.Town	400	752	715
4.Rural	658	447	1329
Grand Total	2404	5225	3021

Table 3B  
*Key Variables by Institution Control, Degree Level and Geographic Location*

	Public					
	4 year or greater			2 year or greater		
	<i>PT Ratio</i>	<i>n</i>	<i>St.Dev</i>	<i>PT Ratio</i>	<i>n</i>	<i>St.Dev</i>
1. City	29.9	366	21.6	49.8	264	27.6
2. Suburb	36.6	158	23.6	52.8	178	29.5
3. Town	28.2	186	20.9	42.9	210	29.4
4. Rural	32.1	52	27.6	49.8	211	28
Grand Total	31	762	22.5	48.6	866	28.8
	<i>MA 50 Mile</i>	<i>n</i>	<i>St.Dev</i>	<i>MA 50 Mile</i>	<i>n</i>	<i>St.Dev</i>
1. City	9977	403	15461	10167	309	14114
2. Suburb	12316	169	14935	14462	212	14629
3. Town	1825	190	4438	1151	246	1869
4. Rural	2252	55	4618	2801	233	6332
GrandTotal	8045	817	13658	7122	1003	11998
	<i>PhD 50 Mile</i>	<i>n</i>	<i>St.Dev</i>	<i>PhD 50 Mile</i>	<i>n</i>	<i>St.Dev</i>
1. City	2170	403	2974	2171	309	2825
2. Suburb	2700	169	2991	3184	212	3005
3. Town	389	190	898	278	246	533
4. Rural	538	55	1091	587	233	1369
GrandTotal	1756	817	2696	1546	1003	2482

Table 3B cont.  
 Key Variables by Institution Control, Degree Level and Geographic Location

Private						
	4 year or greater			2 year or greater		
	<i>PT Ratio</i>	<i>n</i>	<i>St.Dev</i>	<i>PT Ratio</i>	<i>n</i>	<i>St.Dev</i>
2. Suburb	38.1	401	29.4	42	13	34
3. Town	26.3	212	24.9	45.4	6	21.6
4. Rural	33.9	96	28.1	59.2	4	36.9
GrandTotal	35.7	1425	28.7	45.7	48	29.5
	<i>MA 50 Mile</i>			<i>MA 50 Mile</i>		
	<i>n</i>	<i>St Dev</i>		<i>n</i>	<i>St Dev</i>	
1. City	16214	877	18330	16906	98	20339
2. Suburb	19211	477	18445	17884	40	18135
3. Town	2303	231	2805	2732	19	2457
4. Rural	3863	120	7568	2550	12	2606
GrandTotal	14299	1705	17568	14524	169	18662
	<i>PhD 50 Mile</i>			<i>PhD 50 Mile</i>		
	<i>n</i>	<i>St Dev</i>		<i>n</i>	<i>St Dev</i>	
1. City	3493	877	3564	3668	98	3838
2. Suburb	4055	477	3478	4106	40	3368
3. Town	547	231	733	649	19	682
4. Rural	799	120	1458	725	12	821
GrandTotal	3061	1705	3424	3223	169	3568
Private for Profit						
	4 year or greater			2 year or greater		
	<i>PT Ratio</i>	<i>n</i>	<i>St Dev</i>	<i>PT Ratio</i>	<i>n</i>	<i>St Dev</i>
1. City	71.4	228	23.4	51.6	141	23.4
2. Suburb	71.7	89	24.9	52.9	89	27.8
3. Town	70.6	7	10.9	69.8	3	19
4. Rural	69.7	5	13.9	20.9	6	25.3
GrandTotal	71.4	329	23.4	51.5	239	25.5
	<i>MA 50 Mile</i>			<i>MA 50 Mile</i>		
	<i>n</i>	<i>St Dev</i>		<i>n</i>	<i>St Dev</i>	
1. City	12767	427	14320	9402	475	13529
2. Suburb	13603	220	13742	12782	316	13744
3. Town	1244	12	1802	1201	54	1907
4. Rural	4388	7	4136	2958	20	3243
GrandTotal	12748	666	14041	9976	865	13370
	<i>PhD 50 Mile</i>			<i>PhD 50 Mile</i>		
	<i>n</i>	<i>St Dev</i>		<i>n</i>	<i>St Dev</i>	
1. City	2786	427	2827	2102	475	2664
2. Suburb	3021	220	2750	2899	316	2787
3. Town	189	12	306	330	54	592
4. Rural	1120	7	740	773	20	1003
GrandTotal	2799	666	2790	2252	865	2686

