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ABSTRACT

This paper shows how three critical enrollment indicators drawn from a relationship database were used to guide planning and management decisions. The paper discusses the guidelines for the development of the model, attributes needed, variables to be calculated, and other issues that may improve the effectiveness and efficiency of daily enrollment analysis and reporting for institutional researchers, enrollment managers, and registration personnel using Banner, Datatel, and Peoplesoft packages. Comparative student headcount, full-time equivalent (FTE) information, and credit load information within 126 registration days of fall 1999 and fall 2000 were analyzed and discussed. This information is a rich source for those who struggle with fundamental daily enrollment management issues before and after the semester begins. A college or university will find the daily enrollment analysis an added value for academic planning activities and for predicting enrollment at a given point during the registration period. (SLD)

Modeling Comparative Daily Enrollment Indicators to Aid Intelligent College Decisions

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Paper presented

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Modeling Comparative Daily Enrollment Indicators to Aid Intelligent College Decisions

Abstract

The paper shows how three critical enrollment indicators drawn from a relational database, were used to guide planning and management decisions. The paper discusses the guidelines for the development of the model, attributes needed, variables to be calculated, and other issues which may improve the effectiveness and efficiency of daily enrollment analysis and reporting for institutional researchers/enrollment managers/registration personnel using Banner, Datatel and Peoplesoft packages. Comparative student headcount, full-time equivalent (FTE) and credit load information within 126 registration days of fall 1999 and fall 2000 are analyzed and discussed. The report provides rich and robust information useful for academic administrators, enrollment managers/planners and others who struggle with fundamental daily enrollment management issues before and after the semester begins. A college or university will find the daily enrollment analysis an added value for academic planning activities and for predicting enrollment at a given point during the registration period. The analysis is unique, distinctive and add new knowledge to old information analysis and data reporting practice. Perhaps more important, the daily enrollment analysis challenges “census or freeze date” data analysis.

Modeling Comparative Daily Enrollment Indicators to Aid Intelligent College Decisions

Introduction

A high level of enrollment management is crucial to colleges and universities today because of competition in shrinking markets. Intense regulation from state coordinating boards, diversification, and globalization have stimulated a dramatic rise in competitiveness, making it more imperative than ever to better manage student enrollment and student relationships at every point of contact, and to acquire and build loyalty among those students prone to success.

Enrollment at a college or university could be “managed” or “influenced” through a variety of procedures or policies, including recruitment and admissions, pricing, counseling and advising, class scheduling, and registration process. Any change in procedure or policy may have a significant effect on enrollment. Hence, academic administrators and enrollment managers who want to determine a procedure or policy cause-effect on enrollment may often ask the following questions: How many students are enrolled and how many FTE are generated daily during the registration period? Are there early positive or negative anomalies in student enrollment and full-time equivalent (FTE)? These are some of the questions that the daily enrollment analysis can answer. The paper shows how three critical enrollment indicators (Headcount, FTE and Credit Load) drawn from a relational database, were compared for 126 time points between first day of classes between fall 1999 and fall 2000.

Background

The Y2K crisis in information systems prompted some higher education institutions to seek and change to Enterprise Resource Planning (ERP) packages, such as Banner, Datatel and Peoplesoft, as solutions for their legacy systems.

In fall 1998, the college changed from its 15 year old legacy system to a new Banner relational database system. Since the implementation of the system, and in order to help the institution better manage enrollment, the Office of Institutional Research (OIR) focused intense scrutiny on modeling comparative daily enrollment indicators that are not readily available online in the legacy system. The daily enrollment analysis provides leverage on the investment in the new system and helps improves enrollment management and academic planning activities.

Significance of Analysis

Many of us monitor or watch the stock market behavior on a daily basis. From an institutional perspective, student headcount, full-time equivalent (FTE) and average load are vital institutional indicators which deserves a “daily watch” during the registration period rather than a “freeze date watch” so that early positive or negative anomalies can be revealed and appropriate interventions targeted.

