

A Data Appendix

A.1 Administrative data sets

1. ***Data on cohort default rates (CDR)*** for cohorts entering repayment between 1992 and 2009. Default rates are calculated for the cohort that has been in repayment for two fiscal years (e.g., the default rate reported in 1992 applies to the cohort of borrowers that entered repayment in FY 1990). There is one original file for every year, which contains information on the institution (name, address, type) and the default rates for the three preceding years. We use the most recent information on default rates. For example, the default rate corresponding to the year 2001 appears in the 2001, 2002, and 2003 original files and we use the information that appears in the 2003 file. These data are available in the “2-Year Press Packages” links at <https://ifap.ed.gov/DefaultManagement/press/>.
2. ***Data on sanctions due to CDR violations*** for the academic years 1991 through 2010. There is one observation per institution-cohort year for the set of institutions that had at least one borrower entering repayment in the cohort year. This data includes the sanction trigger and penalty (e.g., Table C.1) by institution and cohort year. Data on sanction appeals was obtained through two Freedom of Information Act (FOIA) requests to the Department of Education (ED).
3. ***Data on Pell Grant recipients*** and total amount disbursed per institution and year for the academic years 1974 through 2012. There is one original file for every year and each file contains information on the institution’s location, number of recipients, and total amount disbursed. These data are available for the 2000 through 2017 academic years at <https://www2.ed.gov/finaid/prof/resources/data/pell-institution.html>. Earlier years were received from ED via request.
4. ***Postsecondary Education Participants System (PEPS) data*** includes information pertaining to an institution’s location, sector, participation in Title IV programs, closure date (if participating in Title IV programs at the time of closure), and provides a crosswalk between earlier institution identifiers (“Pell IDs”) and modern institution identifiers (“OPEIDs”). These data cover all institutions that ever participated in Title IV. We use the June 28, 2013 PEPS extract. The most recent PEPS data is available at: <https://www2.ed.gov/offices/OSFAP/PEPS/dataextracts.html>.
5. ***Postsecondary Career School Survey (PCSS) data*** was fielded by ED for the purpose of collecting information on postsecondary institutions offering vocational education programs in 1976, 1978, 1980, and 1981. It contains information on location, sector, and programs offered by schools in this sector. See <https://www.icpsr.umich.edu/icpsrweb/ICPSR/studies/2382> for data and details.

A.2 Analysis data set construction

We first created the single file containing the annual CDR information for all institutions, covering academic years 1992-2010, and a single file containing the annual information on sanctions due to CDR violations for all institutions, covering academic years 1991-2010. Schools are identified by their federal OPEIDS.

We took several steps to clean and harmonize the Pell Grant data across years. First, prior to 2000, school are identified by their “Pell ID”, which in many, but not all cases, is the same as the OPEID. We use the crosswalk between pre-2000 school identifiers (“Pell ID”) and current school identifiers (OPEID) from the PEPS data to synchronize school identifiers across years and create a single file containing the Pell Grant recipient information for all institutions between 1974 and 2012. Despite the fact that we are able to match most schools over time, there are a small number of cases in which we cannot match a school’s Pell ID to its OPEID or the OPEID changes between two consecutive years. We recode these cases to have a single OPEID when between the two years in which the OPEIDS differ, institutional records show the same name and address.

Because the Pell Grant administrative data does not provide separate records for Title IV branch campuses in the early years of the program, we combine recipients from branch and main campuses under the main campus OPEID in years in which this information is available.¹ There are also instances in which recipients from separate institutions within a larger system are combined and reported under only one OPEID (that in other years refers to a specific institution). This primarily occurs in the public sector (e.g., the Indiana Ivy Tech community college system, which includes 14 separate Title IV institutions, reports all recipients under one OPEID before 2006), but there are two large for-profit chains that suffer from this issue (ITT Tech and DeVry). To deal with the fact that this variation in reporting leads to large fluctuations in enrollment that are unrelated to actual enrollment changes, we impute recipients for locations in years in which Title IV enrollment is not separately reported. We use the most recent year in which recipients are reported for specific institutions and calculate the share of all recipients contained within each institution relative to the total number of recipients summed over the set of schools that are reported under a single OPEID in other years. Then, in years in which recipients are not reported for separate institutions, we allocate the total number of recipients reported under the single OPEID based on these baseline shares. At most, less than 3 percent of schools have imputed recipients in a given year. Finally, there are cases in which a given institution will have two separate OPEIDS with the same name and location in a given year. These

¹Note that a Title IV branch campus is a separate location of an institution that is covered under the main institution’s program participation agreement with ED. These are generally much smaller sites that serve a specific purpose or population (e.g., incarcerated adults, high school students, etc.). Title IV branch campuses are distinct from community college systems or for-profit chain that contain multiple institutions because in such cases, each location will have its own program participation agreement and a unique OPEID.

are primarily small programs offered within hospitals that have separate OPEIDS for nursing and other medical technology fields in early years of the Pell Grant data. We combine duplicate records that have the same address and name into a single observation, summing Pell Grant recipients (and borrowers/defaulters when available)). We add closure dates and fill in missing addresses and other information using PEPS data.