Some evidence of trend is evident in the more detailed Table 3C. The left-hand side of Table 3C categorizes schools by their various NCES locale codes referenced in Table 3B. Each of the four major categories is comprised of three sub-groups: large, medium, and small for urban and suburban locales; fringe, remote, and distant for town and rural locales. For example, the three subheads under suburban involving public four-year institutions reveal a continuous reduction in reliance upon part-time faculty as areas become more remote. A similar pattern is evident among public two-year urban, town, and rural institutions as well as public four-year. When decline is not continuous, as for instance among urban or town public four-year institutions, this may be because the 2-digit locales actually have greater affinity to adjacent 1-digit codes with regards to the potential supply of part-time faculty. For example, a “small suburb” may be less urban or dense than a “fringe town” or a “fringe rural” locales just outside urban or suburban centers. As one example, rural fringe institutions are disproportionately represented among public schools in rural locales. These schools demonstrate a reliance upon part-time faculty that is more similar to urban institutions and less like schools identified as remote or distant rural. By contrast, the trend between graduate degree awards is almost always as expected, with degrees falling off significantly as we move from urban to rural locales. Locales have a number of dimensions ranging from legal jurisdiction to total population to population density. However, the most relevant dimension for labor supply is likely to be commuting time or distance. In measuring annual degrees awarded by proximity to an institution we are able to approximate that construct.

Table 3C.  
 Descriptive Variables by Institutional Control, Degree Level and Detailed Geographic Location

Location	Public							
	Four Yr. or Greater				Two Year			
	Mean PT Ratio	Mean MA 50	Mean PhD 50	n	Mean PT Ratio	Mean MA 50	Mean PhD 50	n
1. City	29.9	10090.7	2146.7	360	49.9	10669.2	2214.8	261
11. City: Large	34.5	18755.3	3875.3	137	51.5	18872	3851.6	92
12. City: Midsize	26.2	4898	1153.7	101	52	7698.1	1670.1	66
13. City: Small	28	4659.6	1027.6	122	47.1	5246.1	1101.9	103
2. Suburb	36.6	12565.6	2711.6	158	52.8	15520.1	3341	178
21. Suburb: Large	38.1	17015.3	3632.7	104	54.1	19828.2	4293.5	127
22. Suburb: Midsize	37.8	4353.1	958.9	31	48.6	5678.3	1092.2	29
23. Suburb: Small	28.4	3514.6	909.4	23	50.8	3623.9	806.5	22
3. Town	28.1	1859.8	398.1	187	42.8	1210	285.6	208
31. Town: Fringe	31.8	5500.9	931	27	53.5	4482.8	1014	17
32. Town: Distant	27.4	2145.9	567.2	79	49.5	1735.8	449.2	91
33. Town: Remote	27.5	367.1	55.5	81	34.9	175.1	13	100
4. Rural	32.7	2515.7	569.2	51	49.8	2979.5	624.5	211
41. Rural: Fringe	39.7	3357.1	769.9	34	51.2	3873.7	818.6	148
42. Rural:Distant	20.7	1718.7	372.7	6	49.9	1066.8	193.6	43
42. Rural:Remote	17.6	349.9	56.2	11	39	475	114.6	20
Grand Total	31.1	8061	1725.8	756	48.6	7465.3	1584.1	858
Location	Private Non-Profit							
	Four Yr. or Greater				Two Year			
	Mean PT Ratio	Mean MA 50	Mean PhD 50	n	Mean PT Ratio	Mean MA 50	Mean PhD 50	n
1. City	37.3	15522.8	3324.4	724	45.6	14478.8	3165.7	25
11. City: Large	39.5	21336.6	4508.4	394	43.3	25332.7	5412.1	10
12. City: Midsize	32.6	10194.7	2324.1	154	46	5085.1	1144.3	7
13. City: Small	36.5	7169.9	1549	176	48.2	9131	2126.4	8
2. Suburb	38.2	18577.6	3923.3	402	42	19288.4	4614	13
21. Suburb: Large	39.4	20672.4	4362.4	347	45.5	20817.8	4978.3	12