For this reason, we have created the daily enrollment analysis that focused intense scrutiny on the daily behavior of three critical success indicators (student headcount, FTE and credit load)

for a college or university. The daily enrollment analysis, a new practice of institutional research, is significant and provides highly rich and robust information for academic administrators, enrollment managers and others interested in fundamental daily enrollment management issues before and after the semester begins.

A college or university will find the daily enrollment analysis an added value for academic planning activities and for predicting enrollment at a given point during the registration period. The analysis is unique, distinctive and add new knowledge to old information analysis and data reporting practice.

Usefulness of Analysis to College Decision Making

The analysis, used as an institutional effectiveness tool, can be of direct value to college or university in making precision data driven decisions.

- Can aid in revealing early positive or negative anomalies in student headcount and FTE counts, so that appropriate interventions can be targeted, e.g., aggressive recruitment plan when a negative trend occurs.
- Can aid enrollment projections or forecasting time series enrollment, e.g. enrollment at ^{nth} time period.
- Can aid academic planning processes before the semester begins, e.g. open/cancelled sections, number of adjunct needed, facility management and budgeting.
- Can aid the effective use of target marketing dollars.
- Can aid the college or university enrollment management initiatives.
- Can be used to monitor the effect of changes in academic procedures or policies on enrollment at the college or university.
- Can aid in the development of a student relationship management model for predicting student likelihood to success.

Development of the Model

Universe of Reference:

Universe of reference is the total number of registration days for fall 1999 and fall 2000. Accurately counting the reference dates or time points is important for the modeling and for comparing apples to apples or oranges to oranges. On average, over the past five years, excluding Sundays and public holidays when college is closed, the total fall semester registration days to census date is 144 days; about 126 days before first day of classes. Fall registration usually starts the first week of April and ends after third week of classes—census date. Fall classes usually begins two days after labor day holiday.

Modeling Approaches:

The comparative analysis can be developed using one of the following modeling approaches:

1. (x) semester live data vs. (x-1yr) semester live data.
2. (x) semester live data vs. (x-1yr) semester frozen data.
3. (x) semester frozen data vs. (x-1yr) semester frozen data.

This presentation uses the (x) semester frozen data vs. (x-1yr) semester frozen data modeling approach.

Attributes Needed

The important attribute needed is the initial enrollment dates or reference dates for each of the time points of student registration for the semester under investigation, excluding weekends and public holidays when the college is officially closed. For Banner system users, the attribute name is *ENROLLMENT_ADD_DATE* which could be extracted from view *SFVSTC0* or source field *SFBETRM_ADD_DATE* in the *SFBETRM* table. Other attributes needed are the *STRSTCR_BILL_HR* for FTE calculation and *SFRSTCR_CREDIT_HR* for credit load calculation, both from *SFRSTCR* table. Users of Datatel, Peoplesoft and other systems will need to determine the equivalent attributes in their system in order to perform the analysis.

Variables to be Calculated

- Total registration days before first day of classes for fall 1999 and fall 2000.
- Headcount generated for each registration day.
- Cumulative headcount to date.
- FTE generated for each registration day.
- Cumulative FTE to date.
- Average load.

FTE is calculated by dividing the total credit hours generated by 30. Average load is calculated by dividing the total credit hours generated by number of students enrolled to date.

Comparative Daily Enrollment Analysis

The daily enrollment trend analysis (Table 1) below shows 126 of daily enrollment activities between fall 1999 and fall 2000, the comparative reference dates, the daily headcount generated, cumulative headcount to date, daily FTE generated, cumulative FTE to date and the average load. This information is sufficient for enrollment managers who want to know how many students and FTEs as a particular point in time before and after the semester begins. As more historical data is gathered, the data can be used to develop a time series analysis where enrollment and FTE can be predicted for an ^{nth} point in time.

