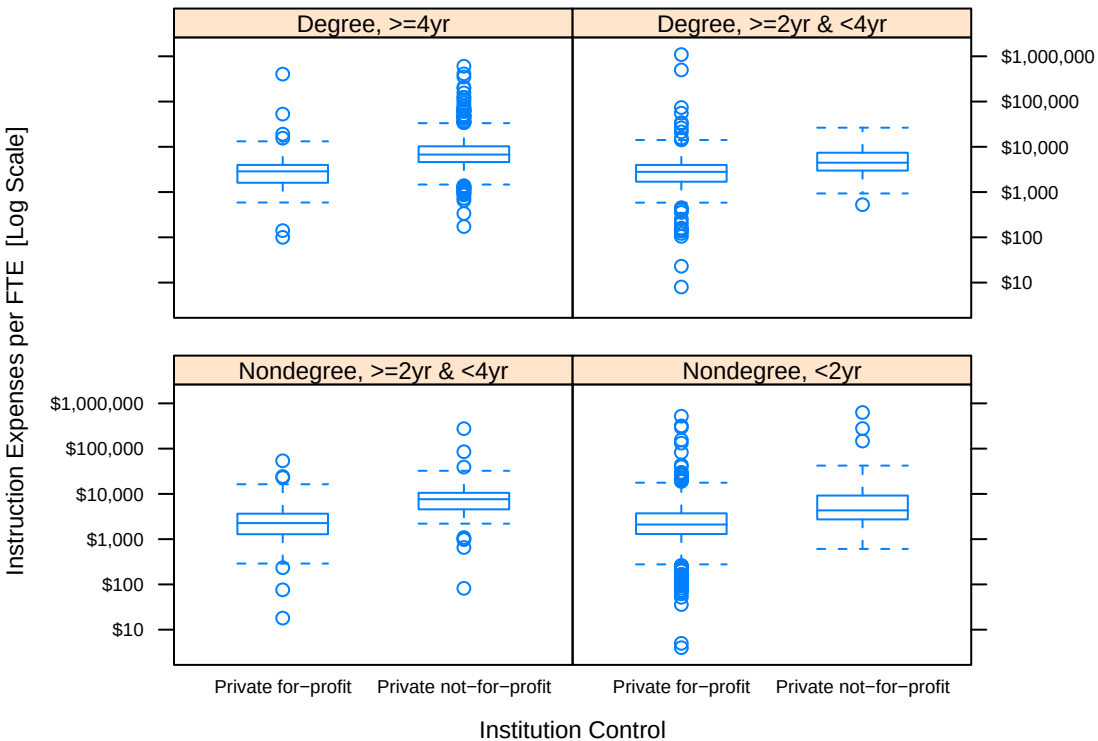
Figure 1: Instruction Expenses per 12−Month Full−Time Equivalent Student for Private Postsecondary Institutions in the United States by Institutional Control, Degree−Granting Status, and Level (Academic Year 2004−05)



Data Source: National Center for Education Statistics, Institute of Education Sciences, U.S. Department of Education. Washington, DC. Data downloaded 29−Jan−2008 from the Integrated Postsecondary Education Data System (IPEDS) at http://nces.ed.gov/ipedspas.

Figure 2: Selected Statistics for the Box-and-Whisker Plots in Figure 1

Institution Category	Private for-profit			Private not-for-profit			Totals	
	N	Median($)	Low Outliers	N	Median($)	Low Outliers	N	Low Outliers
Degree-granting								
Four or more years	358	2,872	2	1,450	6,742	18	1,808	20
At least 2 but less than 4 years	435	2,800	17	113	4,456	1	548	18
Less than 2 years (below associate)	---	---	---	---	---	---	---	---
Totals	793	---	19	1,563	---	19	2,356	38
Nondegree-granting, primarily postsecondary								
Four or more years	---	---	---	---	---	---	---	---
At least 2 but less than 4 years	256	2,263	3	94	7,626	5	350	8
Less than 2 years (below associate)	1,113	2,106	31	80	4,322	0	1,193	31
Totals	1,369	---	34	174	---	5	1,543	39
Grand Totals	2,162	---	53	1,737	---	24	3,899	77

Context. I'm trying to identify colleges and universities in the United States that use innovative business models. My belief is that the most dramatic redefinition of higher education will likely occur among low-cost competitors taking advantage of the significant price exposure that many colleges and universities now provide. Most low-cost competitors will merely choose to skim profits, but there may be a few in which a low-cost strategy is part of a broader effort at institutional and even social change.