22. Suburb: Midsize	30	5722.8	1169.2	35	0	936	242	1
23. Suburb: Small	31.8	4728.5	1122.8	20				
<b>3. Town</b>	<b>26.3</b>	<b>2413.7</b>	<b>580.9</b>	<b>212</b>	<b>45.4</b>	<b>2907</b>	<b>752.8</b>	<b>6</b>
31. Town: Fringe	28.8	3072.4	832.2	43	43.4	4054.7	1159.3	3
32. Town: Distant	25.1	2840.4	658.8	124	47.4	1759.3	346.3	3
33. Town: Remote	27.2	608.7	126.4	45				
<b>4. Rural</b>	<b>33.6</b>	<b>3519.9</b>	<b>777.4</b>	<b>97</b>	<b>59.2</b>	<b>2312.8</b>	<b>503</b>	<b>4</b>
41. Rural: Fringe	42.2	5515.1	1275.7	48	8.5	0	0	1
42. Rural:Distant	24.7	2171.8	403.7	31	75.7	4625.5	1006	2
42. Rural:Remote	26.4	520.9	92.1	18	76.9	0	0	1
<b>Grand Total</b>	<b>35.7</b>	<b>13630.5</b>	<b>2914.7</b>	<b>1435</b>	<b>45.7</b>	<b>13321.1</b>	<b>3034.4</b>	<b>48</b>

Private for Profit

Location	Four Yr. or Greater				Two Year			
	Mean PT Ratio	Mean MA 50	Mean PhD 50	n	Mean PT Ratio	Mean MA 50	Mean PhD 50	n
<b>1. City</b>	<b>71.4</b>	<b>15303.1</b>	<b>3245.4</b>	<b>228</b>	<b>51.6</b>	<b>11107.9</b>	<b>2291.1</b>	<b>141</b>
11. City: Large	72.1	16949	3625.3	142	48.9	14614.3	2981.4	84
12. City: Midsize	70.5	13421.4	2691.2	59	61.2	6912.4	1548.9	31
13. City: Small	69.7	10758.7	2458.4	27	48.7	4781.8	945.8	26
<b>2. Suburb</b>	<b>71.4</b>	<b>15461.1</b>	<b>3334.4</b>	<b>90</b>	<b>52.9</b>	<b>12721.2</b>	<b>2909.4</b>	<b>89</b>
21. Suburb: Large	71.7	16025.6	3477.4	85	52.3	13713	3139.5	79
22. Suburb: Midsize	63.1	6982.3	1037.5	4	56.3	3559.8	675.5	8
23. Suburb: Small	75	1395	364	1	62.5	10188	2756.5	2
<b>3. Town</b>	<b>70.6</b>	<b>2549.7</b>	<b>348.7</b>	<b>7</b>	<b>69.8</b>	<b>759</b>	<b>18.3</b>	<b>3</b>
31. Town: Fringe	75.7	5894.5	495	2				
32. Town: Distant	67.8	1483.8	362.8	4	80.8	955	16	2
33. Town: Remote	71.7	124	0	1	47.8	367	23	1
<b>4. Rural</b>	<b>69.7</b>	<b>2399.8</b>	<b>773.2</b>	<b>5</b>	<b>20.9</b>	<b>1543</b>	<b>329.7</b>	<b>6</b>
41. Rural: Fringe	74.2	2529.8	797.5	4	20.9	1543	329.7	6
42. Rural:Distant	51.5	1880	676	1				
42. Rural:Remote								
<b>Grand Total</b>	<b>71.4</b>	<b>14880.2</b>	<b>3170.8</b>	<b>330</b>	<b>51.5</b>	<b>11338.6</b>	<b>2443.6</b>	<b>239</b>

## Methods and Analysis

As indicated earlier, previous studies have found the degree of urbanization to be significant in determining the ratio of part-time faculty at individual institutions. However, those studies do not consider degree production, and their emphasis upon location makes it relatively easy to dismiss the supply of degreed candidates as the critical factor.

To determine what factors best explain observations we first construct a quartile analysis and then proceed to linear regression. Quartile analysis permits visual inspection of the data, while linear regression enables tests of significance for core variables and comparison across several models.