The daily analysis is further broken down into quarterly analysis (table 2): first quarter analysis from 126 days to 95 days before the semester begins; second quarter analysis from 94 days to 64 days before the semester begins; third quarter analysis from 63 days to 33 days before the semester begins; and fourth quarter analysis from 32 days to 1 day before the semester begins. The analysis shows that enough though enrollment activities started slow in fall 2000 compared to fall 1999, by the second quarter enrollment began to get strong so that by the end of the fourth quarter FTE up by 8%. Three more years of historical data will allow us to glean what pattern is developed. Is enrollment always slow during first quarter so that resources can be reallocated till later in the semester?

Conclusion and Future Research

The paper shows how three critical enrollment indicators drawn from a relational database, were used to guide planning and management decisions. Analysis of comparative student headcount, full-time equivalent (FTE) and credit load information within 126 registration days between fall 1999 and fall 2000 are shown and the significance of analysis are discussed. This type of trend analysis is useful for academic planning activities and for predicting enrollment at a given point during the registration period.

In the future, the unit record data of the model will be combined with other relevant external source data, such as National Student Loan Clearinghouse (NSLC) transfer data, to develop a Student Relationship Management Model (SRMM) that could predict the likelihood of student success at the college. Answerable future research questions to guide the SRMM are: (1) What are the characteristics of students who registered but did not enrolled at the college? (2) Are late registrants hard to retain? (4) What is the likelihood of success of a traditional student carrying full-time load in a transfer/career program, whose ethnicity is white and registered early in the registration period.

Table 1
COMPARATIVE DAILY ENROLLMENT ANALYSIS
FALL 2000 VERSUS FALL 1999

NUMBER OF DAYS BEFORE CLASSES	FALL SEMESTER 2000					FALL SEMESTER 1999				
	REFERENCE DATE	DAILY HEADCOUNT	CUMULATIVE HEADCOUNT	DAILY FTE	CUMULATIVE FTE	REFERENCE DATE	DAILY HEADCOUNT	CUMULATIVE HEADCOUNT	DAILY FTE	CUMULATIVE FTE
126	04/05/00	114	114	33.2	33.2	04/10/99	16	267	3.5	76.4
125	04/06/00	86	200	23.2	56.4	04/12/99	56	323	17.0	93.3
124	04/07/00	38	238	12.0	68.4	04/13/99	37	360	9.4	102.7
123	04/08/00	9	247	2.2	70.6	04/14/99	24	384	4.5	107.2
122	04/10/00	54	301	14.1	84.7	04/15/99	29	413	5.7	113.0
121	04/11/00	40	341	11.1	95.9	04/16/99	31	444	10.9	123.8
120	04/12/00	22	363	6.3	102.1	04/17/99	3	447	0.7	124.5
119	04/13/00	35	398	11.4	113.6	04/19/99	50	497	13.2	137.7
118	04/14/00	24	422	6.2	119.8	04/20/99	45	542	16.2	153.9
117	04/15/00	8	430	2.8	122.6	04/21/99	12	554	2.8	156.7
116	04/17/00	35	465	9.9	132.5	04/22/99	28	582	6.2	162.9
115	04/18/00	24	489	6.3	138.8	04/23/99	13	595	4.4	167.4
114	04/19/00	29	518	5.7	144.5	04/24/99	5	600	1.4	168.8
113	04/20/00	40	558	10.0	154.5	04/26/99	28	628	8.0	176.8
112	04/24/00	27	585	7.9	162.4	04/27/99	26	654	6.3	183.1
111	04/25/00	42	627	16.7	179.1	04/28/99	18	672	6.0	189.1
110	04/26/00	20	647	4.8	183.9	04/29/99	26	698	7.7	196.8
109	04/27/00	15	662	4.5	188.4	04/30/99	18	716	4.7	201.5
108	04/28/00	25	687	5.7	194.1	05/01/99	1	717	0.6	202.1
107	04/29/00	5	692	1.3	195.4	05/03/99	44	761	13.7	215.8
106	05/01/00	37	729	10.9	206.3	05/04/99	18	779	4.2	220.0
105	05/02/00	16	745	4.0	210.4	05/05/99	21	800	5.2	225.2
104	05/03/00	38	783	11.9	222.3	05/06/99	29	829	7.8	233.0
103	05/04/00	27	810	7.5	229.7	05/07/99	22	851	6.3	239.3
102	05/05/00	11	821	3.1	232.9	05/08/99	3	854	0.6	239.9
101	05/06/00	2	823	0.7	233.5	05/10/99	25	879	5.6	245.5
100	05/08/00	29	852	8.6	242.2	05/11/99	18	897	5.9	251.4
99	05/09/00	29	881	8.8	251.0	05/12/99	34	931	12.8	264.2
										8.5