Question. The learning-related organizations I seek may not occur in the population of existing institutions. However, it seems prudent to first examine the traditional world of higher education before searching the fringes. The question then is a very simple one. Are there existing U.S. colleges and universities with low-cost business strategies?

Definitions. This study uses data from the National Center for Education Statistics (NCES) and their Integrated Postsecondary Education Data System (IPEDS). The data refer to the academic year 2004-05, which is most recent year for which postsecondary finance data are publicly available. I've chosen to use unit expenses as a proxy for determining "low-cost," where expenses refer to instruction activities over a single academic year and the unit refers to the number of full-time equivalent students in that year. I'd have preferred to use unit core expenses rather than unit instructional expenses, but IPEDS data files provide the latter and not the former. While it is possible to compute unit core expenses given the data, I trust that NCES had good reasons for not including that computation. So I'll follow their lead. Basically core expenses include all expenses except those for self-supporting auxiliary enterprises and would provide a broader representation of the low-cost nature of institutions than is possible with instruction expenses only. But such are the tradeoffs sometimes necessary with research.

Findings. Figure 1 shows results for 3,899 private U.S. colleges and universities in the academic year 2004-05. Low-cost institutions exist in all but one of the eight categories of institutions examined. There are 77 total outliers with low unit instruction expenses (see Figure 2). Not all of the 77 will turn out to be true outliers on closer examination, of course, since many anomalies can contribute to outlier status. This is particularly true for the extremes at both ends of the distribution. But 77 institutions do provide a useful starting point for further investigation. While not directly relevant to this study, Figures 1 and 2 also demonstrate the substantial cost advantage that private for-profit institutions have over private not-for-profits. For example, the median instruction expense per FTE for private not-for-profit degree-granting institutions with 4 year or higher programs is $6,742. It is only $2,872 for private for-profits in the same institutional category. That's a lot of extra work that the revenue models of not-for-profits must do to earn each dollar of surplus.

Details. IPEDS is the federal government's comprehensive data collection program that includes all institutions whose primary mission is to provide postsecondary education. I downloaded several of the data files from the 2005 IPEDS surveys, loaded these files into a MySQL database, used SQL to join data tables and construct the population of interest, and then did the statistical analysis using R. The population of institutions met all of the following criteria: a) they were private; b) their institutional status was active instead of new; c) they were located in the 50 U.S. states or DC; b) they included all educational sectors except Administrative Units and unknowns; c) they had Fall 2005 enrollment totals greater than zero; d) they had instructional expenses per 12-month FTE greater than zero for the academic year 2004-05; and e) they excluded institutions with Not Applicable as the reporting standard (e.g., FASB) used to report finance data. Unit expenses in Figure 1 are expressed in a logarithmic scale to better illustrate the nature of the outliers. This is a common technique with highly skewed data distributions (see [1] below).

Box-and-Whisker Interpretation. A box-and-whisker plot summarizes the distribution of a variable of interest (unit expense in this case). The box itself shows the interquartile range within which 50% of the values lie. The line within the box locates the median. The dashed lines, called whiskers, that extend from the ends of the box are each potentially 1.5 times the interquartile range (i.e. the box length) and serve to demark where values get tagged as outliers. The whiskers may not be of equal length because they end at the last data value that is not an outlier. In the figure, outliers appear as circles.

References. [1] The classic reference for box-and-whisker plots is John W. Tukey, *Exploratory Data Analysis* (Reading, MA: Addison-Wesley Publishing, 1977). [2] R is a free computing environment for data analysis and graphics. It provides exquisite control over statistical computing and graphic displays. See the R home page at http://www.r-project.org/. [3] For information about the Integrated Postsecondary Education Data System, see http://nces.ed.gov/ipeds/.