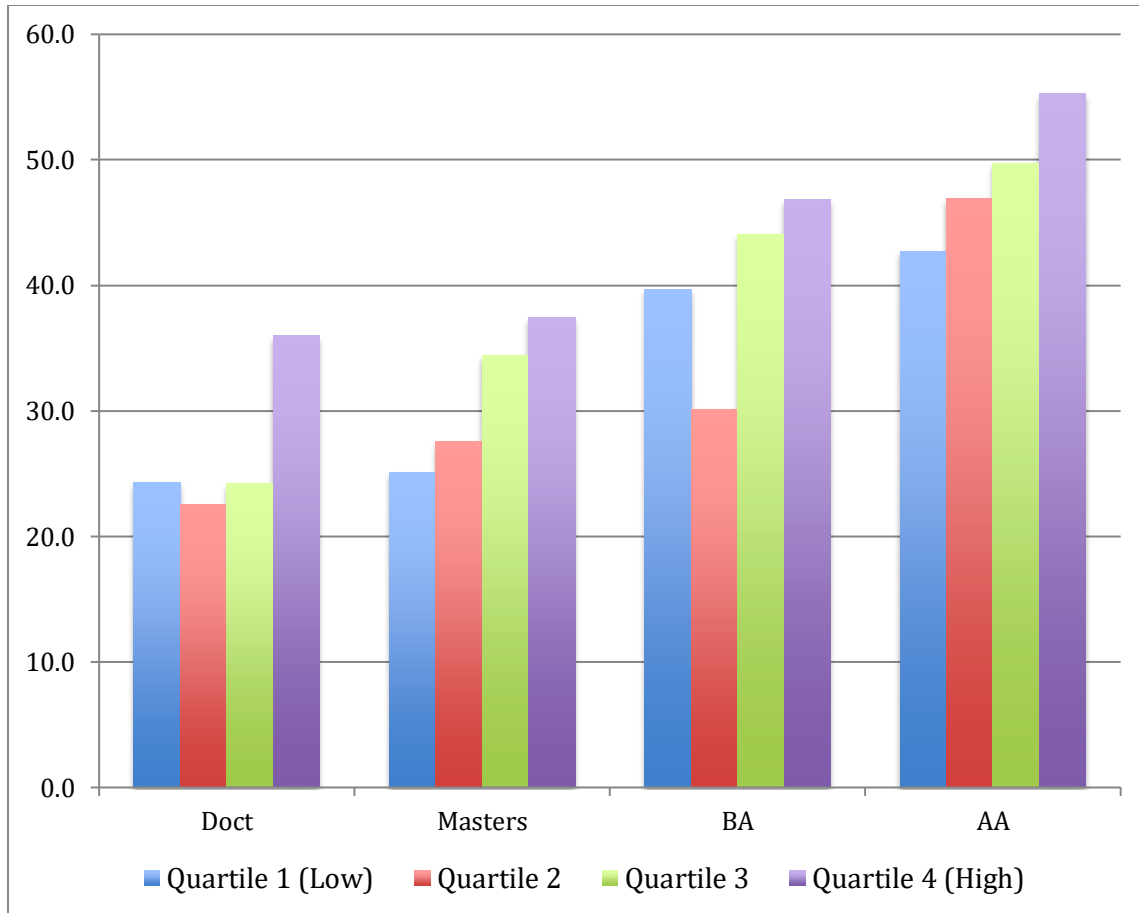


Figure 1. Part-Time Faculty Ratios by Quartile of Annual Masters Degree Awarded within 50 Mile Radius Public Institution by Degree Level

Eight sets of quartiles are produced. Four involve public institutions as differentiated by the highest degree they offered (two year, four year, masters, and doctorate), and a corresponding set of four for private institutions similarly divided. The quartile charts in Figures 1 and 2 are based upon distinct quartile cut points for each subgroup and show the mean part-time ratio for each of the 8 sets of quartiles. For example, the lowest quartile of institutions (Quartile 1) for two-year public institutions consists of institutions having the least masters or PhD in the 50 mile catchment areas in 2016. Figure 1 separates public institutions by degree level, starting with doctoral granting institutions first and ending with institutions whose highest degree is the associates. Although there are two small anomalies, the observable patterns are that the greater the number of master's degrees

awarded in the previous year (i.e., the higher the quartile), the greater is part-time employment, and second, the higher the degree-level awarded by an institution, the lower is its reliance upon part-time faculty. Figure 2 is similar, although post-secondary institutions under private control appear to have less divergence among four-year award levels than is observed among public institutions. Graduate degree-awarding private institutions also have higher levels of reliance upon part-time faculty.