We restrict our sample to include all schools with a record in either the Pell Grant administrative data or the CDR administrative data in at least one year between 1982 and 2008 (which provides a window of 8 years before the first sanctions and after the last sanctions used in our analyses). We classify schools by control (public, nonprofit, for-profit) and level (2-year, 4-year) using the Pell, CDR, and PEPS administrative data. Of 10,089 institutions in the sample, 51 remain unclassified. This is because the Pell Grant data does not have a reliable measure of institutional sector before 1983. We use data from the PCSS to determine the sector of a subset of these institutions. Only some schools in the PCSS have OPEIDS, and some schools without OPEIDS are present in the main data set. In these cases, we match records based on institution name and location. We drop the remaining 13 schools not assigned to a sector from our sample. None of these schools contain Pell Grant recipients after 1982 or CDR records in any year. We assume that the 56 schools without any information on degree offerings are two-year institutions.

A small number of institutions are listed as belonging to different sectors over time. In some cases, this may represent true transitions between nonprofit and for-profit status. However, institutions that are listed as public schools in most years are misclassified with the same frequency. When there are discrepancies in a given institution's reported sector, we use the modal value of this variable. Less than 1 percent of institutions are affected.

Institutions are assigned to counties by zip codes. Specifically, we link institutions to county Federal Information Processing Standard (FIPS) codes using a zip code–FIPS code crosswalk. Since our sample spans three decades, we use the 2010 county definitions to ensure that institutions are consistently assigned to local markets. FIPS codes were manually entered for the 32 institutions that had invalid or missing zip codes. We are unable to match four small institutions in our sample to a county and thus, we drop these schools. None of these schools have Pell Grant recipient enrollment after 1991. In the years in which these schools were serving Pell Grant recipients, total enrollment ranged from 3 to 49 students.

A.3 Chains coding and descriptive statistics

Chains are identified through institution names in 1990 - the year prior to the release of the first round of sanctions. We focus on this year because it should most accurately predict an institution's name during the years in which sanctions were applied but does not suffer from the potentially endogenous response on the

part of sanctioned institutions to join, leave, or form a chain. Unfortunately, there is not a reliable indicator for whether an institution belongs to a chain during the period we examine. We assume that two or more institutions belong to a chain if they have the same name, allowing for variation in the spelling of common words (e.g., Sch versus School, Tech versus Technology) and taking into account the fact that school names that include many very common words (e.g., American Beauty College) will not represent two locations of the same chain unless other criteria are met (e.g., all instances are within the same state or group of adjoining states).

In 1990, we estimate that 32 percent of two-year for-profit institutions (containing 44 percent of Pell Grant recipients enrolled in the two-year for-profit sector) belonged to a chain that had at least two schools. The average for-profit chains had 4 locations with a total of 726 Pell Grant recipients enrolled in 1990. In contrast, the average single-location for-profit enrolled 118 Pell Grant recipients.

Almost half of all chains (45 percent) contained only two institutions, while the largest chain had 35 locations. We classify chains by whether they had locations in multiple states. While only 37 percent of two-year for-profit chains were multi-state, the schools belonging to these chains contained 73 percent of all Pell Grant recipients enrolled in a for-profit chain. Single-state chains had an average of 3 locations containing a total of 355 recipients while multi-state chains contained 6 schools enrolling 1674 students, on average.

A.4 Field of study coding and descriptive statistics

Unfortunately, there is not reliable information available on programs offered by most for-profit institutions during the 1980s and 1990s. While the IPEDS collects information on degrees and credentials received by CIP code, as discussed below, many for-profit schools are absent from the IPEDS during the period of interest. We assign for-profit institutions to six mutually exclusive field of study categories based on a school's name. Because listed names of institutions change over time, especially in the for-profit sector, and because the decision of what programs to offer could be endogenous to sanction receipt, we classify institutions based on their name in 1990, the year prior to the first sanctions were released.

Beauty/cosmetology for-profit schools are those with any of the following terms in their names: aesthetic, barber, beaut, bty, coiffures, cosm, comtlgy, culture, dermaogic, electrology, esthetics, hair, hrdsng, "hr ds", nail, salon, skin, spa, style, styling, vogue. We also include schools in the Wilfred, Aveda, and Paul Mitchell chains as these institutions offered only cosmetology programs.