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NUMBER OF DAYS BEFORE CLASSES	FALL SEMESTER 2000						FALL SEMESTER 1999					
	REFERENCE DATE	DAILY HEADCOUNT	CUMULATIVE DAILY			AVERAGE	REFERENCE DATE	DAILY HEADCOUNT	CUMULATIVE DAILY			AVERAGE
			HEADCOUNT	FTE	FTE				HEADCOUNT	FTE	FTE	
70	06/13/00	42	1,372	15.3	402.9	8.8	06/16/99	11	1,359	3.1	392.8	8.7
69	06/14/00	12	1,384	4.0	406.9	8.8	06/17/99	27	1,386	9.0	401.8	8.7
68	06/15/00	51	1,435	19.8	426.8	8.9	06/18/99	6	1,392	1.6	403.4	8.7
67	06/16/00	12	1,447	4.3	431.1	8.9	06/19/99	1	1,393	0.1	403.5	8.7
66	06/17/00	1	1,448	0.2	431.3	8.9	06/21/99	20	1,413	6.8	410.3	8.7
65	06/19/00	13	1,461	4.5	435.8	8.9	06/22/99	47	1,460	15.7	426.0	8.8
64	06/20/00	12	1,473	3.8	439.6	9.0	06/23/99	17	1,477	4.3	430.3	8.7
63	06/21/00	31	1,504	8.2	447.7	8.9	06/24/99	16	1,493	3.9	434.2	8.7
62	06/22/00	14	1,518	4.9	452.6	8.9	06/25/99	0	1,493	0.0	434.2	8.7
61	06/23/00	7	1,525	1.6	454.3	8.9	06/26/99	0	1,493	0.0	434.2	8.7
60	06/24/00	6	1,531	1.6	455.9	8.9	06/28/99	42	1,535	10.4	444.6	8.7
59	06/26/00	20	1,551	6.6	462.5	8.9	06/29/99	0	1,535	0.0	444.6	8.7
58	06/27/00	49	1,600	17.8	480.3	9.0	06/30/99	57	1,592	20.1	464.7	8.8
57	06/28/00	16	1,616	4.7	484.9	9.0	07/01/99	15	1,607	4.0	468.8	8.8
56	06/29/00	44	1,660	16.5	501.4	9.1	07/02/99	14	1,621	4.4	473.1	8.8
55	06/30/00	6	1,666	1.9	503.4	9.1	07/03/99	7	1,628	2.2	475.3	8.8
54	07/01/00	2	1,668	0.6	504.0	9.1	07/06/99	26	1,654	7.2	482.6	8.8
53	07/05/00	18	1,686	5.9	509.9	9.1	07/07/99	26	1,680	5.2	487.8	8.7
52	07/06/00	47	1,733	15.8	525.7	9.1	07/08/99	65	1,745	22.5	510.3	8.8
51	07/07/00	21	1,754	6.0	531.7	9.1	07/09/99	17	1,762	4.4	514.7	8.8
50	07/08/00	5	1,759	1.6	533.3	9.1	07/10/99	5	1,767	1.0	515.7	8.8
49	07/10/00	24	1,783	5.2	538.5	9.1	07/12/99	26	1,793	6.6	522.3	8.7
48	07/11/00	63	1,846	20.7	559.2	9.1	07/13/99	54	1,847	19.3	541.5	8.8
47	07/12/00	34	1,880	9.7	568.9	9.1	07/14/99	26	1,873	7.2	548.7	8.8
46	07/13/00	50	1,930	17.5	586.4	9.1	07/15/99	35	1,908	6.9	555.6	8.7
45	07/14/00	13	1,943	3.2	589.6	9.1	07/16/99	25	1,933	6.7	562.3	8.7
44	07/15/00	4	1,947	1.1	590.8	9.1	07/17/99	2	1,935	0.3	562.6	8.7
43	07/17/00	44	1,991	11.6	602.4	9.1	07/19/99	38	1,973	9.7	572.3	8.7