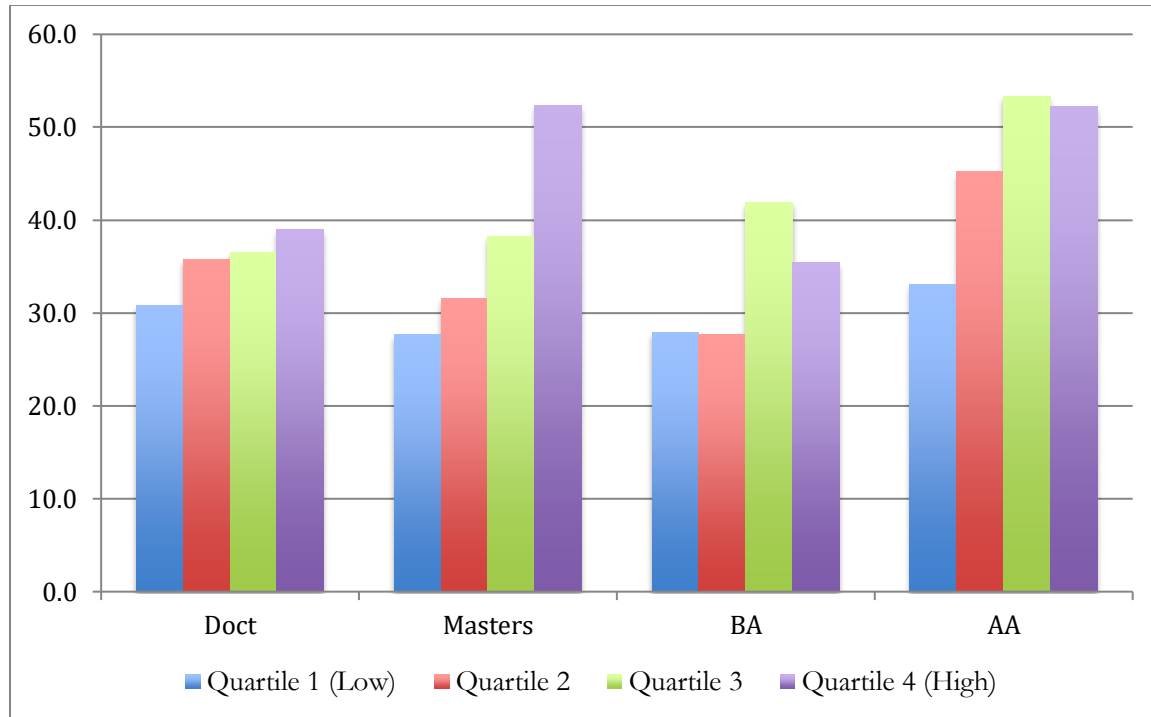


Figure 2. Part-Time Faculty Ratios by Quartile of Annual Masters Degree Awarded within 50 Mile Radius Private Institutions by Degree Level

Linear regression enables significance tests for location and other supply measures, while controlling for institutional degree level and public or private control. Comparison across regression models suggests which of the alternative measures of part-time faculty supply best explain the observed variations. We test the following hypothesis:

H1: The supply of recent Masters and PhD students is significantly correlated to the share of part-time faculty at nearby institutions

H2: The supply of recent Masters and PhD students has greater explanatory power than does a simple measure of location

H3: The importance of Masters relative to PhD graduates on part-time employment will depend upon the sector or type of higher education institution.

## Results

Table 5 presents the results from seven regression analyses involving different measures of local supply and their relationship to the dependent variable PTR (share of part-time faculty employment) while holding constant the institutional type and its interaction with a dummy variable for private sector institutions. Table 4 summarizes the key differences across the seven models in Table 5.

In all models where logged annual degree awards are regressed, whether Masters or PhD (Model 1, 2, 4, 5 and 6), degrees are highly significant ( $p < .0001$ ), Model 3 regresses part-time



employment ratios are regressed upon a location variable coded as 1 when institutions are located in either urban or suburban areas. Location is statistically significant. In Model 7, where dummy variables for urban, suburban and town locations are regressed, results are mixed in that the coefficient for urban schools is not significant, whereas suburban and town locations are significant at relatively low levels,  $p < .05$ , for suburban and  $p < .01$  for towns. When the 3 location codes (urban, suburban and town) are included in conjunction with master's degrees (Model 6), locations are not significant. In sum, degrees, especially master's degrees, outperform location, and in models where they are included together only degrees are significant.

Comparison of the  $R^2$  and adjusted  $R^2$  in various models leads to similar conclusions. The model in which supply is proxied solely by master's degrees accounts for nearly 19% of observed variation in PTR, and the models using doctoral degrees are only slightly lower. When location, but not degrees are specified in regressions (Model 3 and 7) the  $R^2$  is 2 to 3 percentage points lower.

