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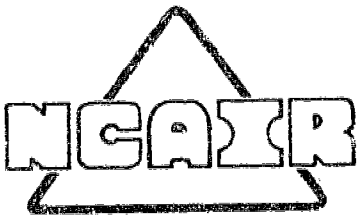
ABSTRACT

The major theme of Report Card 1 is enrollment projections. Reports in this section include: Barwick and Stafford's "Statewide Enrollment Projections for North Carolina, 1975-80"; Reiman's "Assumption-Based Model for Developing Institutional Enrollment Projections"; Rajasekhara's "Enrollment Projection," dealing with alternative methods; Nichols' "Enrollment Projection Procedures at Concord and Bluefield State Colleges;" and Chapman's "Institutional Enrollment Projections: High School Surveys." Report Card 2 includes Fry's "Research Tool for the Study of Student Progression and Non-Retention," and Council's "Student Retention and Graduation at North Carolina State University." Report Card 3 covers new ideas and approaches in the process of development, formulation, and experimentation for institutional research practitioners. It includes: Fry's "Mechanism for Studying Campus-Wide Rooms and Building Utilization and Availability"; Montgomery's "How to Succeed in Institutional Research by Really Trying"; Reiman's "Proposed Methodology for Use of the UCE-UCLA Survey for Entering Freshmen as a Tool for Long-Range Planning"; Reiman and Hubbard's "Experimental Instrument for Evaluating the Performance of College and University Administrators"; and Uhl and Pratt's "Importance of Local Validation in Using Standardized Tests for Institutional Research."
(Author/LBH)

REPORT CARD
on
ENROLLMENT PROJECTIONS



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Third Annual Meeting of the North Carolina Association For Institutional Research

Charles I. Brown, Editor

1976 Boone 1976

2

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INSTITUTIONAL RESEARCH

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REPORT CARD
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PREFACE AND ACKNOWLEDGEMENTS

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Recipients of any of the several North Carolina Association for Institutional Research Proceedings prior to this fourth effort will note with favor, I hope, two words, REPORT CARD, that have been added to the title of NCAIR Proceedings initially came up at one of the Executive Committee Meetings; toy was made with nomenclatures such as "Burning Issues", "IR Challenges of the 70's" and a small coterie of other names before being rejected for one reason or another. And though REPORT CARD was not everyone's first choice in the "Name the Proceedings" contest, a virtue of the name finally chosen was that it was not only distinctive, but of ever greater import, was the realization that the newly acquired REPORT CARD appellation was a more than apt description of NCAIR Annual Meetings and of its Proceedings.

Accordingly, in these most appropriately named Proceedings, the major theme of REPORT CARD 1 is Enrollment Projections. Beginning at the highest level possible within a state, the subject of the first report by Allen J. Barwick and Thomas H. Stafford is "Statewide Enrollment Projection for North Carolina, 1975-80." From this topmost or apogee level, Robert E. Reiman includes a report on "An Assumption-Based Model for Developing Institutional Enrollment Projection." Koosappa Rajasekhara includes in his "Enrollment Projection" report several alternatives ranging from simple averaging to a computer program from which institutional enrollment projections may be calculated. James O. Nichols summarizes in the fourth report of this section "Enrollment Projection Procedures at Concord and Bluefield State Colleges" and concludes with "Institutional Enrollment Projections: High School Surveys" at the community college level by Edwin R. Chapman.

REPORT CARD 2 includes two reports and has as its central theme, Student Retention and Progression. In the first of these reports Robert E. Fry, after being subjected to several student retention-progression type questions by colleagues at his institution, suggests to the reader "A Research Tool for the Study of Student Progression and Non-Retention." The concluding report in this section is a collection of six tables by Kathryn A. Council that when taken together combines into a graphic depiction of "Student Retention and Graduation at North Carolina State University."

In uphold of one of the axioms upon which NCAIR was founded, REPORT CARD 3 provides the institutional research practitioner an opportunity to "showcase" the new ideas, approaches and wares that are in the process of development, formulation, experimentation and trial at their respective institutions. And again this declared intent or founding stone has been sustained as the several reports that comprise the Special Interest Studies section are a veritable reservoir of new institutional research ideas,

approaches and wares. In witness of the foregoing assertion, Robert E. Fry's second contribution to these Proceedings offers "A Mechanism for Studying Campus-Wide Room and Building Utilization and Availability;" while James R. Montgomery in response to a perennial problem offers some excellent homespun advice on "How to Succeed in Institutional Research by Really Trying." Catering to one of his many interests, the third special interest report is Robert E. Reiman's "Proposed Methodology for Use of the ACE-UCLA Survey for Entering Freshmen as a Tool for Long-Range Planning" and joins William C. Hubbard as the co-author of "An Experimental Instrument for Evaluating the Performance of College and University Administrators." REPORT CARD 3 is concluded by Norman P. Uhl and Linda K. Pratt who caution us against the blind use of standardized tests, numerous though their advantages may be, in "The Importance of Local Validation in Using Standardized Tests for Institutional Research."

Prior to concluding these prefatory remarks, I would like to acknowledge with thanks the contribution made by the several committee members of NCAIR, and to an even larger number of persons who volunteered their services to insure the success of the Third Annual Meeting of NCAIR and of these Proceedings. I would also like to publicly thank the President of the North Carolina Association of Independent Colleges and Universities, Dr. Cameron P. West, on the behalf of a very appreciative NCAIR audience who heard a highly informative after dinner speech delightfully made and to offer my sincere apologies for having to go to press prior to receipt of an amended version of his speech and to hope that despite our rush to print that "Cam" will come back to us whenever he or we feel the need of his help again.

Charles I. Brown
Fayetteville State University
July, 1976

REPORT CARD 1 - ENROLLMENT PROJECTION STUDIES
* * * * * * * *

STATEWIDE ENROLLMENT PROJECTION FOR NORTH CAROLINA, 1975-80[1]

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The University of North Carolina, General Administration

and

Thomas H. Stafford, Jr.
North Carolina State University

I. INTRODUCTION

The need for accurate projections of college enrollments in North Carolina as a basis for statewide planning of higher education is becoming increasingly evident. The difficulties, however, of making such projections are illustrated by previous efforts which have experienced at best modest success.

The underprojections of actual enrollments by Thompson (1961) and Hamilton (1962) were caused by underestimates of the percent of the age group which would enroll in college. A later projection by Hamilton (1965) was overly optimistic, over-projecting actual enrollments by 24.8%. Lee's more recent projection (1967) was very accurate compared to projections just mentioned. However, Lee did not accurately partition between public and private enrollments, underpredicted actual enrollment in 1974 by 10.5%, and did not partition enrollment between North Carolina residents and non-residents.

Lee's and Hamilton's projections were determined by using the cohort-survival method. This technique is based on the extent to which a cohort (a group of students having a similar classification trait) survives by class. The survival ratio is computed for a series of cohorts of successive years, and a trend is established in order to determine college enrollment for each year. Thompson's projections employed what is called the ratio method. The ratio method basically consists of deriving future estimates of college enrollments on the basis of predetermined projected ratios (ratio of enrollment to college age population) applied to one or more larger "predictor" populations (the 18-21 college age population in Thompson's case). One shortcoming of this procedure is the difficulty of making accurate forecasts of the predictor population.

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[1]For a more comprehensive and detailed treatment of this topic see Allen J. Barwick, College Enrollments and Projections in North Carolina, 1975-80, (Chapel Hill: The University of North Carolina - General Administration, May, 1975).

In an effort to overcome shortcomings of previously used techniques, a different enrollment technique has been developed. The following paper describes this technique and summarizes statewide enrollment projections thereby produced.

II. GENERAL ASSUMPTIONS OF PROJECTION TECHNIQUES

In the case of both the ratio cohort survival methods, the fundamental assumption is that enrollment will bear an ascertainable proportion to some other "driving" quantity. One might say that the ratio method is fundamentally the same as the cohort-survival method. In the former, we are defining our cohort to be the total enrollment, and survival or transition takes place from the predictor population to college enrollment. Of course, in the cohort-survival method the cohorts are usually based on classes, and transitions (survival) take place from class to class.

Both methods operate on the basic assumption that future projections should indicate what the general or mean trend of enrollment will be in light of past trends. Extension of these trends may be modified, however, by certain secondary assumptions regarding future social, economic, and political factors affecting education.

In applying both techniques in North Carolina, the basic cohorts have been defined based on in-state and out-of-state enrollment. For instance, Thompson looked at total headcount enrollment as a function of 18-21 college age population. Similarly, Lee and Hamilton both defined their cohorts to include both in-state and out-of-state students by level of instruction.

III. METHODOLOGY

In the following methodology, fall headcount enrollment by residence and by type of instruction will be projected. The need to project both in-state and out-of-state students separately has been encouraged for several reasons. Two of these are:

1. The differential between in-state and out-of-state tuition rates charged at public institutions.

2. The state policy of funding scholarships for North Carolina resident students attending private colleges in North Carolina.

A different projection method will be used for in-state and out-of-state enrollments. The method used for in-state projections is a modified version of the ratio-method. The "predictor" population for in-state enrollment consists of a proxy for the 18-23 college age population; i.e., six-year cumulative North Carolina public high school graduates. This predictor population has two appealing advantages over the more traditionally used 18-21

college age population. First, the range of ages has been extended to cover an expected larger age spectrum going to college; and second, the cumulative high school graduations are more recent and probably more reliable than projections of population by age groups.

The out-of-state enrollment component of total statewide enrollment has no easily defined predictor population. To a large extent, out-of-state enrollment is a policy variable; that is, it is more directly controllable in its size and proportion than is the in-state enrollment. Because of these two factors, out-of-state enrollment will be given little emphasis and in most instances, will be assumed to remain virtually constant.

IV. STATEWIDE PROJECTIONS TO 1980

A. North Carolina Resident Projections

The method employed in predicting statewide (both public and private) in-state enrollments is based on the assumption that there exists and there will continue to exist a meaningful relationship between fall headcount in-state enrollments and the total number of high school graduates during the six years immediately preceding the fall semester considered (six-year cumulative high school graduates). There are two variable factors to be taken into account in using this method. One is the projection of the number of high school graduates, and the other is the determination of the ratio of the six-year cumulative high school graduates to the number who will enter college.

The projected number of high school graduates shown in Table I is based on unofficial Department of Public Instruction projections. Implicit in these projections is an assumed decrease in attrition in the public schools.

Corresponding to the projections of high school graduates are the year-by-year projections of six-year cumulative high school graduates given also in Table II. In-state enrollments to a certain extent directly reflect the variations in this measure of the potential pool of college enrollment. The rate at which students have attended North Carolina colleges and universities from this pool (the total in-state going rate) during the past ten years has steadily increased. Table II gives this ratio since 1968, showing that it has increased from .243 in 1968 to .312 in 1975 or an increase of .069 in eight years. Since 1968 the average rate of growth in the total in-state going rate has been about .009 per year (.01 during the past five years).

The determination of the in-state going rates, of course is a fundamental prerequisite to using this method as an instrument of enrollment projection. The dynamic characteristics of these going rates are most

difficult to predict because of the many causal factors that influence their temporal fluctuations. Per capita income, condition of the job market, draft quotas, availability of financial aid, student costs, and public policy are but a few of the variables influencing college going rates. To increase the total in-state going rate even more than it has increased in the past five years (at about .01 "points" per year) in the face of growing inflation, impending recession, and counter going-rate trends on a national basis seems unlikely. Conversely, the prospects of total in-state going rate being lower than the current value seems unlikely, due primarily to the fact that it would be contrary to the past trends, and the fact that the relatively low North Carolina going rate as compared to national going rates could serve as a positive force at least to maintain, if not to increase, our current total in-state going rate.

In the final analysis, the total in-state going rate to be used in making enrollment projections is, of course, determined by whatever assumptions are imposed. These assumptions are given below.

-There will be no severe social or economic shifts in the society or the state during the five-year projection period.

-There will be no drastic diminution in the availability of student places throughout the state; i.e., there will be the same basis institutional capacity throughout the planning period.

-There will be no major programmatic changes that will significantly affect college going rate trends or cause institutional shifts in enrollment.

-Adequate funding of both public and private sectors to support the projected growth of enrollment will be available.

Based on these assumptions, the in-state total going rate is projected to continue increasing at a rate of growth slightly lower than the rate based on the experience of the past eight years (the moderate going rate shown in Table III). This going rate will increase from .312 in 1975 to .354 in 1980, or an average annual increase of .008. This projected rate of growth is to be contrasted to the average increase of .01 per year experienced in the five-year span, 1970-75.

Multiplying the above projected total in-state going rate ratio with the projection of six-year cumulative high school graduates given in Table I yields the projected statewide in-state enrollments given in Table III. These projections show a numerical growth of 20,963 in-state students by 1980-81. This represents a five-year percentage increase of 16%. From 1970 to 1975, the same length of time, total in-state enrollment increased by 27,948 students, or an approximate 27% increase. In other words, the

projected rate of increase in in-state enrollment expected during the next five years is 59% of the rate of growth experienced during the past five years.