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	REFERENCE DATE	DAILY HEADCOUNT	CUMULATIVE HEADCOUNT	DAILY FTE	AVERAGE		REFERENCE DATE	DAILY HEADCOUNT	CUMULATIVE HEADCOUNT	DAILY FTE	AVERAGE	
					FTE	LOAD					FTE	LOAD
42	07/18/00	48	2,039	15.1	617.5	9.1	07/20/99	64	2,037	20.6	592.9	8.7
41	07/19/00	32	2,071	8.4	625.9	9.1	07/21/99	41	2,078	10.9	603.8	8.7
40	07/20/00	60	2,131	19.8	645.7	9.1	07/22/99	68	2,146	20.9	624.7	8.7
39	07/21/00	26	2,157	7.7	653.4	9.1	07/23/99	33	2,179	8.0	632.7	8.7
38	07/22/00	10	2,167	2.7	656.1	9.1	07/24/99	5	2,184	1.2	633.9	8.7
37	07/24/00	40	2,207	9.2	665.3	9.0	07/26/99	39	2,223	7.3	641.3	8.7
36	07/25/00	77	2,284	23.4	688.6	9.0	07/27/99	63	2,286	16.6	657.8	8.6
35	07/26/00	65	2,349	20.2	708.8	9.1	07/28/99	36	2,322	11.0	668.8	8.6
34	07/27/00	69	2,418	22.7	731.5	9.1	07/29/99	67	2,389	20.3	689.0	8.7
33	07/28/00	27	2,445	6.7	738.2	9.1	07/30/99	29	2,418	6.3	695.4	8.6
32	07/29/00	6	2,451	1.2	739.4	9.1	07/31/99	11	2,429	2.2	697.5	8.6
31	07/31/00	51	2,502	11.5	750.9	9.0	08/02/99	60	2,489	12.3	709.8	8.6
30	08/01/00	95	2,597	27.9	778.8	9.0	08/03/99	62	2,551	17.7	727.5	8.6
29	08/02/00	72	2,669	15.5	794.3	8.9	08/04/99	52	2,603	11.6	739.1	8.5
28	08/03/00	78	2,747	21.9	816.2	8.9	08/05/99	74	2,677	21.4	760.6	8.5
27	08/04/00	53	2,800	13.4	829.6	8.9	08/06/99	36	2,713	9.5	770.1	8.5
26	08/05/00	10	2,810	2.2	831.8	8.9	08/07/99	14	2,727	2.1	772.2	8.5
25	08/07/00	103	2,913	22.9	854.7	8.8	08/09/99	85	2,812	20.7	793.0	8.5
24	08/08/00	57	2,970	12.2	866.9	8.8	08/10/99	99	2,911	25.9	818.8	8.4
23	08/09/00	86	3,056	22.8	889.7	8.7	08/11/99	131	3,042	36.8	855.7	8.4
22	08/10/00	74	3,130	20.3	910.0	8.7	08/12/99	112	3,154	26.2	881.9	8.4
21	08/11/00	46	3,176	13.0	922.9	8.7	08/13/99	46	3,200	12.3	894.1	8.4
20	08/12/00	45	3,221	12.9	935.8	8.7	08/14/99	35	3,235	7.2	901.3	8.4
19	08/14/00	148	3,369	39.8	975.5	8.7	08/16/99	93	3,328	22.9	924.2	8.3
18	08/15/00	116	3,485	25.5	1,001.0	8.6	08/17/99	91	3,419	20.7	944.9	8.3
17	08/16/00	100	3,585	24.4	1,025.4	8.6	08/18/99	94	3,513	21.3	966.1	8.3
16	08/17/00	95	3,680	20.0	1,045.5	8.5	08/19/99	74	3,587	16.4	982.6	8.2
15	08/18/00	58	3,738	12.6	1,058.0	8.5	08/20/99	37	3,624	9.7	992.3	8.2