The constant (cons) at the bottom of the regression estimates the PTR for the omitted categories (these are the for-profit institutions in Models 1 through 5 and rural for-profit institutions in Models 6 and 7). The omitted categories were chosen because they were observed to have the highest PTRs. That accounts for the negative sign on each of the eight institutional dummies indicating institutional control and degree level. For example, in Model 3 the estimated constant is 56.91% represents the average PTR among all for-profit institutions, and the negative coefficients for each institutional control and degree level indicate how much lower are the PTRs for those categories as compared to the for-profit average. For example, Model 3 public doctoral institutions would average 21.4% PTR (56.91 – 35.49). In models 1, 2, 4, 5 and 6 log masters or doctoral degrees are included and their coefficients indicate how much the PTR would rise with a doubling in the number of degrees. As the log of degrees awarded in 2015 ranges from 0 to 10 (see Table 1) we can multiply the coefficient for degrees in any model by 10 to estimate the total change in PTR predicted by degree awards. For example, Model 1 indicates the schools with the highest supply of recently awarded degrees to have a PTR roughly 26% ( $2.6 * 10$ ) higher the schools in areas that had no doctoral degrees awarded within 50 miles of their location.

Table 4  
*Elements of Models*

MODEL	2016 Degrees	Location	Level/Control
1	Ln50doct16	None	All Public/Private Levels For Profit Omitted
2	Ln50doct16	urb_suburb	All Public/Private Levels For Profit Omitted
3	None	urb_suburb	All Public/Private Levels For Profit Omitted
4	Ln50masters16	urb_suburb	All Public/Private Levels For Profit Omitted
5	Ln50masters16	None	All Public/Private Levels For Profit Omitted
6	Ln50masters16	Urb,Sub,Town Rural Omitted	All Public/Private Levels For Profit Omitted
7	None	Urb,Sub,Town Rural Omitted	All Public/Private Levels For Profit Omitted

Table 5  
 Linear Regressions Determinants for Part-time Faculty Ratios in 2017

Variables	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6		Model 7	
	Coef./ se	t/ sig	Coef./ se	t/ sig	Coef./ se	t/ sig	Coef./ se	t/sig	Coef./ se	t/sig	Coef./ se	t/ sig	Coef./ se	t/ sig level
Ln50mast16							2.72 1.23	8.77 ***	2.76 0.28	9.92	2.590621 0.3096176	8.37 ***		
Ln50doct16	2.6 0.28	9.29 ***	2.44 0.3	8.07 ***										
Urb_Suburb			1.83 1.3	1.4	6.39 1.08	5.94 ***	1.16 1.23	0.95						
PubDoc	-34.44 1.83	-18.9 ***	-34.31 1.83	-18.8 ***	-35.49 1.8	-19.7 ***	-34.44 1.78	-19.3 ***	-35.44 1.77	-20 ***	-34.20 1.79	-19.16 ***	-35.97 1.79	-20.13 ***
PubBA	-21.26 2.47	-8.62 ***	-20.92 2.48	-8.44 ***	-20.59 2.27	-9.07 ***	-20.54 2.36	-8.72 ***	-20.92 2.34	-8.92 ***	-20.23 2.36	-8.56 ***	-29.24 2.31	-12.68 ***
PubMA	-27.78 2.58	-10.8 ***	-27.31 2.48	-10.5 ***	-29.36 2.3	-12.8 ***	-27.89 2.29	-12.2 ***	-28.39 2.26	-12.6 ***	-27.72 -2.29	-12.13 ***	-20.96 2.26	-9.26 ***
PubAA	-10.8 1.56	-6.93 ***	-10.33 2.6	-6.47 ***	-11.57 1.53	-7.57 ***	-10.18 1.54	-6.6 ***	-10.65 1.5	-7.08 ***	-10.19 -1.55	-6.58 ***	-12.13 1.53	-7.92 ***
PrivNFPDoc	-28.09 1.56	-18.1 ***	-27.96 1.6	-17.9 ***	-27.09 1.56	-17.4 ***	-28.23 1.54	-18.3 ***	-28.69 1.53	-18.8 ***	-27.96 -1.54	-18.21 ***	-27.56 1.55	-17.81 ***
PrivNFPMA	-24.54 1.66	-14.8 ***	-24.23 1.56	-14.5 ***	-24.3 1.64	-14.8 ***	-24.6 1.63	-15.1 ***	-24.9 1.61	-15.5 ***	-24.47 -1.62	-15.08 ***	-24.38 1.64	-14.82 ***
PrivNFP_BA	-28.52 2.05	-13.9 ***	-28.1 2.07	-13.6 ***	-28 1.08	-13.9 ***	-28.02 2	-14 ***	-28.44 1.98	-14.4 ***	-27.81 -2.01	-13.86 ***	-28.05 2.02	-13.91 ***
PrivNFP_AA	-18 4.12	-4.42 ***	-18 4.12	-4.37 ***	-16.23 4.04	-4.02 ***	-17.89 4.09	-4.37 ***	-18.1 4.08	-4.43 ***	-16.89 -4.05	-4.17 ***	-16.36 4.04	-4.05 ***
Urban											-1.07 -1.77	-0.61	2.44 1.62	1.51
Suburban											-0.85 -1.88	-0.45	3.97 1.71	2.33 *
Town											-3.60 -1.92	-1.87	-5.11 1.78	-2.88 **
_Cons	44.42 2.35	18.9 ***	43.82 2.38	18.4 ***	56.91 1.53	37.2 ***	38.44 2.69	14.3 ***	39.33 2.67	14.7 ***	41.39 -3.02	13.72 ***	60.39 1.90	31.78 ***
Number of obs	3,241		3,241		3,653		3,468		3,483		3468.00		3653.00	
F	79.01		71.33		75.27		78.21		88.81		65.31		62.69	
Prob > F	***		***		***		***		***		***		***	
R-squared	0.1804		0.1809		0.1568		0.1845		0.1871		0.18		0.16	
Adj R-squared	0.1781		0.1784		0.1547		0.1821		0.185		0.18		0.16	
Root MSE	26.575		26.571		26.842		26.373		26.36		28.75		26.81	