B. Non-Resident Projections

As intimated previously, non-resident enrollment in the public sector is in large measure controlled by public policy. That is, the decline since 1967 can be attributed largely to overt actions such as the increase in non-resident tuition in 1971 and stricter admission requirements imposed by many of the public institutions in the late sixties. Because of these factors, the projections to follow will be based on reducing non-resident enrollment in the public sector to around 10.0% of the total by 1980.

From 1965 to 1969, the percentage of non-resident students enrolled in private institutions climbed from about 41% to approximately 46%. This percentage has remained relatively constant at 46% since 1969. The projections to follow assume that the non-resident enrollment in the private sector will be 46% for the entire planning period.

C. Total Projections, 1975-80

Table IV shows total headcount projections through 1980 partitioned between the public and private sectors. They show a total enrollment growth of about 2.8% per year for the next five years. (This compares with total enrollment growth averaging about 4% a year from 1970 to 1975.)

D. Summary

The extent of future growth of enrollments in North Carolina colleges and universities will be greatly influenced by the number of students graduating from high schools within the state. More specifically, the growth of the potential pool of college students, the six-year cumulative high school graduates, will play a dominant role in the growth of in-state college enrollments. This pool will reach a high in 1979, remain about level until 1982 and then will start decreasing moderately for the duration of the planning period (see Table I). The numbers from this pool that will enroll in college depends, of course, on many factors such as student costs, students' ability to finance the cost of education, availability of financial aid, military service draft policies, etc. All of these factors are considered implicitly in the assumptions concerning the going rate ratios. For instance, the projected ratio of in state enrollment to six-year cumulative high school graduates given in Table III is predicated on a continuation of past trends, reflecting the prevailing conditions during the past decade. If these assumptions be true, a leveling off of enrollments can be expected during the mid-eighties. Under less optimistic going rate assumptions, enrollments can be expected to level off at an earlier date, around

1980, and a decrease can be anticipated thereafter for the remainder of the planning period.

In summary, the highlights of this study are:

-Changes in college enrollments are to a large extent a reflection of the 18-23 extended college age population.

-The 18-23 extended college age population as measured by six-year cumulative high school graduates will reach a peak of 427,000 in 1980 and will decrease to around 359,100 by 1990 (15.5% decrease).

-The college going rate as measured by the ratio of in-state enrollment to six-year cumulative high school graduates has increased from .245 in 1968 to .312 in 1975. (.067 points in 8 years). All other measures of college going rate (ratio of entering freshmen to high school graduates, and ratio of total enrollment to 18-21 college age population) indicate that North Carolina is substantially behind the national average.

-If the going rate trends established during the past decade continue, the total in-state going rate ratio can be expected to be around .35 in 1980 compared to .312 in 1975. Total in-state enrollment in 1980 can thus be expected to be around 155,300 (a 17% increase over 1975). Total enrollment is expected to be around 192,000, or about 14% larger than the statewide enrollment in 1975.

-A leveling off of total enrollment can be expected by the mid-eighties when the six-year cumulative high school graduate pool will have dropped to about the same level as experienced in 1972. Increasing in-state going rates, however, are expected to keep total enrollments from dropping until the early to mid-eighties.

In using the projections presented in this section, it should be remembered that such projections are not intended to be an accurate prediction of what will happen in the future. They are nothing more nor less than statistical or numerical estimates of what would happen if certain trends continue and if certain more or less reasonable assumptions should turn out to be true. Thus, these projections represent the results of combining judgment and common sense with objective data and numerical methods. As a result, care must be exercised in their use, and attempts should be made on a regular and continuing basis to take account of additional experience as well as any changes in the assumptions on which the present projections are based.

TABLE I

ACTUAL AND PROJECTED HIGH SCHOOL GRADUATES
1968-75 ACTUAL AND 1976-85 PROJECTED

Year	N. C.[1] Live Births 18 Years Prior	High School[2] Graduates N. C.	Six Year Cumulative High School Graduates N. C.	High School[3] Graduates USA (000)	Six Year Cumulative High School Graduates USA (000)
1968	106,486	64,677	364,854	2,702	14,918
1969	110,910	67,287	383,660	2,829	15,797
1970	111,272	67,564	398,118	2,896	16,403
1971	111,856	68,821	399,538	2,943	16,681
1972	114,846	70,242	403,599	3,006	17,055
1973	115,365	69,322	407,911	3,037	17,413
1974	116,274	69,972	413,206	3,095	17,806
1975	113,440	69,814	415,735	3,119	18,096
1976	110,698	70,000	418,171	3,130	18,330
1977	110,884	71,100	420,450	3,148	18,535
1978	109,779	70,900	421,108	3,133	18,662
1979	111,860	72,000	423,786	3,086	18,711
1980	109,672	71,800	425,614	3,043	18,659
1981	107,364	70,600	426,319	3,001	18,541
1982	106,061	70,600	426,929	2,908	18,319
1983	97,656	66,800	422,642	2,783	17,954
1984	92,727	63,200	414,903	2,679	17,500
1985	92,600	62,400	405,332	NA	NA

[1]North Carolina State Board of Health, Vital Statistics.

[2]High School Graduate Projections provided by Department of Public Instruction.

[3]Projections of Educational Statistics to 1983-84, 1974 Edition, NCES, Washington, D.C., 1975.

TABLE II

COMPARISON OF NORTH CAROLINA AND NATIONAL RATIOS OF IN-STATE ENROLLMENT TO SIX YEAR CUMULATIVE HIGH SCHOOL GRADUATES, 1958-1975

Year	Degree Credit Enrollment				Six-Year Cumulative High School Graduates		Going Rate Ratios			Ratio of USA Going Rate to N.C. Going Rate
	N.C. Residents* Remaining In-State	N.C. Residents** Enrolled in Other States	Total N.C. Residents Enrolled Anywhere	USA*** (000)	N.C.	USA (000)	N.C. In-State Ratio	Total N.C. Ratio	USA Ratio	
	1	2	3	4	5	6	7 (1÷5)	8 (3÷5)	9 (4÷6)	10 (9÷8)
1958	88,525	12,591	101,116	6,983	344,854	14,918	.243	.277	.468	1.690
1959	93,762	13,200	106,962	7,543	383,660	15,797	.244	.279	.477	1.710
1970	101,639	13,700	115,339	7,886	398,118	16,403	.255	.290	.487	1.679
1971	107,056	13,800	120,856	8,188	399,538	16,681	.268	.302	.491	1.626
1972	109,855	13,800	123,655	8,342	403,599	17,055	.272	.306	.489	1.598
1973	112,578	13,700	126,278	8,602	407,911	17,413	.276	.310	.494	1.594
1974	119,985	13,700	133,685	9,110	413,206	17,806	.290	.324	.512	1.580
1975	129,587	13,400	142,987	9,420	415,735	18,096	.312	.344	.521	1.515

*Excluding Military Centers.
**Estimated by Institutional Research.
***Projections of Educational Statistics to 1983-84, 1974 Edition, NCES, Washington, D.C., 1975.

TABLE III

PUBLIC AND PRIVATE IN-STATE (N.C. RESIDENTS) HEADCOUNT ENROLLMENTS PROJECTIONS, 1976-1980

Fall Term	In-State[1] Pool	Going[2] Rate Assumptions	UNC Enrollment	UNC Going Rate	Community Colleges Enrollment	Community Colleges Going Rate	Public Total Enrollment	Public Total Going Rate	Private Total Enrollment	Private Total Going Rate	Statewide Enrollment	Statewide Going Rate
1968	359,817	Actual	55,775	.155	6,900	.019	62,675	.174	25,850	.071	88,525	.245
1969	383,660	"	59,772	.155	8,294	.022	68,066	.177	25,696	.067	93,762	.244
1970	398,118	"	65,894	.165	10,178	.026	76,072	.191	25,567	.064	101,639	.255
1971	399,538	"	70,942	.177	9,315	.023	80,257	.200	26,799	.067	107,056	.267
1972	403,399	"	74,844	.185	8,645	.021	83,489	.206	26,366	.065	109,855	.271
1973	407,911	"	78,295	.192	8,801	.021	87,096	.213	25,842	.063	112,378	.276
1974	413,205	"	84,333	.204	8,852	.021	93,185	.226	26,620	.064	119,805	.290
1975	415,735	"	92,281	.222	10,504	.0253	102,785	.247	26,802	.064	129,587	.312
1976	418,137	High	96,200	.230	10,960	.0262	107,160	.256	26,800	.064	133,960	.320
		Moderate	95,390	.228	10,900	.0260	106,290	.254	26,800	.064	133,090	.318
		Low	94,500	.226	10,790	.0258	105,290	.252	26,800	.064	132,090	.316
1977	420,650	High	100,900	.240	11,320	.0274	112,420	.267	26,900	.064	139,320	.331
		Moderate	99,200	.236	11,310	.0269	110,510	.263	26,900	.064	137,410	.327
		Low	97,500	.232	11,140	.0265	108,640	.259	26,900	.064	135,540	.323
1978	421,108	High	105,300	.250	12,000	.0285	117,300	.278	26,950	.064	144,250	.343
		Moderate	102,750	.244	11,710	.0278	114,460	.272	26,950	.064	141,410	.336
		Low	100,220	.238	11,450	.0272	111,670	.2652	26,950	.064	138,620	.329
1979	423,786	High	110,180	.260	12,590	.0297	122,770	.290	27,120	.064	149,890	.354
		Moderate	106,800	.252	12,200	.0288	119,000	.281	27,120	.064	146,120	.345
		Low	103,400	.244	11,780	.0278	115,180	.272	27,120	.064	142,300	.336
1980	425,614	High	114,910	.270	13,110	.0308	128,020	.301	27,250	.064	155,270	.365
		Moderate	110,660	.260	12,640	.0297	123,300	.290	27,250	.064	150,550	.354
		Low	106,400	.250	12,130	.0285	118,530	.278	27,250	.064	145,780	.342

[1] Cumulative Six-year North Carolina High School Graduates.

[2] Going Rate Assumptions:
"High" - Based on rate of increase experienced in past 8 years.
"Moderate" - Based on 3/4 of rate of increase experienced in past 8 years.
"Low" - Based on 1/2 of rate of increase experienced in past 8 years.

TABLE IV TOTAL HEADCOUNT ENROLLMENT PROJECTIONS, 1976-80

Year	PUBLIC* In-State	PUBLIC* Out-of-State	PUBLIC* Total	PRIVATE In-State	PRIVATE Out-of-State	PRIVATE Total	STATEWIDE In-State	STATEWIDE Out-of-State	STATEWIDE Total
1973	88,758	12,620	101,378	25,842	23,041	48,883	114,600	35,661	150,261
1974	95,510	13,128	108,638	26,620	22,420	49,040	122,130	35,548	157,678
1975	105,766	12,963	118,729	26,802	22,548	49,350	132,568	35,511	168,079
1976	109,951	13,147	123,098	26,800	22,545	49,345	136,751	35,692	172,443
1977	114,531	13,248	127,779	26,890	22,615	49,505	141,421	35,863	177,284
1978	119,316	13,333	132,649	26,940	22,675	49,615	146,256	36,008	182,264
1979	123,749	13,542	137,291	27,120	22,815	49,935	150,869	36,357	187,226
1980	128,054	13,807	141,861	27,240	22,920	50,160	155,294	36,727	192,021

Assumptions/Notes

*Includes military centers.

In-State

1. The total in-state enrollment projections are based on "moderate" going rate ratio.
2. The private in-state enrollment projections are based on holding the private in-state going rate ratio constant at its 1975 value of .064.
3. The public in-state enrollment projections are based on the difference between the total projections and the private projections.

Out-of-State

1. Public out-of-state enrollment projections are based on the assumption that the percentage of out-of-state enrollment will decline to about 10% of total public enrollment by 1980.
2. Private out-of-state enrollment projections are based on the assumption that out-of-state enrollment will remain constant at 46% of their total enrollment.