Health for-profit institutions are those that are not classified as beauty schools and have any of the following terms in their names: acupuncture, anesth, body, cancer, chiropractic, counseling, cyotech, dental,

denturist, diagnostic, dietetic, doctor, drug, fitness, eeg, electrolysis, heal, histotech, histologic, hlth, holistic, hosp, laboratory, massage, med, midwifery, muscle, myomassology, myotherapy, nurse, nursing, nrsg, nrs, nutrition, ofradio, oncology, ophthalmology, optometry, optician, paramed, pedodontic, pharmacy, physician, psycholgy, radiologic, rad-tech, reserve, resp, shiatsu, sonograph, surgical, therap, ultrasoundm, xray, x-ray. Institutions that would be classified as both beauty and health related based on their names are placed in the beauty category.

Computing, business, and business technology focused for-profits are those that are not classified as health or beauty and have names containing any of the following terms: accounting, accountancy, banking, business, buisness, busn, "bus clg", commerce, commercial, comput, cmptr, court, data, electology, fiber, financial, law, legal, management, network, office, paraprof, processing, program, "sch of bus", secretar, steno, software, technolog, "word process", workforce. Schools that are classified as both computing and health are placed in the health category.

Hospitality, culinary, arts, and personal service oriented for-profits are those that are not classified as health, computing, or beauty and have with any of the following terms as part of their names: art, acting, actor, animal, audio, baking, ballet, bartend, brdcst, broadcast, canine, casino, chauffeurs, cinema, conservatory, cooking, creative, culinary, culture, cuisine, dance, dealing, dealer, design, drama, draft, drawing, dog, equestrian, film, fash, floral, food, funeral, gaming, golf, horse, hospitality, hotel, jewelry, k-9, luthiary, modeling, mortician, mortuary, motel, movement, music, nanny, painting, paper, pastry, pet, photo, piano, printing, recording, reporting, restaurant, restoration, scriptwriting, sewing, sound, studio, symphony, tailor, taxidermy, theater, theatre, television, travel, tv, upholstery, video.

Mechanical, trades, engineering, and transportation focused for-profits are those that are not classified as beauty, health, computing, or hospitality focused schools and have any of the following terms in their names: aero, airline, appliance, auto, aviation, boat, construction, diamond, diesel, drafting, driver, driving, electron, engineer, flight, flight, gunsmith, heating, indus, locksmith, mechanic, microwave, motor-cycle, seaboard, refrigeration, repair, tractor, trailer, transport, transmission, truck, vehicle, wastewater, watch, weld, yacht.

We classify schools that do not fall into one of the five categories as **general** for-profits. This category includes institutions that offer many different programs (that may align with the above categories) and specialized institutions for which we were not able to determine the types of programs offered from the school's name.

Table A.1: Descriptive statistics by field

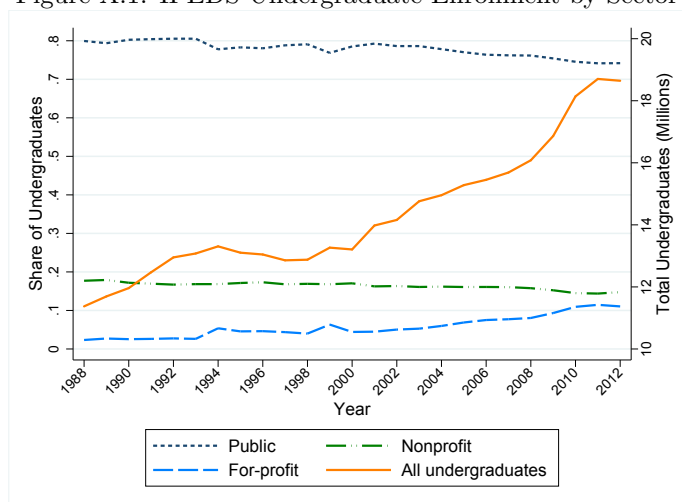
	Baseline (1990)		Sanctioned		Unsanctioned FP comp of sanctioned FP in any industry		Unsanctioned FP comp of sanctioned FP in same industry		Unsanctioned pub/NP comp of sanctioned FP in industry	
	<u>N</u>	<u>Av enrollment</u>	<u>N</u>	<u>Av enrollment</u>	<u>N</u>	<u>Av enrollment</u>	<u>N</u>	<u>Av enrollment</u>	<u>N</u>	<u>Av enrollment</u>
General	690	284	95	751	532	201	245	203	304	614
Beauty, cosm.	1,767	46	283	91	942	44	584	40	556	564
Culinary, arts, hosp.	125	91	9	473	99	74	7	219	28	640
Health	144	166	10	791	149	105	9	277	35	861
Business, computing	449	281	52	660	301	266	68	192	161	357
Mech., transp., engin.	109	199	16	701	77	161	10	226	44	543

Notes: See section A.4 for description of industry categories and classification. Average enrollment is in $t - 1$.