## Discussion

By emphasizing place rather than supply, previous studies have paid scant attention to the interactions between university producers of potential academics and the demand for faculty by surrounding institutions. Our study encourages an emphasis on this regional dimension of the market for precarious part-time faculty. Curiously, this is even reflected, in the case of for-profit institutions that exhibit relative invariance to the supply of graduate degree holders. That is because for-profits often emphasize distance learning that nullifies the necessity for local recruitment. Quartile and regressions analysis results are consistent with the idea that a readily available supply of recent masters or PhD graduates influences the PTR in various institutions. The results also suggest that masters degrees are slightly better predictors than PhD degrees, but that both are better predictors than is geographic locale as measured either dichotomously as urban/rural or with a more detailed coding. Because it is hard to assume that master's degree students attend graduate school primarily to participate in academic labor markets, it would stretch the evidence to argue that graduate production must be reduced across the board in order to improve the quality of academic jobs. That said, however, the correlation does suggest that research institutions do influence employment at nearby colleges. The coefficients on our estimator suggest that the supply of graduates can determine as much as 30 percentage points of part-time employment in areas with heavy graduate degree production. That is substantial, as it represents just under half of the national average for community colleges, and more than that for four-year degree granting institutions. Given the issues surrounding part-time faculty employment and the significant investment in degree production, this research suggests that research institutions may wish to coordinate more closely with neighboring schools to improve employment opportunities so as to protect their students' sizable investments in human capital.

### Limitations

Despite the significance of estimated coefficients for key variables in our regressions, it is possible that their correspondence to part-time faculty employment masks the effects of other variables. A key limitation of the current research is that it does not involve a complete supply and demand analysis built upon a full set of determinants. As discussed earlier, previous studies have identified demand side variables that were significant alongside a location variable that may be viewed as a proxy for supply. Our own attempts to replicate other studies using the new variables suggest that there is no confounding. We do not report those results because, like other studies, we have not yet succeeded in specifying part-time faculty wages, and we believe these are critical in articulating demand. Our original 2010 study was conducted in hopes of linking supply measures to part-time wages as ascertained by the 2010 Coalition of Academic Workers survey of contingent academics. While that effort proved complicated, the results we reported here are completely consistent with the supply analysis for that earlier year.

A second limitation of this study is the fact that degree production and labor supply are not synonymous. The annual flow of graduates may be significantly different from the stock of degreed candidates available for recruitment as part-time faculty. This would be especially so when recent graduates show a propensity to migrate away. The evidence here, however, suggests that there is some "trap and catch" effect among advanced degree holders. That is, once local graduates enter the part-time market, they likely have greater difficulty entering national markets for full-time employment, or even in capitalizing on full-time opportunities with their existing employers (Roemer & Schnitz, 1982).

Finally, there is room for much additional research that might address closely related issues. One concern, of course, is the extent to which part-time employment is preferred or even sought by older or retired faculty. Finkelstein, Conley, & Schuster (2016) provide evidence that a large portion of part-time employment in four-year institutions consists of individuals over 55 years in age, and that the share of part-time faculty among 55 to 65 year olds has increased by roughly twenty percentage points between 1987 and 2010. This may account for the differences in reliance upon PhDs in four-year as opposed to two-year institutions. More importantly it suggests another way in which part-time markets may be better understood as local phenomena. Likewise, we know that women are more likely to be employed part-time than men, and that is also likely to be better understood within the context of place-bound individuals. Finally, while the AAUP finds full-time non-tenure track faculty to be fewer in number, roughly 12% of all faculty in 2016, nonetheless the extent to which their employment is local (perhaps even occurring at the institutions granting their degree) is worth studying. In this and similar areas further or more detailed local market research will be useful.