TABLE 14. RATIO OF IN-STATE (N.C. RESIDENTS) ENROLLMENT TO SIX-YEAR CUMULATIVE HIGH SCHOOL GRADUATES 1965-74: THE IN-STATE GOING RATE

Year	Six-Year Cumulative High School Graduates	In-State Enrollment			In-State Going Rate (Ratio of In-State Enrollment to Cumulative High School Graduates)			
		UNC	Public	Private	Total	UNC	Public	Private	Total
1965	312,533	46,818	49,364	25,824	75,188	.150	.158	.083	.241
1966	333,423	50,052	54,193	25,763	79,956	.150	.163	.077	.240
1967	349,945	52,976	58,840	25,803	84,643	.151	.169	.074	.243
1968	359,817	55,775	63,328	25,850	89,178	.155	.174	.071	.245
1969	383,660	59,772	68,576	25,696	94,272	.156	.179	.067	.246
1970	398,118	65,894	76,557	25,567	102,124	.165	.192	.064	.256
1971	399,538	70,942	80,802	26,799	107,601	.178	.202	.067	.269
1972	403,599	74,544	84,299	26,366	110,665	.185	.209	.065	.274
1973	407,911	78,295	88,758	25,842	114,600	.192	.218	.063	.281
1974	413,206	84,513	95,510	26,620	122,130	.204	.231	.064	.295

TABLE 16. PUBLIC AND PRIVATE IN-STATE (N. C. RESIDENTS) HEADCOUNT ENROLLMENT PROJECTIONS, 1975-79

Year	Six-Year Cumulative High School Graduates (1)	In-State Enrollment				In-State Going Rate Ratio		
		Public (2)	Private (3)	Percent Private	Total (4)	Public 2+1 (5)	Private 3+1 (6)	Total 4+1 (7)
1965	312,533	49,364	25,824	34.3%	75,188	.158	.083	.241
1966	333,423	54,193	25,763	32.2	79,956	.163	.077	.240
1967	348,854	58,193	25,803	30.5	84,643	.169	.074	.243
1968	364,854	63,328	25,850	29.0	89,178	.174	.071	.245
1969	383,660	68,576	25,696	27.3	94,272	.179	.067	.246
1970	398,118	76,557	25,567	25.0	102,124	.192	.064	.256
1971	399,538	80,802	26,799	24.9	107,601	.202	.067	.269
1972	403,599	84,299	26,366	23.8	110,665	.209	.065	.274
1973	407,911	88,758	25,842	22.5	114,600	.218	.063	.281
1974	413,206	95,510	26,620	21.8	122,130	.231	.064	.295
1975	414,821	98,723	26,600	21.2	125,323	.238	.064	.302
1976	415,857	101,586	26,600	20.8	128,186	.244	.064	.308
1977	415,836	104,408	26,600	20.3	131,008	.251	.064	.315
1978	414,494	107,205	26,600	19.9	133,805	.259	.064	.323
1979	414,672	110,067	26,600	19.4	136,667	.266	.064	.330

Assumptions/Notes

1. The total in-state enrollment projections are based on increasing the total in-state going rate ratio at a rate based on the actual increase experienced in the 1965-74 decade.
2. The private in-state enrollment projections are based on holding the private in-state going rate ratio constant at its 1974 value of .064.
3. The public in-state enrollment projections are based on the difference between the total projections and the private projections.

TABLE 17. TOTAL HEADCOUNT ENROLLMENT PROJECTIONS, 1975-79

YEAR	PUBLIC			PRIVATE			STATEWIDE		
	In-State	Out-of-State	Total	In-State	Out-of-State	Total	In-State	Out-of State	Total
1973	88,758	12,620	101,378	25,842	23,041	48,883	114,600	35,661	150,261
1974	95,510	13,128	108,638	26,620	22,420	49,040	122,130	35,548	157,678
1975	98,723	12,814	111,537	26,600	22,660	49,260	125,323	35,474	160,797
1976	101,586	12,906	114,492	26,600	22,660	49,260	128,186	35,566	163,752
1977	104,408	13,280	117,688	26,600	22,660	49,260	131,008	35,940	166,948
1978	107,205	13,622	120,827	26,600	22,660	49,260	133,805	36,282	170,087
1979	110,067	13,994	124,061	26,600	22,660	49,260	136,667	36,654	173,321

Assumptions/Notes

In-State

1. The total in-state enrollment projections are based on increasing the total in-state going rate ratio at a rate based on the actual increase experienced in the 1965-74 decade.

2. The private in-state enrollment projections are based on holding the private in-state going rate ratio constant at its 1974 value of .064.

3. The public in-state enrollment projections are based on the difference between the total projections and the private projections.

Out-of-State

1. Public out-of-state enrollment projections are based on the assumption that out-of-state enrollment will decline to 11.3% of total public enrollment by 1976 and then remain at this percentage of total until 1979.

2. Private out-of-state enrollment projections are based on the assumption that out-of-state enrollment will remain constant at 46% of their total enrollment.

TABLE 18. TOTAL HEADCOUNT ENROLLMENT PROJECTIONS TO 1989-90

	1974-75 ACTUAL	1979-80	1984-85 Series A	1984-85 Series B	1984-85 Series C	1989-90 Series A	1989-90 Series B	1989-90 Series C
SECTOR:								
UNC	97,031	110,156	120,505	113,320	106,510	122,590	109,450	97,050
Military Centers	2,193	2,420	2,430	2,270	2,130	2,460	2,195	1,945
Community Colleges	9,414	11,485	11,650	10,950	10,295	11,850	10,575	9,300
Total Public	108,638	124,061	134,585	126,540	118,935	136,900	122,220	108,375
Total Private	49,040	49,260	47,000	47,000	47,000	42,835	42,835	42,835
Statewide Total	157,678	173,321	181,585	173,540	165,935	179,735	165,055	151,210
Six-Year Cumulative High School Grads.	413,206	414,672	396,600	396,600	396,600	361,400	361,400	361,400

Assumptions/Notes:

1. Out-of-State Enrollment
   Public: Out-of-state enrollment assumed to be 11.3% of total public enrollment for all series.
   Private: Out-of-state enrollment assumed to be 46% of total private enrollment for all series.

2. In-State Enrollment
   Public: Series A assumes that the in-state going rate will continue to increase at the same rate of increase experienced during the 1965-74 decade.
   Series B assumes that the in-state going rate will continue to increase at the same rate of increase experienced during the 1965-74 decade until 1980 when it will begin to grow at one half this rate.
   Series C assumes that the in-state going rate will continue to increase at same rate of increase experienced during the 1965-74 decade until 1980 when it will remain constant at the 1979-80 in-state going rate.
   Private: All series assume that the in-state going rate will reflect the constant in-state going rate experienced during the last half of the 1965-74 decade.

3. The partition of public sector enrollments between UNC, military centers and the community college system is based approximately on the current percent distribution.

AN ASSUMPTION-BASED MODEL FOR DEVELOPING INSTITUTIONAL ENROLLMENT PROJECTIONS

Robert E. Reiman

Appalachian State University

I. INTRODUCTION

Since 1969 enrollment projections at Appalachian State University have been made via the use of an "assumption" type model, which uses as a base the same data elements that are already being reported to the General Administration of the University of North Carolina and were previously reported to the North Carolina Board of Higher Education. The use of PLANTRAN (a computerized planning system) greatly facilitates the mathematical calculations. However, the system has been and can be manipulated, with a little more difficulty, by utilizing a desk calculator.

The model is quite simplistic in nature. Instead of attempting to determine how many students are "knocking on the door," or trying to predict an institution's "share" of the total available population, an examination is made of each reported student data element in a given year and an assumption is made as to the possible change(s) that could occur in regard to that data element; elements are then aggregated. In other words, the projection is built "from the bottom up".

II. PRELIMINARY STEPS

Two basic actions are required to initiate the system. First of all a historical plot is made of the "performance" of each data element over the past several years, in order to ascertain trends and tendencies in the "behavior" of discrete elements. A number of mathematical relationships emerge and can be plotted, such as: What is the ratio between "total freshmen" and "continuing freshmen"; what is the ratio between "total fall headcount" and "average FTE for three quarters" (or two semesters). Examination of these ratios reveals a certain amount of stability over time, even though it must be recognized that the ratios are often purely arithmetical. Another important figure to be derived is the "retention ratio", i.e., the ratio between the number of freshmen in one year that will become sophomores the following year, sophomores that will become juniors, etc. If an institution possesses throughput data and has by that means determined such ratios, they should be used. Unfortunately some institutions lack such precise information, in that case a rough approximation of retention experience can be made by examining the ratios, over about a five-year period, between the total number of enrolled students in a particular classification one year and the

number of continuing students at the next highest classification the following year.

Once the various desired ratios have been derived, the second step is to make some assumptions in regard to each data element in the projection. The salient question is: Do we expect the size of each discrete element to increase, decrease, or remain stable? If an increase or decrease is expected, some order of magnitude also must be assumed. These assumptions can be made either by one knowledgeable individual, by a committee (as is done at ASU), or by a group of administrators. The assumptions should take into consideration such factors as demographic conditions in the drawing area of the institution, the "image" of the institution, its programs, proposed program changes, classroom and dormitory capacity, and the like. If an item can be "controlled" (e.g., number of entering freshmen, number of transfer students, etc.), some goal value must be determined for each controlled item for each year of the planning horizon.

III. USE OF THE SYSTEM

If the PLANTRAN mode of manipulation is used, data cards are punched for each element in the projection (see pp. 1-2 of the attachment). The cards contain information relevant to the base year and expected "performance" of each data element during the planning period (usually ten years). For example, the first data card in ASU's projection indicates that the headcount of entering freshmen was 1822 in 1974 (the base year) and 1800 are expected each year thereafter during the planning period. (This, incidentally, is a "goal value". The intention is to limit to or recruit to this number of new freshmen.)

If manual manipulation is used, large sheets of accounting paper are helpful--each line can serve the same purpose as the data card in the PLANTRAN mode. Columns can be utilized in the same way as the computer printout indicates in pages 3 through 10 in the attachment. In the manual mode not as many lines will be needed--the number is higher in the PLANTRAN mode because of the necessity for calculating only one line at a time. This limitation can be by-passed in the manual mode.

When the manipulations are complete, reports can be prepared by extracting only those lines that are essential; in the PLANTRAN mode the program can be instructed to do this (see pp. 11-14 in the attachment).

The PLANTRAN mode also offers another advantage. Changes can be made in individual "lines" of the manipulation and new reports produced that indicate the outcomes of the changes (see pp. 16-24 in the attachment). This facilitates the use of the model as an "If-what" tool. The same thing can be done manually, but with considerably greater effort because all the calculations must be run through any time one line is changed.

IV. SUMMARY

The use of assumptions in projecting enrollments carries with it a

certain amount of risk, and obviously the accuracy of the projection is related positively to the validity of the assumptions. However, the technique is simple to use; it appears to be quite effective if the assumptions are tied closely to the overall long-range planning effort of the institution. During the past five years at ASU the assumptions have been valid, with one glaring exception--the number of "returning students" (ie., those who have been away from the institution for one term or more and then come back) has been grossly underestimated for the past two years. (Numbers of students in this category generally reflect short-run economic conditions, hence are sometimes unpredictable.) Most other categories have emerged fairly close to the predicted values.

The primary value of the system, however, is the ability to create a stable system--then vary the assumptions to see what impact certain actions will have on the planning milieu. Moreover, because of its simplicity, the system can be exercised frequently and updated as often as the assumptions change, or as often as the planner wants to see the projected outcome of certain proposed actions. It can be a powerful, dynamic tool, limited only by the planner's imagination and enthusiasm.

ENROLLMENT PROJECTION

Koosappa Rajasekhara

Barber-Scotia College

Enrollment projection is vital to the administrators for it has a direct bearing on the cost, academic standards, and current and future institutional needs. There are several methods available for enrollment projections. These range from simple averaging to the sophisticated computer models. The following models could be used by an institutional researcher with a basic computational knowledge:

1. Simple Average: Averaging the institutional enrollment over a long period of time.

2. Moving Average: Example:

$$E_{1975\text{-}76} = (E_{74\text{-}75} + E_{73\text{-}74} + E_{72\text{-}73} + E_{71\text{-}72} + E_{70\text{-}71})/5$$

3. Exponential Smoothing:

$0 > a < 1$

$$E_{1975\text{-}76} = aE_{74\text{-}75} + a(1\text{-}a)\ E_{73\text{-}74} + a(1\text{-}a)^2\ E_{72\text{-}73} + a(1\text{-}a)^3\ E_{71\text{-}72} + a(1\text{-}a)^4\ E_{70\text{-}71}$$

'a' is a smoothing constant and is given a value from 0.1 to 0.9. The value is given initially by trial and error. It is estimated by simple averaging of sum numbers of recent enrollments (5 years).

if $a = 0.5$ then

$$E_{1975\text{-}76} = \tfrac{1}{2}E_{74\text{-}75} + \tfrac{1}{2}(\tfrac{1}{2})E_{73\text{-}74} + \tfrac{1}{2}(\tfrac{1}{2})^2E_{72\text{-}73} + \tfrac{1}{2}(\tfrac{1}{2})^3E_{71\text{-}72} + \tfrac{1}{2}(\tfrac{1}{2})^4E_{70\text{-}71}$$

4. Ratio Technique: "The ratio method determines the ratio between the persons enrolled in college and the college-age population of which those persons are a part."[1]

---

[1]Lins, L. J., Methodology of Enrollment Projections for Colleges and Universities, 1964, Page 10.

It is found by dividing the college enrollment for each class by the class-age population for that year.
This ratio is used to determine future enrollment trends by multiplying the ratio by the future class-age population for each year.