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	REFERENCE DATE	DAILY HEADCOUNT	CUMULATIVE HEADCOUNT	DAILY FTE	CUMULATIVE FTE	AVERAGE LOAD	REFERENCE DATE	DAILY HEADCOUNT	CUMULATIVE HEADCOUNT	DAILY FTE	CUMULATIVE FTE	AVERAGE LOAD
14	08/19/00	29	3,767	6.6	1,064.6	8.5	08/21/99	16	3,640	3.0	995.2	8.2
13	08/21/00	95	3,862	20.9	1,085.5	8.4	08/23/99	83	3,723	17.5	1,012.8	8.2
12	08/22/00	91	3,953	19.6	1,105.1	8.4	08/24/99	72	3,795	14.6	1,027.4	8.1
11	08/23/00	70	4,023	13.0	1,118.1	8.3	08/25/99	92	3,887	19.5	1,046.9	8.1
10	08/24/00	52	4,075	10.5	1,128.5	8.3	08/26/99	81	3,968	15.6	1,062.5	8.0
9	08/25/00	45	4,120	9.6	1,138.1	8.3	08/27/99	48	4,016	8.7	1,071.3	8.0
8	08/26/00	29	4,149	5.3	1,143.5	8.3	08/28/99	27	4,043	5.2	1,076.4	8.0
7	08/28/00	103	4,252	21.3	1,164.8	8.2	08/30/99	92	4,135	17.8	1,094.2	7.9
6	08/29/00	90	4,342	16.8	1,181.5	8.2	08/31/99	62	4,197	11.0	1,105.2	7.9
5	08/30/00	79	4,421	14.2	1,195.7	8.1	09/01/99	58	4,255	10.0	1,115.2	7.9
4	08/31/00	92	4,513	16.7	1,212.4	8.1	09/02/99	69	4,324	13.0	1,128.2	7.8
3	09/01/00	68	4,581	12.2	1,224.6	8.0	09/03/99	52	4,376	9.4	1,137.6	7.8
2	09/02/00	49	4,630	7.7	1,232.3	8.0	09/04/99	25	4,401	3.6	1,141.2	7.8
1	09/05/00	150	4,780	27.0	1,259.3	7.9	09/07/99	145	4,546	23.2	1,164.4	7.7

Table 2
Comparative Daily Enrollment Analysis by Quarter

Days before classes begin	Headcount				FTE			
	Fall 2000	Fall 1999	Gain/Loss	%Change	Fall 2000	Fall 1999	Gain/Loss	%Change
1st Quarter (126 - 95 days)	954	997	-43	-4%	275	284	-9.3	-3%
2nd Quarter (94 - 64 days)	1,473	1,477	-4	0%	440	430	9.3	2%
3rd Quarter (63 - 33 days)	2,445	2,418	27	1%	738	695	42.8	6%
4th Quarter (32 - 1 day)	4,780	4,546	234	5%	1,259	1,164	94.9	8%

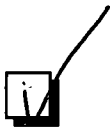


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