A.5 Pre-2000 representation of for-profit institutions with Pell Grant recipients in IPEDS

We compare the number of institutions and Pell Grant enrollment by sector in our analysis data set to a similar data set constructed from Integrated Postsecondary Education Data System (IPEDS) data. We used data from the annual fall enrollment and institutional characteristics (IC) files to measure total undergraduate enrollment. Institutions were allocated to counties using a crosswalk between county FIPS codes and institutions' zip codes and states. Information on institutional control and highest degree offered (four-year, two-year, or less than two-year) was used to allocate institutions to sectors. Figure A.1 displays total fall undergraduate enrollment in IPEDS institutions between 1988 and 2012 (solid line, right y-axis) as well as the distribution of IPEDS undergraduates across sectors (left y-axis) for institutions in counties with at least one Pell Grant recipient reported in the Pell Grant administrative data.

Figure A.1: IPEDS Undergraduate Enrollment by Sector



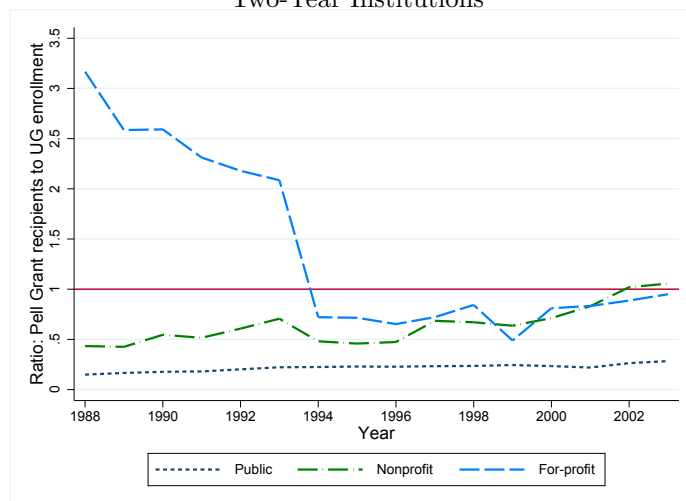
Notes: Sample limited to counties with at least one Pell Grant recipient enrolled in a two-year institution (including less than two-year institutions) between the 1988 and 2003 academic years. Fall undergraduate enrollment from IPEDS fall enrollment files.

Theoretically, the IPEDS universe includes all institutions in a given year that participated in Title IV programs. However, prior to 2001, the IPEDS data omits a large number of for-profit institutions that show-up in administrative data as enrolling Pell Grant recipients. For example, the Digest of Education Statistics reports 323 for-profit institutions in 1988 (U.S. Department of Education, 2015, Table 317.10) while the Pell Grant administrative data includes 2,791 for-profit institutions with at least one Pell Grant recipient enrolled in the same year. Some of these extra institutions may represent “branch campuses,” which may be grouped with “parent campuses” in the IPEDS. However, the treatment of branch and parent campuses cannot account for the discrepancy between for-profit enrollment reported in the IPEDS and Pell

Grant enrollment calculated from administrative data. As shown in Figure A.2, the number of Pell Grant recipients enrolled in two-year for-profit institutions exceeded the total number of undergraduates these institutions enrolled in 1988 by more than 300 percent.² For-profit institutions that were sanctioned and/or closed in the early 1990s are the most likely to be missing from the IPEDS.

Public and nonprofit institutions that participated in Title IV programs in the 1980s and 1990s appear to be better represented in the IPEDS. The number of Pell Grant recipients enrolled in two-year institutions in these sectors is always less than total fall undergraduate enrollment. The number of institutions in the IPEDS closely matches the number of institutions in the Pell Grant administrative data. For example, in 1988, the IPEDS data reports 1,673 nonprofit institutions and 1,591 public institutions, while the Pell Grant administrative data contain 1,752 nonprofits and 1,825 public institutions.

Figure A.2: Pell Grant Enrollment as a Percentage of Total IPEDS Enrollment by Sector:
Two-Year Institutions



Notes: Sample limited to counties with at least one Pell Grant recipient enrolled in a two-year institution (including less than two-year institutions) between 1988 and 2003. Undergraduate enrollment from IPEDS fall enrollment files.

References

U.S. Department of Education. 2015. “Digest of Education Statistics: 2014.” Washington, DC: National Center for Education Statistics.

²Results are quite similar when the sample is expanded to include four-year institutions. This is because very few for-profit institutions in the 1980s and 1990s were classified as four-years.