1970 Population Census - State

All races - 4,648,494

Black - 865,388

.186165

	All Races		Black % of all Races	
16 + 17 years	174,759	x	.186165	= 32,534
18 + 19 years	174,894	x	.186165	= 32,559
20 years	93,529	x	.186165	= 17,412
21 years	91,610	x	.186165	= 17,055
22 to 24 years	254,895	x	.186165	= 47,453

Let us assume equal distribution.

16	16,267	
17	16,267	Freshman bracket
18	16,279	
19	16,280	Sophomore bracket
20	17,412	Junior bracket
21	17,055	
22	15,818	Senior bracket
23	15,818	
24	15,817	

Planning University has an enrollment of:

1,200 Freshmen (16, 17, 18 year olds)

1,000 Sophomores (19 year olds)

900 Juniors (20 year olds)

600 Seniors (21-24 year olds)

APPROXIMATE CLASS-AGE POPULATION (BLACK ONLY)

Year	Freshmen	Sophomore	Junior	Senior	Total
1970	48,800	16,280	17,410	64,510	147,000
1971	48,980	16,340	17,470	64,750	147,540
1972	49,160	16,400	17,530	64,990	148,080
1973	49,330	16,450	17,590	65,230	148,600
1974	49,510	16,510	17,650	65,470	149,140
1975	49,690	16,570	17,710	65,710	149,680
1976	49,870	16,630	17,770	65,950	150,220
1977	50,050	16,690	17,830	66,190	150,760
1978	50,220	16,740	17,890	66,430	151,280
1979	50,400	16,800	17,950	66,670	151,820
1980	50,560	16,860	18,030	66,840	152,290

Given the class-age population for each year, find the ratio for each class in 1970. Divide the freshman class enrollment (1200) by the class-age population in 1970 (48,800). The ratio is .0245. Find the sophomore, junior, and senior ratios for 1970, in the same manner.

The projected freshman class-age population for 1975 is 49,690. Multiply this number by the ratio .0245, and the expected freshman college enrollment is 1,217. Proceed with this method and multiply each future class-age population by the ratio.

RATIO TECHNIQUE

Black Enrollment in University

Year	Freshmen	Sophomore	Junior	Senior	Total
1970	1,200	1,000	900	600	3,700
1971	1,200	1,003	901	602	3,706
1972	1,204	1,007	905	604	3,720
1973	1,208	1,010	908	607	3,733
1974	1,213	1,014	911	609	3,747
1975	1,217	1,017	914	611	3,759
1976	1,222	1,021	917	613	3,773
1977	1,226	1,025	920	616	3,787
1978	1,230	1,028	923	618	3,799
1979	1,235	1,032	926	620	3,813
1980	1,239	1,035	930	622	3,866
Ratios	.0245	.0614	.0516	.0093	

5. Computer Program:

```
HELLO-ZØØØ,
READY
TAPE
1Ø  S1=P1=Y=P2=Ø
2Ø  PRINT "TYPE IN THE FIRST YEAR FOR WHICH YOU HAVE DATA."
3Ø  INPUT M
4Ø  PRINT "TYPE IN THE TOTAL NUMBER OF YEARS THAT ARE KNOWN."
5Ø  INPUT N
6Ø  DIM Z[1ØØ]
7Ø  FOR I=1 TO N
8Ø  PRINT "TYPE IN AN ENROLLMENT FIGURE."
9Ø  INPUT Z[I]
1ØØ  NEXT I
11Ø  FOR J=1 TO N
12Ø  S1=(J-1)+S1
13Ø  P1=(J-1)↑2+P1
14Ø  Y=Z[J]+Y
15Ø  P2=(J-1)*Z[J]+P2
16Ø  NEXT J
17Ø  A=(P1*Y-S1*P2)/(N*P1-S1↑2)
18Ø  B=(N*P2-S1*Y)/(N*P1-S1↑2)
19Ø  PRINT "HOW MANY YEARS DO YOU WISH TO PREDICT?"
2ØØ  INPUT D
21Ø  K=N-1
22Ø  FOR L=K TO K+D-1
23Ø  PRINT M+L+1;INT(A+(L+1)*B)
24Ø  NEXT L
25Ø  END
KEY
RUN
```

Computer Run:

```
TYPE IN THE FIRST YEAR FOR WHICH YOU HAVE DATA.
?1963
TYPE IN THE TOTAL NUMBER OF YEARS THAT ARE KNOWN.
?12
TYPE IN AN ENROLLMENT FIGURE.
?315
TYPE IN AN ENROLLMENT FIGURE.
?315
TYPE IN AN ENROLLMENT FIGURE.
?347
TYPE IN AN ENROLLMENT FIGURE.
?358
TYPE IN AN ENROLLMENT FIGURE.
?432
TYPE IN AN ENROLLMENT FIGURE.
?581
TYPE IN AN ENROLLMENT FIGURE.
?544
TYPE IN AN ENROLLMENT FIGURE.
?521
TYPE IN AN ENROLLMENT FIGURE.
?542
TYPE IN AN ENROLLMENT FIGURE.
?5Ø9
TYPE IN AN ENROLLMENT FIGURE.
?44Ø
TYPE IN AN ENROLLMENT FIGURE.
?456
HOW MANY YEARS DO YOU WISH TO PREDICT?
?1Ø
 1975      559
 1976      576
 1977      594
 1978      611
 1979      628
 198Ø      646
 1981      663
 1982      68Ø
 1983      698
 1984      715

DONE
```

ENROLLMENT PROJECTION PROCEDURES AT CONCORD AND BLUEFIELD STATE COLLEGES

James O. Nichols

Concord and Bluefield State Colleges

Summary

Enrollment projection procedures and calculations were described as a three-phase project. The initial phase consisted of determining head-count enrollment projections by student level. Following that calculation, derivation of FTE students by course level was explained. Finally, translation of course level FTE student projections into FTE faculty positions funded, and subsequently into fiscal resources was explained.

The projection of student head-count enrollment by student level was described as a combination of the cohort survival technique and estimates of the other inputs of students. The projection of first-time freshman enrollment was accomplished by using the West Virginia State Department of Education's projection of high school graduates by county and applying trend type drawing factors based on historical college enrollment from each county. Head-count enrollment of transfer students and of returning students were estimated based upon previous years data. The enrollment of continuing students from student classification to student classification each year was accomplished through the use of the cohort survival technique and a number of years of experience.

Once the head-count enrollment by student classification was determined, the number of student credit hours produced by student level was calculated based upon historical average credit hour loads per student level. In turn, once this student level credit hour production was determined, it was translated into course level student hour production by using percentage course taking pattern distributions. That is to say, of so many student credit hours produced by lower level students, a given proportion were in upper division courses and a given proportion were in lower division courses. Having determined projected student credit hour production by course level, these student credit hours were divided by 15 to result in FTE students by course level.

The projections of FTE students by course level were applied against West Virginia's staffing ratios of FTE students per FTE instructional positions funded at a given course level to derive a given number of FTE positions funded at each course level. The total number of faculty positions were in turn multiplied by a Board of Regents provided salary

per FTE position funded to result in a final dollar figure for professional salaries in the category of instruction.

The discussion was supported by handouts and stimulated considerable discussion.

INSTITUTIONAL ENROLLMENT PROJECTIONS (HIGH SCHOOL SURVEYS)

Edwin R. Chapman

Western Piedmont Community College

Western Piedmont Community College has conducted surveys of high school seniors in its prime service area (Burke County) for the past four years (1972-75 inclusive). This has been a part of the research effort of the Western North Carolina Consortium. The consortium consists of 14 two-year community colleges or technical institutes plus two regional universities. The service area for the consortium institutions encompasses the 29 counties in the western one-third of North Carolina.

We had two major purposes for conducting the studies among high school seniors. First, we wished to determine the educational plans of these potential students. Secondly, we wanted to know the opinions of high school students about our institution.

Of course, we had specific objectives for the information gathered by this applied research. These objectives are directly related to our immediate and long-range planning processes. The college felt the need to provide productive communications between our institution and high school students within our service area. We hoped to aid recruitment by examining our image and also by evaluating students' future educational plans. Additionally, the high school seniors' plans and opinions together with information from the recent business-industry survey was input to our long-range planning. Finally, the high school survey was used to increase the accuracy in predicting enrollments and space needs.

The survey consisted of using consortially developed questionnaires directly administered to seniors in all high schools in our area. The questions were on "op scan" forms to facilitate processing and analysis. The data was then compiled and reports printed. The reports contained three types of data: (1) individual institutional items, (2) consortium items, and (3) trend data.

In summary, the survey accomplished the two main purposes originally outlined. We were able to obtain the essential information from high school seniors about their future educational plans, career or program choices, and the image of Western Piedmont among high school students. These data were enhanced by comparison and contrast with those from other consortial institutions. Also, we have been able to establish trend data over the past four years.

Major Findings from High School Surveys

The major findings from surveys over the past three years (1973-1975) have been grouped into three areas via: (1) for each member institution of the consortium (2) consortium wide items, and (3) trend data. This report focuses on the consortium with some Western Piedmont Community College individual items. However, Western Piedmont Community College data closely parallels the consortium-wide items.

Student Occupational Preferences

The ten out of the ninety-two occupational fields which drew the greatest number of student responses are:

1. Teaching, Administration, and Counseling
2. Accounting
3. Secretary-Stenographer
4. Land and Water Management
5. Health Professions
6. Entertainment
7. Nurse - RN
8. Other Health Service Work
9. Auto and Truck Mechanics
10. Data Processing

Student Education-Training Program Choices

The top ten programs preferred by students are:

1. Secretarial - all kinds
2. Pre-Teaching
3. Automotive Mechanics
4. Child Care Worker
5. Pre-Social Work
6. Business Administration
7. Fish and Wildlife Management

8. Accounting
9. Pre-Law
10. Pre-Medical

Major Post-Secondary Goals

Student Goals	1973	1974	1975
Enter a specific Community College	18.1%	19.4%	19.8%
Enter other 2 year college or Tech. Inst.	9.1	7.0	5.6
Enter 4 year college/university	20.8	24.8	25.6
Enter Business School/College	2.3	1.1	1.9
Get a job	23.6	20.0	14.7
Enter military	1.1	2.6	5.6
Marriage with no more education	3.1	2.8	2.1
Undecided	21.1	21.2	23.3
No Response	0.8	1.3	1.6

Opinion about the College	1973	1974	1975
Like	57.8%	50.6%	54.0%
Don't like	3.1	1.6	1.2
No opinion	35.1	41.8	40.9
No response	3.1	4.4	2.8
Never heard of	0.8	1.6	1.2

Have you been informed by college representatives about programs and offerings?

Responses	1973	1974	1975
Yes	63.3%	46.3%	30.9%
No	33.3	50.5	66.5
No Response	3.5	3.2	2.6

Through which of the following have you heard about the College?

Responses	1973	1974	1975
Catalog/brochure	33.5%	31.0%	26.7%
Other publication	9.7	8.6	7.8
Local Newspaper	26.5	29.8	28.1
TV	3.0	2.7	3.1
Radio	18.4	16.8	20.5
None of the Above	7.9	9.3	12.7
No Response	1.0	1.8	1.1

High School person who most strongly suggested you attend the College?

Responses	1973	1974	1975
Homeroom teacher	0.2%	0.3%	0.9%
Other teacher	4.8	2.9	2.8
Counselor	16.5	13.4	11.6
Principal	0.3	0.0	0.2
Friend	16.0	18.5	21.6
None of the above	59.1	61.8	60.9
No Response	3.1	3.1	1.9

REPORT CARD 2 - STUDENT RETENTION AND PROGRESSION STUDIES
* * * * * * * *

A RESEARCH TOOL FOR THE STUDY OF STUDENT PROGRESSION AND NON-RETENTION

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In the Spring of 1975, the Admissions Committee of The University of North Carolina at Wilmington (UNC-W) asked the Office of Institutional Research (OIR) to conduct a study of the existing admissions standards, the retention chart and the academic outcomes of specific groups of students. Presently, UNC-W has an open admission's policy for all qualified applicants. It was felt that if and when the university was called upon to limit its admissions, the above data items would be useful in determining what type of students would be most successful in the academic environment. More specifically the committee asked the following questions:

1. What is the outcome of students who are only marginally qualified by present admissions standards?

2. What are the effects of a reduced credit hour load on semester Grade Point Average (GPA) differentials?

3. Is there a relationship between the frequency of major migration and attained GPA?

4. What type of student is most likely to follow the drop out-drop in pattern of college attendance?

5. What are the summer school enrollment levels of low GPA students and what are the GPA differential benefits derived by this group for such attendance?