### **Policy Implications**

There are two major reasons policy makers are concerned by the extent of reliance on part-time faculty. These involve the separate impacts it has on faculty and upon students. Researchers have found that about half of all part-time academics would prefer full-time employment that provides greater security and benefits (Jacoby, 2005). However, given the current structure of jobs a minority of faculty make this transition (Finkelstein et al., 2016). At the same time a significant literature exists demonstrating the economic and social dislocations affecting part-time faculty. Perhaps more important than these faculty concerns is the fact that researchers have found significant negative effect on students and instruction arising from institutional reliance upon part-time faculty (Benjamin, 2003; Ehrenberg, 2003; Jacoby, 2006; Jaeger & Eagen, 2009). So far, however, neither labor, consumer nor accreditation concerns have successfully organized any significant reversal of current trends.

Absent external regulation, advocates who seek to reverse the process of casualization within academia often see unionization as an essential ingredient. Faculty unionization, however, comes in many configurations, each involving its own incentives. Bousquet (2008), in particular, expresses faith that graduate student and contingent faculty unions together may achieve a “true apprenticeship” for faculty. Bousquet omits details of this apprenticeship placing his emphasis on union efforts to win higher wages. Jacoby (1991) shows that American apprenticeship reached an inflection point near the start of the 20th century when craft unions succeeded in controlling supply while also raising apprentice wages and securing indentures that restricted exploitive employer behaviors. Given this history, Bousquet’s high wage solution suggests a plausible step towards curtailing the excess supply of qualified candidates. If graduate assistantships become more expensive, university demand for graduate assistants could decline. However, supply will only decline if universities do not increase enrollment to harvest graduate student tuition dollars while reducing offsetting aid or assistantships. Apprenticeship and job training involve long-term relationships that must be negotiated and enforced. Without that, long-term investments are vulnerable to exploitation and other opportunistic behaviors (Williamson et al., 1975). Graduate education is no different. Successful apprenticeship arrangements in the US have typically involved unions, however union involvement requires a mindset different from the standard industrial union demand for more immediate compensation and benefits.

Bowen & Sosa’s (1989) forecast for an improving tenure track market by aggregating supply and demand at the national level. Bousquet’s critique of their approach is important in shifting

attention away from the national market in favor of the local. Under the national market approach, excess supply seemingly spills over to undermine tenure as the standard for faculty positions, and without national regulation or enforcement little can be done. Each university envisions itself unable to shift national fundamentals and rationally believes their own unilateral decisions to reduce the stream of graduate degrees will be met with free-riders elsewhere and no real change. However, when we understand local markets as central to contingent labor, there can be more immediate and direct benefits to regional coordination designed to protect a university's graduates. Unions would play two roles in this arrangement: One is to place pressure on the University to coordinate local faculty markets. The other is to build multi-institutional contracts enforcing local apprenticeship arrangements establishing an orderly advance of qualified candidates to more secure positions with better working conditions.

A number of unions might make this effort. However, we need to know more about the effectiveness of different union constellations as they address the labor situation. The limited research we have at present suggests that unions have been unsuccessful in curtailing part-time employment (Dobbie & Robinson, 2007; Liu & Zhang, 2013). We can be reasonably sure, however, that the interests of graduate students and part-time contingent faculty will often diverge in significant ways. This will be especially so if one group sees itself preparing for future careers by obtaining the PhD, while the majority of the other group has a vested interest in continuing to work with lesser qualifications. Perhaps the best hope for coordination of supply lies in the union Metro model, under which unions coordinate efforts to organize all contingent workers across multiple institutions within a Metro region. The model has had some limited successes in Boston, Philadelphia, Portland, and Washington DC, but so far has not aimed at coordinating supply (Miller, 2015).

If there is a desire to reverse present trends, the research presented here places us in a better position by recognizing the differences between national tenure track markets and regional part-time markets, as well as the need for coordination across both. In the absence of regulation or an accreditation that mandates more full-time faculty, faculty unions will need to develop new ways to coordinate the supply and demand for post-secondary teaching credentials. In essence, that requires a different model of organizing and bargaining across supplying and demanding institutions.

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