As can be seen by the above list of questions, the committee's requirements were extensive and the resulting project for Institutional Research was time consuming. As a first step in this project, the OIR made a study of existing cross-sectional and longitudinal data items. Since several of the committee's questions required the linking of semester to semester data for individual students, it was decided that a longitudinal collection method coupled with a cross-sectional analysis of aggregate data would supply the largest portion of the information requested. In terms of

demographic or identifying information, the following data items were decided upon: social security number, name, race, sex, year of birth, high school or transfer institution, percentile rank in high school class, verbal and math SAT's, North Carolina county or state of residence and entry date and type. In order to review semester outcomes, a series of data items needed to be collected. Hours attempted as opposed to hours passed was decided upon as the indicator of academic level attained. It was found that for students with low GPA's the credit hour load generated by the hours passed variable was not sufficient when responding to question #2 above. Cumulative GPA was decided upon as the best variable to indicate the degree of academic success. Students may change their academic major at any time up to a certain academic level and thus a decision was made to collect the major code each semester the student attends college. An identifying semester code completed the list of coding items to be collected.

The computer file for this study was organized with identifying, demographic and descriptive information located in the first 80 bytes of each student's record. The information to be collected each semester was located in twenty-one ten byte blocks following the descriptive information area. These twenty-one blocks correspond to a possible twenty-one semesters of student attendance. This appears to be an extremely large number of semesters, but when looking at fall, spring and two summer sessions of possible attendance over a four year period, it is not beyond the possibility of having a student on campus for a total of 16 separate attendance units. Following the twenty-one semester information blocks are twenty-one three byte blocks containing the major code for each semester attended.

The procedures for collecting the initial and follow-up data on each student are relatively simple. The initial data collection effort for each cohort is begun after the end of the first semester of college attendance. A computer program was designed to carry out the function of establishing a data record for each student and inserting the first 80 bytes of descriptive information. After the individual records are established, a second program takes the newly created data set and inserts the first semester block of academic information. For the fall semester, the basic descriptive information is collected in January. At that time, the created data set is matched with stored master files for the fall and the two previous summer sessions to insure that all credit hours attempted have been collected for the student. After the spring semester, data is collected for continuing students by matching retention records against spring master files. If a student attended in the fall and spring, then their retention record would contain two complete blocks of retention information. At the end of one academic year, the data set contains all people entering during that year and their academic success based on the number of semesters attended. Since this data set is not within the framework of the updating process carried out by other administrative offices, it became apparent that changes to such items as social security number and name would not be made when required. It

was decided that in order to maintain the integrity of this data file, all major updates, such as the two mentioned above, would be sent to the OIR, copied and then directed to the Computing Center. The OIR would control the updating of its own research files while the Computing Center would continue with the normal changes to administrative data sets. Since the Admissions Committee needed to review the outcomes of individual students or groups of students, a tag or one byte code was added to the descriptive information portion of the record. This code can be either numerical or alphabetic and can be updated or deleted when the committee desires.

The analysis portion of this project is in the implementation phase and will be completed in the Spring of 1976. As the first step in the analysis, an analytical data generation program has been designed and implemented. This program is designed to generate several data files which will be used for the cross-sectional analysis approach mentioned earlier. Among these files are: a continuation file, an endpoint file and an attendance file. The continuation file consists of the following data items: social security number and other identifier information, demographic information, hours attempted and GPA, date for both the beginning and ending point of the study and the GPA and hour differential for the time period specified. The endpoint file is designed to answer questions about where the student was with respect to academic level and academic success when he or she last attended UNC-W. The attendance file is designed to determine levels of semester enrollment for each entering cohort based on any of a variety of academic and demographic characteristics.

This data collection technique provides an inexpensively produced data set that is easily constructed, updated and utilized. It is apparent that this technique will not respond to every retention and outcome inquiry, but we feel it will respond to the most persistent and recurring questions in this area of student research. We believe that this opinion will be substantiated when the results of our analysis are completed.

TABLE 1: STATUS AT BEGINNING OF EACH YEAR SINCE ENTRY

TOTAL FRESHMEN

Cohort	Status	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6
1970	Continuing	81.5	68.0	62.4	20.3	8.0
	Suspended	6.1	10.9	11.9	11.1	10.5
	Withdrew	12.1	21.0	24.8	28.5	27.3
	Graduated	0.0	0.0	0.8	39.9	54.1
	Total N	2237				
1971	Continuing	79.1	67.3	64.5	25.8	
	Suspended	5.3	9.8	8.9	8.4	
	Withdrew	15.4	22.9	25.6	30.9	
	Graduated	0.0	0.0	0.6	34.6	
	Total N	2323				
1972	Continuing	80.8	72.6	69.3		
	Suspended	4.6	5.4	5.0		
	Withdrew	14.5	21.8	25.1		
	Graduated	0.0	0.0	0.4		
	Total N	2348				
1973	Continuing	85.6	77.3			
	Suspended	0.8	1.6			
	Withdrew	13.5	21.0			
	Graduated	0.0	0.0			
	Total N	2496				
1974	Continuing	85.6				
	Suspended	0.0				
	Withdrew	14.3				
	Graduated	0.0				
	Total N	2821				

STUDENT RETENTION AND GRADUATION
AT NORTH CAROLINA STATE UNIVERSITY

Kathryn A. Council

North Carolina State University

TABLE 2: STATUS AT BEGINNING OF EACH YEAR SINCE ENTRY, BY RACE

		BLACK FRESHMEN					WHITE FRESHMEN				
Cohort	Status	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6
1970	Continuing	84.8	81.8	75.8	24.1	12.0	81.5	68.0	62.4	20.3	8.0
	Suspended	9.0	9.0	12.0	9.0	9.0	6.1	10.9	11.9	11.1	10.5
	Withdrew	6.0	9.0	9.0	15.1	15.1	12.3	21.0	24.9	28.6	27.3
	Graduated	0.0	0.0	3.0	51.5	63.6	0.0	0.0	0.6	39.8	54.0
	Total N	*33*					*2161*				
1971	Continuing	86.0	77.8	75.0	19.4		79.1	67.1	64.5	25.8	
	Suspended	2.8	2.8	2.8	2.8		5.3	9.8	9.0	8.5	
	Withdrew	11.0	19.4	22.1	38.9		15.5	22.9	25.6	30.9	
	Graduated	0.0	0.0	0.0	38.9		0.0	0.0	0.6	34.6	
	Total N	*36*					*2240*				
1972	Continuing	85.1	75.9	75.9			80.8	72.8	69.4		
	Suspended	7.4	9.3	9.3			4.6	5.4	5.0		
	Withdrew	7.4	14.8	14.8			14.5	21.8	25.1		
	Graduated	0.0	0.0	0.0			0.0	0.0	0.4		
	Total N	*54*					*2257*				
1973	Continuing	88.3	75.0				85.4	77.3			
	Suspended	1.6	3.3				0.8	1.6			
	Withdrew	9.9	21.6				13.8	21.0			
	Graduated	0.0	0.0				0.0	0.0			
	Total N	*60*					*2330*				
1974	Continuing	88.1					85.3				
	Suspended	0.0					0.0				
	Withdrew	11.8					14.4				
	Graduated	0.0					0.0				
	Total N	*144*					*2642*				

TABLE 3: STATUS AT BEGINNING OF EACH YEAR SINCE ENTRY, BY SEX

		FRESHMEN FEMALES					FRESHMEN MALES				
Cohort	Status	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6
1970	Continuing	84.6	67.9	56.8	12.3	4.6	80.8	68.0	63.8	22.1	8.8
	Suspended	2.3	4.4	5.1	4.1	4.0	7.0	12.4	13.4	12.6	12.0
	Withdrew	12.9	27.5	36.5	38.4	35.8	12.0	19.5	22.0	26.3	25.3
	Graduated	0.0	0.0	1.4	45.0	55.4	0.0	0.0	0.6	38.6	53.8
	Total N	*424*					*1813*				
1971	Continuing	79.9	63.0	57.5	15.1		79.0	68.4	66.5	28.8	
	Suspended	2.3	6.0	5.3	4.9		6.1	10.8	9.9	9.4	
	Withdrew	17.8	30.8	36.2	41.0		14.8	20.6	22.6	28.1	
	Graduated	0.0	0.0	0.5	38.8		0.0	0.0	0.6	33.5	
	Total N	*512*					*1811*				
1972	Continuing	81.0	68.4	63.9			80.6	74.0	70.9		
	Suspended	2.1	3.3	3.4			5.4	6.0	5.4		
	Withdrew	16.6	28.3	31.5			13.8	19.9	23.1		
	Graduated	0.0	0.0	0.9			0.0	0.0	0.3		
	Total N	*544*					*1804*				
1973	Continuing	81.5	70.9				87.0	79.3			
	Suspended	0.3	1.1				0.9	1.8			
	Withdrew	18.0	27.9				12.0	18.8			
	Graduated	0.0	0.0				0.0	0.0			
	Total N	*680*					*1875*				
1974	Continuing	84.1					86.3				
	Suspended	0.0					0.0				
	Withdrew	15.8					13.6				
	Graduated	0.0					0.0				
	Total N	*788*					*8038*				

TABLE 4: STATUS AT BEGINNING OF 6th YEAR, BY SCHOOL OF INITIAL ENTRY (1970 COHORT)

	AG&LS	DN	EDUC	ENGR	FOR	L.A.	PAMS	TEXT	TOTAL
Continuing-same school	4.6	8.1	1.1	4.8	6.3	5.9	1.4	1.3	8.0
Continuing-different school	2.6	1.1	2.3	4.1	3.8	3.9	3.6	2.5	
Suspended	14.5	4.6	9.3	7.1	18.1	11.8	8.1	13.3	10.5
Withdrew	24.3	19.8	34.9	25.6	31.4	31.5	26.9	24.6	27.3
Graduated-same school	41.2	56.9	32.5	42.3	28.3	31.5	33.3	46.8	54.1
Graduated-different school	12.4	9.3	19.8	15.8	11.9	15.1	26.1	11.4	
TOTAL ENTERED 1970	337	86	86	685	159	459	267	158	2237

TABLE 5: STATUS AT BEGINNING OF EACH YEAR SINCE ENTRY, BY SCHOOL OF INITIAL ENTRY

		AGRICULTURE AND LIFE SCIENCES					DESIGN				
Cohort	Status	Yr 2	Yr 3	Yr 4	Yr 5	Yr. 6	Yr 2	Yr 3	Yr 4	Yr 5	Yr. 6
1970	Continuing-same school	72.9	50.6	46.3	12.8	4.6	84.9	75.5	65.0	13.9	8.1
	Continuing-different sch.	8.0	13.6	13.9	5.0	2.6	9.3	10.4	9.3	4.6	1.1
	Suspended	9.8	16.3	15.6	15.1	14.5	0.0	1.1	4.6	4.6	4.6
	Withdrew	9.1	19.3	22.5	27.3	24.3	5.8	12.8	19.8	24.4	19.8
	Graduated-same school	0.0	0.0	1.4	31.4	41.1	0.0	0.0	0.0	45.3	56.9
	Graduated-different school	0.0	0.0	0.0	8.3	12.4	0.0	0.0	1.1	6.9	9.3
	Total N	*337*					*86*				
1971	Continuing-same school	65.9	54.3	47.4	16.9		81.8	55.8	54.5	14.3	
	Continuing-different sch.	13.5	18.8	18.3	8.8		7.8	22.0	24.6	12.9	
	Suspended	5.4	7.4	7.4	6.6		1.3	2.5	3.9	2.5	
	Withdrew	14.9	19.5	25.6	33.0		9.0	19.4	16.9	29.8	
	Graduated-same school	0.0	0.0	1.1	26.4		0.0	0.0	0.0	29.8	
	Graduated-different school	0.0	0.0	0.0	8.0		0.0	0.0	0.0	10.4	
	Total N	*420*					*77*				
1972	Continuing-same school	67.4	57.1	51.4			87.3	77.4	73.1		
	Continuing-different sch.	14.4	15.9	15.9			1.4	4.1	7.0		
	Suspended	4.0	5.5	5.0			0.0	0.0	1.4		
	Withdrew	14.0	21.3	27.3			11.3	18.3	18.3		
	Graduated-same school	0.0	0.0	0.1			0.0	0.0	0.0		
	Graduated-different sch.	0.0	0.0	0.1			0.0	0.0	0.0		
	Total N	*535*					*71*				
1973	Continuing-same school	74.3	60.6				87.5	78.1			
	Continuing-different sch.	13.3	17.3				9.4	12.5			
	Suspended	0.0	0.9				0.0	0.0			
	Withdrew	12.4	21.0				3.1	9.4			
	Graduated-same school	0.0	0.0				0.0	0.0			
	Graduated-same school	0.0	0.0				0.0	0.0			
	Total N	*614*					*64*				
1974	Continuing-same school	76.0					79.1				
	Continuing-different sch.	12.1					16.9				
	Suspended	0.0					0.0				
	Withdrew	11.6					3.8				
	Graduated-same school	0.0					0.0				
	Graduated-different sch.	0.0					0.0				
	Total N	*648*					*53*				

TABLE 5: (Continued)

		EDUCATION					ENGINEERING				
Cohort	Status	Yr 2	Yr 3	Yr 4	Yr 5	Yr. 6	Yr 2	Yr 3	Yr 4	Yr 5	Yr. 6
1970	Continuing-same school	60.4	46.5	36.0	5.8	1.1	69.1	52 4	47.6	15.1	4.8
	Continuing-different sch.	17.4	20.9	22 0	10.4	2.3	16.6	20.3	20.4	9.9	4.1
	Suspended	5.8	9.3	9.3	9.3	9.3	2.6	7.5	8.3	7.9	7.1
	Withdrew	16.3	23.3	31.4	34.9	34.9	11.5	19.6	23.0	26.6	25.6
	Graduated-same school	0.0	0.0	1.1	29.0	32.5	0.0	0.0	0.4	30.6	42.3
	Graduated-different school	0.0	0.0	0.0	10.4	19.8	0.0	0.0	0.0	9.6	15.8
	Total N	*86*					*686*				
1971	Continuing-same school	52.6	33.8	28.4	6.8		62.4	49.4	48.8	20.3	
	Continuing-different sch.	24.3	29.6	31.0	9.4		17.6	18.9	19.9	11.4	
	Suspended	8.0	10.8	9 4	9.4		5.5	11.8	10.5	10.3	
	Withdrew	14.8	25.6	31.0	36.4		14.3	19.8	19.9	23.5	
	Graduated-same school	0.0	0.0	0.0	17.5		0.0	0.0	0.5	26.3	
	Graduated-different school	0.0	0.0	0.0	20.3		0.0	0.0	0.1	7.9	
	Total N	*74*					*725*				
1972	Continuing-same school	53.8	48.8	42.4			67.0	60.9	58.8		
	Continuing-different sch.	19.9	18.8	19.9			16.3	17.3	18.0		
	Suspended	8.6	11.1	11.1			4.6	5.1	4.4		
	Withdrew	17.4	21.1	23.6			12.0	16.4	18.1		
	Graduated-same school	0.0	0.0	2.4			0.0	0.0	0.5		
	Graduated-different school	0.0	0.0	0.0			0.0	0.0	0.0		
	Total N	*80*					*582*				
1973	Continuing-same school	61.5	53.8				79.4	68.5			
	Continuing-different sch.	13.4	13.4				9.1	13.6			
	Suspended	0.0	1.9				1.5	2.6			
	Withdrew	25.0	30.8				9.9	15.0			
	Graduated-same school	0.0	0.0				0.0	0.0			
	Graduated-different school	0.0	0.0				0.0	0.0			
	Total N	*52*					*587*				
1974	Continuing-same school	63.4					76.9				
	Continuing-different sch.	26.8					10.6				
	Suspended	0.0					0.0				
	Withdrew	9.8					12.3				
	Graduated-same school	0.0					0.0				
	Graduated-different sch.	0.0					0.0				
	Total N	*71*					*746*				

TABLE 7: (Continued)

		FOREST RESOURCES					LIBERAL ARTS				
Cohort	Status	Yr 2	Yr 3	Yr 4	Yr 5	Yr.6	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6
1970	Continuing-same school	53.4	40.3	36.4	13.1	6.3	58.5	42.6	35.7	11.8	5.9
	Continuing-different sch.	16.3	13.1	13.1	7.5	3.8	18.5	19.1	20.5	8.6	3.9
	Suspended	10.6	16.9	22 0	20 0	18.1	8.9	12.8	13.5	11 9	11 8
	Withdrew	19.4	29.5	28.3	31.4	31.4	13.9	25.3	29.1	33.3	31.5
	Graduated-same school	0.0	0.0	0.0	20.8	28.3	0.0	0.0	0.8	24.4	31.5
	Graduated-different school	0.0	0.0	0.0	6.9	11.9	0.0	0.0	0.1	9.8	15.1
	Total N	*159*					*459*				
1971	Continuing-same school	64.1	55.4	54.0	14.1		61.4	40.8	38.1	15.4	
	Continuing-different sch.	8.8	10.1	9.4	5.4		14.3	16.1	14.6	8.9	
	Suspended	8.0	10.8	9.4	9.4		5.4	11.9	11.1	9.6	
	Withdrew	18.9	23.6	27.0	34.4		18.8	31.1	35.6	39.9	
	Graduated-same school	0.0	0.0	0.0	30.4		0.0	0.0	0.4	20.1	
	Graduated-different school	0.0	0.0	0.0	6.0		0.0	0.0	0.0	5.8	
	Total N	*148*					*446*				
1972	Continuing-same school	58.1	50.5	45.6			63.9	49.9	44.0		
	Continuing-different sch.	14.6	17.4	20.6			13.3	15.6	16.6		
	Suspended	7.5	8.1	7.0			5.8	6.3	5.9		
	Withdrew	19.5	23.9	26.6			17.0	28.0	32.9		
	Graduated-same school	0.0	0.0	0.0			0.0	0.0	0.3		
	Graduated-different school	0.0	0.0	0.0			0.0	0.0	0.0		
	Total N	*184*					*535*				
1973	Continuing-same school	66.1	59.4				69.6	52.3			
	Continuing-different sch.	12.5	18.0				12.5	17.3			
	Suspended	0.0	0.0				1.0	1.8			
	Withdrew	21.1	22.4				16.6	28.5			
	Graduated-same school	0.0	0.0				0.0	0.0			
	Graduated-different school	0.0	0.0				0.0	0.0			
	Total N	*160*					*654*				
1974	Continuing-same school	66.8					69.3				
	Continuing-different sch.	13.0					12.3				
	Suspended	0.0					0.0				
	Withdrew	20.0					18.3				
	Graduated-same school	0.0					0.0				
	Graduated-different sch.	0.0					0.0				
	Total N	*184*					*688*				

TABLE 5: (Continued)

		PHYSICAL AND MATHEMATICAL SCIENCES					TEXTILES				
Cohort	Status	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6
1970	Continuing-same school	62.1	45.3	37.8	7.1	1.4	65.1	53.8	50.6	8.1	1.3
	Continuing-different sch.	22.0	26.9	26.9	10.1	3.6	13.9	17.6	14.5	4.4	2.5
	Suspended	3.7	8.5	10.0	9.0	8.1	9.4	12.0	12.6	13.3	13.3
	Withdrew	11.9	19.0	24.3	27.3	26.9	11.4	16.4	21.5	24.0	24.6
	Graduated-same school	0.0	0.0	0.4	27.3	33.3	0.0	0.0	0 6	41.8	46.8
	Graduated-different school	0.0	0.0	0.4	19.0	26.1	0.0	0.0	0.0	8.1	11.4
	Total N	287					158				
1971	Continuing-same school	53.5	34.9	32.4	6.8		73.1	61.5	62.5	16.0	
	Continuing-different sch.	27.6	35.5	33.9	14.3		8.9	7.1	7.1	4.4	
	Suspended	4.3	7.8	7.8	7.8		3.5	5.3	2.6	2.6	
	Withdrew	14.3	21.8	24.9	29.5		14.3	25.9	26.8	32.1	
	Graduated-same school	0.0	0.0	0.5	20.8		0.0	0.0	0.9	42.8	
	Graduated-different school	0.0	0.0	0.3	20.5		0.0	0.0	0.0	1.8	
	Total N	321					112				
1972	Continuing-same school	50.5	39.8	35.6			82.0	75.0	67.9		
	Continuing-different sch.	31.8	32.9	36.4			8.0	8.0	10.9		
	Suspended	1.9	1.5	1.9			4.0	5.0	4.9		
	Withdrew	15.6	25.6	25.3			6.0	12.0	15.9		
	Graduated-same school	0.0	0.0	0.8			0.0	0.0	0.0		
	Graduated-different school	0.0	0.0	0.0			0.0	0.0	0.0		
	Total	261					100				
1973	Continuing-same school	59.6	47.3				79.3	65.0			
	Continuing-different sch.	25.9	32.4				8.6	17.4			
	Suspended	0.9	1.8				0.8	1.5			
	Withdrew	13.5	18.4				11.0	15.8			
	Graduated-same school	0.0	0.0				0.0	0.0			
	Graduated-different school	0.0	0.0				0.0	0.0			
	Total N	228					126				
1974	Continuing-same school	57.5					79.9				
	Continuing-different sch.	24.4					14.1				
	Suspended	0.0					0.0				
	Withdrew	18.0					5.8				
	Graduated-same school	0.0					0.0				
	Graduated-different sch.	0.0					0.0				
	Total N	311					120				

TABLE 6: STATUS AT BEGINNING OF 6th YEAR BY CHSR, SATV, SATM, UPGA, AND CGPA (1970 COHORT)

	TOTAL FRESHMEN					BLACK FRESHMEN				
	Total	Cont.	Sup.	w/dr.	Grad.	Total	Cont.	Sup.	w/dr	Grad.
Converted High School Rank										
71 - 80	186	2.6%	1.0%	20.4%	75.8%	5	0.0%	0.0%	39.9%	59.9%
61 - 70	894	5.5	4.4	25.8	64.0	17	11.8	17.6	0.0	70.5
51 - 60	945	9.8	16.1	29.9	44.0	8	12.5	0.0	37.5	50.0
41 - 50	163	17.1	22.0	25.8	34.9	3	33.3	0.0	0.0	66.6
31 - 40	14	21.4	28.5	28.5	21.4	0	0.0	0.0	0.0	0.0
20 - 30	1	0.0	0.0	100.0	0.0	0	0.0	0.0	0.0	0.0
No CHSR	34	0.0	2.9	35.3	61.8	0	0.0	0.0	0.0	0.0
SAT Verbal										
71 - 80	40	9.9%	9.9%	34.9%	44.9%	0	0.0%	0.0%	0.0%	0.0%
61 - 70	229	11.3	5.1	23.1	60.3	1	100.0	0.0	0.0	0.0
51 - 60	848	8.3	8.4	27.0	56.0	6	16.6	0.0	33.3	50.0
41 - 50	869	7.6	11.4	27.9	52.9	15	6.6	19.9	19.9	53.3
31 - 40	234	4.6	20.0	27.8	47.4	9	11.0	0.0	0.0	88.9
20 - 30	10	0.0	19.9	19.9	59.9	2	0.0	0.0	0.0	100.0
No SATV	7	0.0	0.0	57.1	42.8	0	0.0	0.0	0.0	0.0
SAT Math										
71 - 80	118	5.9%	3.4%	19.4%	71.1%	0	0.0%	0.0%	0.0%	0.0%
61 - 70	735	8.4	6.6	26.4	58.5	4	0.0	0.0	25.0	75.0
51 - 60	968	8.6	12.1	27.3	51.8	10	19.9	29.9	19.9	29.9
41 - 50	384	6.5	16.6	30.9	45.8	15	13.3	0.0	13.3	73.3
31 - 40	25	3.9	3.9	27.9	63.9	4	0.0	0.0	0.0	100.0
20 - 30	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0
No SATM	7	0.0	0.0	57.1	42.8	0	0.0	0.0	0.0	0.0
UPGA										
3.5 - 4.00	0	0.0%	0.0%	0.0%	0.0%	0	0.0%	0.0%	0.0%	0.0%
3.0 - 3.49	47	4.3	0.0	19.1	76.5	0	0.0	0.0	0.0	0.0
2.5 - 2.99	328	7.3	2.1	21.0	69.5	3	0.0	0.0	33.3	66.6
2.0 - 2.49	915	6.8	6.1	27.1	59.8	15	13.3	19.9	6.6	59.9
1.6 - 1.99	690	9.8	17.6	29.9	42.4	11	18.1	0.0	27.3	54.5
0.0 - 1.59	131	9.9	25.1	29.0	35.9	3	0.0	0.0	0.0	100.0
No UPGA	126	7.9	13.4	30.9	47.5	1	0.0	0.0	0.0	100.0

TABLE 6: (Continued)

	TOTAL FRESHMEN					BLACK FRESHMEN				
	Total	Cont.	Susp.	w/dr.	Grad.	Total	Cont.	Susp.	w/dr	Grad.
CGPA First Year										
3.5 - 4.00	99	3.0%	0.0%	14.1%	82.8%	0	0.0%	0.0%	0.0%	0.0%
3.0 - 3.49	254	2.8	0.0	15.3	81.9	3	0 0	0.0	0.0	100.0
2.5 - 2.99	393	4.3	0.0	20.8	74.8	4	0.0	0.0	0.0	100.0
2.0 - 2 49	585	7.1	1.6	24.5	66.4	6	0.0	0.0	16.6	83.3
1.6 - 1.99	361	11.6	10.5	30.4	47.3	7	14.3	0.0	28.5	57.1
0.0 - 1.59	429	13.8	38.4	33.0	14.6	12	25.0	25.0	8.3	41.6
No CGPA	116	7.8	19.8	68.9	3.4	1	0.0	0.0	100.0	0.0

REPORT CARD 3 - SPECIAL INTEREST STUDIES
* * * * * * * *

A MECHANISM FOR STUDYING CAMPUS-WIDE ROOM AND BUILDING UTILIZATION AND AVAILABILITY

Robert E. Fry
The University of North Carolina - Wilmington

The University of North Carolina at Wilmington has 3309 students (2853 FTE) enrolled in approximately 600 credit courses for the Fall of 1975. This is an FTE increase of 14% over the Fall of 1974. Presently, the campus has 48 classrooms and 29 laboratories contained in ten buildings. In light of the rapid increase in enrollment, the university has found it increasingly more difficult to avoid conflicts when scheduling classrooms and laboratories. In the Spring of this year, the Office of Institutional Research began a study of techniques that would speed the scheduling process and at the same time reduce classroom assignment conflicts.

As the first step of this project, a study was made of the present class scheduling procedures. During the past several years room scheduling has been done by each academic department chairman with a central coordinator who acted to eliminate scheduling conflicts. The number of scheduling conflicts over the past years had grown along with the rapid growth in enrollment and a corresponding increase in course offerings. Departmentally proposed schedules were based primarily on departmental preferences, instructor preferences and room locations with respect to department offices. Scheduling conflicts resulted when departmental room preferences overlapped. Departmental preferences not only involved rooms but teaching times, thus a room could be scheduled by several different departments for a particular hour of the day and then not utilized for the following hour. The traditional practice of scheduling during the morning hours has resulted in high morning utilization followed by low afternoon utilization. This type of scheduling coupled with a rapidly growing student body has made departmental room scheduling highly competitive and student-faculty parking places few and far between during the morning hours. The low afternoon utilization of buildings has resulted in wasted utility expenses especially during the summer months when electricity costs for air conditioning hit a peak.

In order to establish a mechanism for room scheduling, two different data bases are required. First for each room, information was needed on size, seating capacity, use type and location (building and room identifier). Fortunately, these data items are collected annually by the North Carolina

Higher Education Facilities Commission and they provided a copy of the current UNC-W room inventory data set for this project. Secondly, information about the proposed schedule was required. This data is supplied to the scheduling officer by the departmental chairmen. Included in this data are the instructor's name, the department offering the course, the course and section numbers, the proposed room's location (building and room identifier), the beginning and ending times of each course, the days of the week this course is to be taught and the number of students expected to enroll.

In restructuring the room schedule procedures, it was determined that a computer edit would eliminate a large portion of the scheduling officer's preliminary work on the departmentally proposed schedule. In changing this procedure it was decided that proposed schedules would be collected by the scheduling officer and then forwarded to the Computing Center where they would be key punched and edited for obvious errors. The scheduling officer is first provided with a computer edit for the proposed course schedule. This edit checks to see that the following items are completed: faculty name, departmental name, course and section number, beginning and ending time and building and room information. This edit is reviewed by the scheduling officer and errors are corrected. When this is completed, the course schedule data set is sorted and each faculty member's proposed teaching schedule is printed. This schedule is used by the scheduling officer in the event that a room conflict can only be resolved by changing the meeting time for a class (vertical shift in scheduling). This teaching schedule is followed by a distribution of course starting times by individual academic departments. This item is used to determine if departments are altering course scheduling procedures to increase afternoon and evening room utilization. Finally, the scheduling officer is supplied with a room conflict matrix (Item I). The conflict matrix provides seating capacity, use type and location information along with the proposed schedule for each room on the UNC-W campus. The proposed schedule is contained in a two dimensional array as shown in Item I. Schedule times for a class are blocked out in the matrix by the department name, course number and section number. An exception in the format exists for the first day of the week that a class is scheduled. For this day, the second fifteen minute block of time for the course contains the instructor's name and the third block contains the expected number of registrants. Since most classes meet for a minimum of one hour, the instructor's name and number of registrants' lines are bounded on the top and the bottom by course identifier lines. Each existing room conflict and non-recoverable error is placed in a computer generated error list. The scheduling officer uses this listing and the conflict matrix to place courses having conflicts into suitable rooms. After all the possible corrections have been made to the proposed schedule, a final conflict matrix is printed. This final copy is used after the beginning of the semester to place courses with TBA times into available rooms. It is also used to find suitable rooms for special events during the semester.

This approach to scheduling does not respond to all the problems that now exist with the activity, but it does provide administrators with better control of the way campus facilities are being utilized. It does not remove from the original scheduling personnel the decision-making process. With an increased number of departmental room assignments, a more even distribution of scheduling times and the aid of the conflict matrix, the semester scheduling process requires less data editing and bookkeeping work for the scheduling officer and allows him to spend more time on improving room and building utilization.

Item I

C O U R S E S C H E D U L E M A T R I X

BUILDING=HOGGARD ROOM=212 CAPACITY=035 USE=CLASSROOM

TIME	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
0800|0815					
0815|0830		PLS 415 01		PLS 415 01	
0830|0845		DIXON		PLS 415 01	
0845|0900		STUD=030		PLS 415 01	
0900|0915		PLS 415 01		PLS 415 01	
0915|0930		PLS 415 01		PLS 415 01	
0930|0945	PED 320 01		PED 320 01		PED 320 01
0945|1000	DONAHUE		PED 320 01		PED 320 01
1000|1015	STUD=025	PED 355 01	PED 320 01	PED 355 01	PED 320 01
1015|1030	PED 320 01	MILLER	PED 320 01	PED 355 01	PED 320 01
1030|1045		STUD=030		PED 355 01	
1045|1100		PED 355 01		PED 355 01	
1100|1115		PED 355 01			
1115|1130					PED 421 01
1130|1145	PED 421 01		PED 421 01		PED 421 01
1145|1200	MILLER		PED 421 01		PED 421 01
1200|1215	STUD=024		PED 421 01		PED 421 01
1215|1230	PED 421 01		PED 421 01		PED 101 02
1230|1245	PED 101 02		PED 101 02		PED 101 02
1245|1300	MILLER		PED 101 02		PED 101 02
1300|1315	STUD=030	PED 468 01	PED 101 02	PED 468 01	PED 101 02
1315|1330	PED 101 02	DAVIS	PED 101 02	PED 468 01	
1330|1345		STUD=025		PED 468 01	
1345|1400		PED 468 01		PED 468 01	
1400|1415		PED 468 01			
1415|1430			CSC 115 01		
1430|1445	CSC 117 01		HALSEY		
1445|1500	NORRIS		STUD=035		
1500|1515	STUD=025		CSC 115 01		
1515|1530	CSC 117 01		CSC 115 01		
1530|1545	CSC 117 01		CSC 115 01		
1545|1600	CSC 117 01		CSC 115 01		
1600|1615	CSC 117 01		CSC 115 01		
1615|1630	CSC 117 01		CSC 115 01		
1630|1645					
1645|1700					
1700|1715					
1715|1730					
1730|1745					
1745|1800					
1800|1815					
1815|1830					
1830|1845					
1845|1900					
1900|1915		CSC 116 01			
1915|1930		GURGANUS			
1930|1945		STUD=030			
1945|2000		CSC 116 01			
2000|2015		CSC 116 01			
2015|2030		CSC 116 01			
2030|2045		CSC 116 01			
2045|2100		CSC 116 01			
2100|2115					
2115|2130					
2130|2145					
2145|2200					
2200|2215					
2215|2230					

HOW TO SUCCEED IN INSTITUTIONAL RESEARCH BY REALLY TRYING

James R. Montgomery

Virginia Polytechnic Institute and State University

When given an institutional research assignment

1. Keep in mind five steps that will lead to a successful completion of the assignment:

   a. Keep it simple;

   b. Get the facts behind the assignment;

   c. Involve the offices/faculty/individuals who made the assignment;

   d. Make use of any and all aids and assistance pertinent to a successful completion of the assignment that is readily available;

   e. Make your survey useful (understandable) as it can be and then serve as its advocate.

2. Keep in mind the following problem areas that are liable to take the fun out of institutional research if permitted to get out of hand:

   a. The robot-like replication of surveys that have long since lost their sense of urgency, meaning, etc.;

   b. Failing to gain a clear understanding as to who you work for and/or the description of the job you are required/ expected to do;

   c. The payoff for failing to advance oneself as an institutional research practitioner in new knowledges, skills and techniques, may subsequently lead to a failing to advance in rank and/or in salary beyond cost-of-living increases;

   d. Failing to write reports for your superiors that are at once comprehensive, concise and easy to understand (free of technical jargon);

e. Loss of understanding and interaction with students -- that segment of the campus population to whom institutional research personnel ideally owes his principal allegiance.

3. Keep in mind what is fun in institutional research:

a. Variety -- as opposed to 2a and 2c above;

b. Solving a problem and getting results used (Happiness is);

c. Meeting with other Institutional Research types in organizations such as NCAIR and AIR.

PROPOSED METHODOLOGY FOR USE OF THE ACE-UCLA SURVEY OF ENTERING FRESHMEN AS A TOOL FOR LONG-RANGE PLANNING

Robert E. Reiman

Appalachian State University

Introduction

For the past five years Appalachian State University has utilized the Cooperative Institutional Research Program, conducted jointly by the American Council on Education and the University of California at Los Angeles, to gather data on entering freshmen. The information derived each year as a result of administration of the Student Information Form has been used only to develop freshmen profiles and to compare each individual class with national norms.

Purpose of the Proposed Study

The purpose of the proposed study is to manipulate the body of data gathered over a five-year period and analyze selected items in order to see what implications might be derived that are relevant to long-range planning. It is anticipated that an examination of items dealing with characteristics such as age, educational plans, reasons for selecting the institution, preferred residence patterns, parental education, parental income, career plans, self-concept, concern about financial support, and the like, will reveal trends and tendencies that can serve as vital input to the institution's long-range planning effort. The data can be examined not only from a local standpoint but from a broader view as well, by also comparing changes in the national norms.

Limitations of the Study

There are several limitations. First of all, and most obvious, is the fact that the data are limited by and to the items on the questionnaire; the items were not necessarily intended for long-range planning. Second, not all items are consistent throughout the five-years of data; some minor adjustments will have to be made. Third, all items are self-reported. However, the form has undergone rigorous tests of validity and reliability, so this may not be a detraction. Fourth, items such as financial aid and parental income may have to be analyzed in terms of constant dollars if the information is to be meaningful. Fifth, the normative data are not arranged in such a way as to make the most optimum comparisons. (The norm group is somewhat heterogeneous.)

The body of data is rather large and the changes indicated are sometimes rather small on a year-to-year basis. Therefore, in order to maximize the differences, the data will be examined only in terms of the first and last year that a discrete item appeared in the five years of output. For most items the timespan will encompass the full five years (after adjustment of increments); for a few items the comparisons will cover only a year or two.

Methodology

Essential information to be derived from the data consists mainly of determining the magnitude of change in percentages of students who answered affirmatively to any particular questionnaire item. Differences to be examined are as follows:

a. Difference between ASU Freshmen in the initial year versus the final year (by sex and both sexes combined.)

b. Differences between freshmen in the national norm group in the initial year versus the final year (by sex and both sexes combined).

c. Differences between ASU Freshmen and the national norm group in the initial year and in the final year (by sex and both sexes combined).

Attached to this paper is an illustration of the proposed worksheet to be used for manipulating the data. It consists simply of pages of accounting paper pasted together and posted to the worksheet manually from computer print-outs furnished by ACE-UCLA. Calculations also will be done manually. (For those institutions who were wise enough to purchase computer tapes of the data the task may be mechanized.)

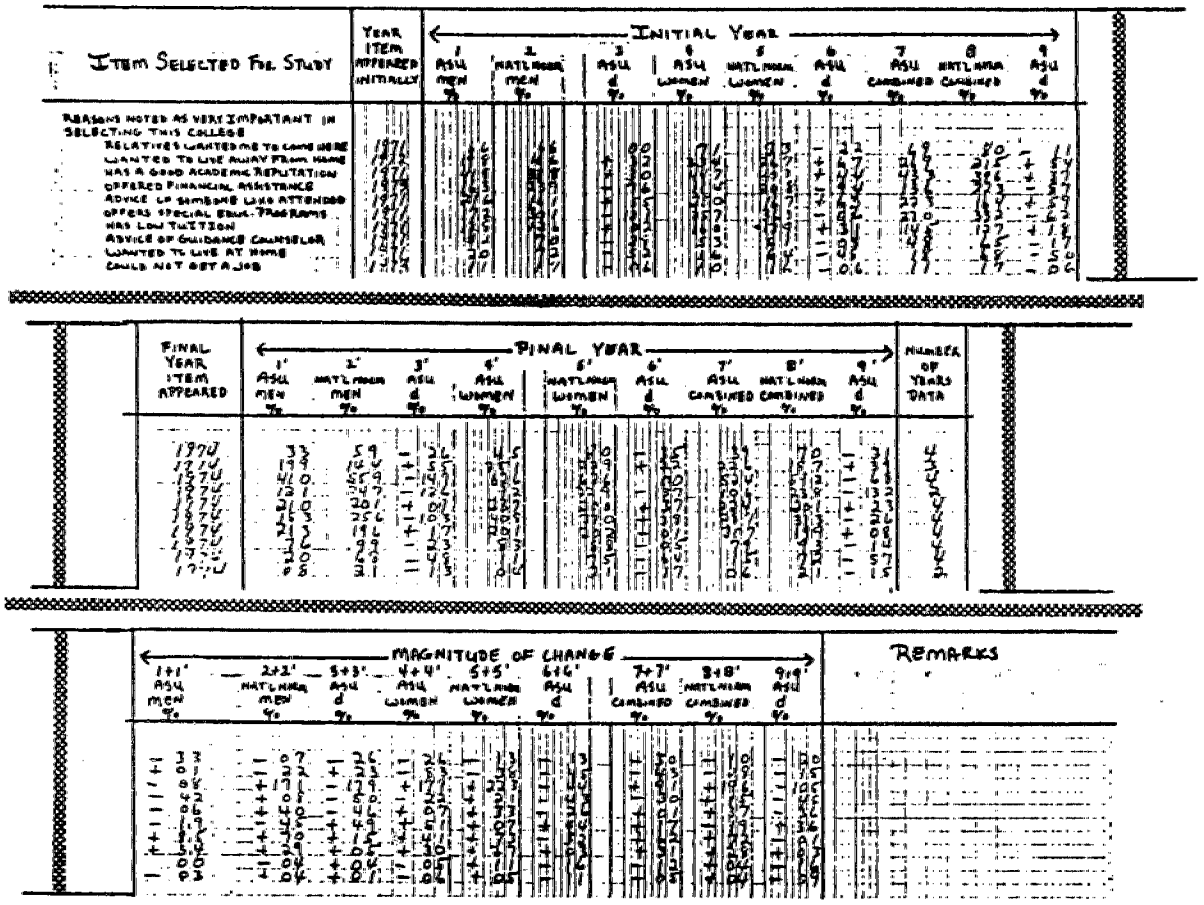
The data are manipulated for the initial year and the final year by calculating the changes from column to column as indicated in the illustration. Then the magnitude of change is calculated for each column by adding the results of the initial and final years algebraically. Subjective review of the portion of the worksheet headed "magnitude of change" should then be made and the results described. From this information should be drawn some implications for planning.

Summary

The proposed methodology is simple and straightforward; it can be accomplished manually without great expenditure of clerical time. It is hoped that once the calculations are made some quantitative technique--

more precise than subjective review--can also be applied to the derived data, in order to better test the validity of the assumptions arrived at. Suggestions by the membership will be greatly appreciated!

SAMPLE OF PROPOSED DATA ANALYSIS WORKSHEET FORMAT



AN EXPERIMENTAL INSTRUMENT FOR EVALUATING THE PERFORMANCE OF COLLEGE AND UNIVERSITY ADMINISTRATORS

Please direct questions, comments, reactions,

and/or suggestions for improvement

to

Robert E. Reiman, Coordinator of Long-Range Planning

or

William C. Hubbard, Coordinator of Instructional Resources

Appalachian State University

Boone, North Carolina 28608

Appalachian State University

Experimental Edition (11-3-75)

EVALUATION OF ADMINISTRATORS --- 1975

Title of person being evaluated _____

Please evaluate the administrator named above on the following items. Use a five-point scale with "1" being the lowest rating possible and "5" being the highest possible on any item. Please respond to each item twice--first, regarding how the administrator "ideally" should rate; and next your perception of how the individual named above "actually" scores on this item.

Ideally --- this person should be (Mark 1, 2, 3, 4, or 5)	Check this column if no rating, item not relevant	Actually --- this person is (Mark 1, 2, 3, 4, or 5)	Check this column if no rating or did not observe
⇩	⇩	⇩	⇩

PERSONAL ATTRIBUTES	
1. Does not express thoughts clearly. (1)	Has rare ability to communicate ideas to others. (5)
2. Lacks integrity. (1)	Displays a high degree of integrity. (5)
3. Does nothing to stimulate thought. (1)	Is highly effective in encouraging stimulating thought. (5)
4. Discourages any nonconformity. (1)	Strongly advocates and supports independent supervision. (5)
5. Manipulates people, does not get along with people and groups. (1)	Reacts to people with a positive regard for each individual. (5)
6. Lacks objectivity when dealing with differences in sex, race, religion, politics, and/or educational background. (1)	Is fair with regard to differences in sex, race, religion, politics and/or educational backgrounds. (5)
JOB-RELATED ATTRIBUTES	
7. Has gaps in the fundamental knowledge and skills of his job. (1)	Has a grasp of entire broad duties. (5)
8. Inefficient with administrative routine. (1)	Handles routine duties effectively. (5)
9. Ineffective in public relations. (1)	A good promoter for the department college and/or institution locally and regionally. (5)
10. Is unsympathetic and inconsiderate with students. (1)	Consistently approachable, accessible, considerate and courteous. (5)
11. Indecisive - delegates too little or too much authority-tends to abdicate position. (1)	Clearly demonstrates administrative ability by optimum delegation of authority and responsibility. (5)
12. Unfair, lacks objectivity, and is inconsistent in policy implementation. (1)	Conducts duties in a fair, consistent, and objective manner. (5)
13. Cannot successfully handle conflict. (1)	Tactfully mediates and arbitrates conflict successfully. (5)
RELATIONS WITH FACULTY	
14. Disregards the Faculty Handbook. (1)	Follows letter and intent of guidelines in the Faculty Handbook. (5)
15. Does not keep faculty informed. (1)	Communicates with and keeps faculty fully informed. (5)
16. Shows little consideration for faculty input. (1)	Actively encourages faculty involvement. (5)
17. Does not care about professional improvement of faculty. (1)	Encourages scholarly activities and research. (5)
18. Does a poor job in faculty recruitment. (1)	Does an outstanding job recruiting and working with new faculty. (5)
19. Ineffective in representing his faculty. (1)	Successfully and fairly communicates faculty viewpoints to others. (5)
20. Does not provide or protect academic freedom. (1)	Does provide and support academic freedom. (5)

SPECIAL NOTE TO RESPONDENTS: Because this form is experimental, your criticisms are elicited (or you may wish to suggest items for inclusion in the next revision). Use this space below to do so.

THE IMPORTANCE OF LOCAL VALIDATION IN USING STANDARDIZED TESTS FOR INSTITUTIONAL RESEARCH

Norman P. Uhl
and
Linda K. Pratt

North Carolina Central University

There are a great variety of standardized tests available to the institutional researcher--tests to measure institutional goals, campus environment, student characteristics, as well as student ratings of instruction. Using these standardized tests has many advantages. Most standardized tests are the result of several years of research by competent individuals in the fields of higher education and measurement. This usually results in reliable and valid tests for the norming population. Usually an individual responsible for institutional research at a particular institution cannot devote the time and money to develop such instruments. The elimination of the time and cost of test development can represent a substantial saving to an institution. In addition, there are other advantages in using such tests. Inter-institutional research is facilitated by the use of instruments developed for use in a variety of colleges and universities. This permits the researcher not only to collect data for his own campus study, but also to compare it with data from other institutions. In many cases, these inter-institutional comparisons assist administrators in interpreting the results of the study. While some studies may be planned for which the available standardized tests are not completely adequate, most of these instruments provide the option of adding several items designed for a specific purpose.

While there are numerous advantages to using standardized tests, they should not be employed blindly. Such things as scale scores, which might have been developed using institutions with different characteristics than one's own, are often assumed to yield valid results and therefore are not checked through local validation procedures. This may result in the use of inappropriate scales which may lead to misinterpretations. For example, it is usually assumed that the scale scores are unidimensional. However, it is possible that for students having some different characteristics from the norm group, some of the scales may become multi-dimensional. If this happens, not only are the actual structure and interpretability of the scales unclear, but group differences and developmental changes, potentially revealed through comparative or longitudinal studies, could be concealed. As Feldman and Newcomb (1970, p. 59) state, ". . . difficulty in interpretation is encountered if a test assumed to be unidimensional is really multi-dimensional, and if these dimensions differentially contribute to scores at time 1 and time 2." Thus, if a scale actually includes two dimensions and if students respond more to dimension 1 than to dimension 2 as freshmen, but just the reverse as seniors. then the difference

between freshmen and senior scores becomes very difficult to interpret. This problem of course, would also extend to cross-institutional and/or other comparative studies. The researcher must also consider when the test was last validated. If substantial changes occur within the local area or in the country at large that might affect responses to the items on these scales, then again local validation might be a wise precaution.

A few examples follow, using actual data, to illustrate these problems and the need for local validation.

Nelsen & Uhl (1974) found that the items from the Liberalism scale of the CSQ did not form any generally interpretable factor in a factor analysis study of freshmen at North Carolina Central University. The items from the Peer Independence and Cultural Sophistication (Peterson, 1965) scale did appear; however, the items from the Peer Independence scale formed two distinct factors, one directed toward thought and action, the other reflecting a ". . . tendency towards isolation or solitary activities." Five items from the cultural sophistication scale appeared on a reduced scale which reflected primarily an interest and/or appreciation of the fine arts while the two additional items appeared on a scale reflecting interest in politics and world affairs.

An additional study, examining the factor structure of 1972 seniors at NCCU, revealed even more significant changes in factor structure. Seven interpretable factors were identified, and only two of these have more than a tangential relation to previously identified factors. Five items from the Family Independence (FI) and six from the Peer Independence (PI) scale clustered to form a single factor apparently reflecting general independence. Two items from the Social Conscience scale combined with a third item relating to independence to form a factor which might be interpreted as a social conscience scale.

Two of the new scales which were identified in this study are of particular interest because they reflect either substantial changes in NCCU students between their freshman and senior years or the substantial changes in the social and cultural fabric of the country which occurred between 1968 and 1972.

The first factor appears to be a politically oriented scale, though reflecting more than the traditional liberal versus conservative orientation. Three items from the Liberalism (L) scale are included:

1. Is your political viewpoint conservative or liberal?

2. Should the government have the right to prevent public meetings of persons who disagree with our form of government?

3. Do you agree that the police are unduly hampered by the requirement of search warrants?

However, two additional items from the Social Conscience scale and two from the Cultural Sophistication scale also loaded on this factor. The two items from the SC scale (concern that persons who are not white-Anglo-Saxon-Protestant seem to have less opportunity in America, and concern over the problem of juvenile crime)both reflect an activist stance which was often associated with political liberalism in the late sixties and early seventies. The final items, those from the CS scale reflect an active interest in history and classical music.

The second factor of interest might be termed a counter-culture scale. The principle items, those with the highest loadings, relate to enjoyment of poetry, interest in foreign films, the number of books owned and knowledge of the history of painting, all clearly CS scale items. However, the scale identified by this factor also contained items relating to liberal versus conservative points of view such as attitudes toward capital punishment, universal medical care, and the effects of a welfare state. One SC scale item, attitude toward the use of the atomic bomb at Hiroshima, also loaded on this factor. A high score on this factor tends to reflect a generally humanistic approach in a variety of areas.

The factors from the 1972 senior data set differed so widely from the factors identified in the analysis of the 1968 freshmen responses that the authors felt that the subset of students who remained at NCCU and completed the CSQ as seniors might differ from the population of 1968 freshmen. An analysis of freshmen responses including only those students who also completed the senior questionnaire, however, yielded a factor structure substantially the same as the factor structure reported by Nelsen and Uhl for the entire freshmen class.

The extent to which the factor structure of the CSQ attitude data changed between 1968 and 1972 highlights the need for caution in interpreting results from longitudinal type studies. Identical scale scores at one time of administration may have a quite different meaning when administered at some other point in time (a test-retest reliability coefficient would assist the researcher in deciding the applicability of the test for longitudinal studies). Of course this caution does not only apply to standardized tests, but to all tests. Unfortunately, the standardized test, only because it is a standardized test, is often assumed to have qualities that even the author would not claim.

Changes in factor structure, whether attributed to differences between the individual institution and the norming sample, to changes in the student samples, or to general cultural changes always present problems in interpretation of test results. However, even assuming that the factor structure is valid and relatively stable, other problems in interpretation may occur. During the development of the preliminary form of the Institutional Goals Inventory, for example, an unpredictable change in the mean scores on one

goal area appeared between rounds of the Delphi process at one institution, but at none of the others. Only through discussions with the college representative, was it found that a demonstration had occurred on campus between administrations of the test which was related to the goal area in question. This illustrates one example of an interpretation of scale scores which could only be made by a person thoroughly familiar with the particular institution.

The example above represented interpretation of an unplanned or unexpected change in a scale score. Other changes may be expected as a result of planned intervention. For example, the Advanced Institutional Development Program (AIDP) grants often require rather substantial changes in the planning and management of the college. Corresponding changes in the Democratic Governance and Accountability/Efficiency scale might be expected. However, baseline testing prior to intervention is necessary before valid interpretation of the scores can be made.

In summary one cannot assume that the reliability and validity figures from a test's technical manual apply. Local validation of the standardized test is recommended if an institution differs from the norming sample or if major cultural changes have occurred since the test was validated. Examination of the stability of scale scores over time at the local level is also necessary if the test results are to be used to evaluate the impact of major changes in the college, whether planned or fortuitous.

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