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ABSTRACT

LaGuardia Community College (LGCC) has recently initiated work on the development of a comprehensive system for computer storage, processing, and analysis of data pertaining to student performance, demography, and attitudes. This system is not yet wholly operative, but many of its components have been developed. This report presents the findings of several computer-based analyses of student performance. Grades awarded in credit classes from fall 1971 to summer 1974 are compared for groups of students classified by curriculum, admission status (open admission or other), attendance pattern (full-time or part-time), date of admission, and number of credits accrued. Data revealing grade distributions as a function of date of award, time of year, and awarding division are also presented. The findings show a marked differentiation in performance associated with admission status, credit-accrual, and curriculum classifications. Factors which may account for the obtained heterogeneity of student performance are suggested and discussed. Data are presented which show that LGCC awards a higher proportion of non-passing grades than any other community college in the City University of New York (CUNY) system; it is suggested that this is a result of the college's lack of a true failing grade. (Author/DC)

Patterns of Student Performance at LaGuardia Community College 1971-1974

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ABSTRACT

An extensive computer analysis has been performed on all grades awarded in credit-bearing courses at LaGuardia Community College for the three-year period beginning with the College's opening in 1971. The analysis provides a comparison of the performance of groups of students classified by curriculum, admission status, attendance pattern, date of admission, and credit accrual. Data are also presented which reveal grade distributions as a function of date of award, time of year, and awarding division. The findings show a marked differentiation in performance associated with admission, credit-accrual, and curriculum classifications, and also a wide variation in distribution of grades awarded by LaGuardia's various divisions of instruction. Factors which may account for the obtained heterogeneity of student performance are suggested and discussed. Data are presented which show that LaGuardia awards a higher proportion of non-passing grades than any other community college in the CUNY system, and it is suggested that this is a concomitant of the College's lack of a true failing grade.

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Patterns of Student Performance at LaGuardia Community College 1971-1974

Toward the end of 1973, the Office of Institutional Research of LaGuardia Community College initiated work on the development of a comprehensive system for computer storage, processing, and analysis of data pertaining to student performance, demography, and attitudes. While this system, called RSFILE, is, at the time of this writing, still awaiting operational status as a unified whole, many of its various components or "packages" have already been developed and have seen actual service in the processing of student performance data. Released to date have been findings pertaining to basic skills of entering freshmen (Ehrlich, Ellis, & Berger, 1974); skill improvement following remediation (Ehrlich & Ellis, 1974; Self-Evaluation Committee, 1974, pp. 166 ff.; LaGuardia Community College, 1973); skills of graduates (Self-Evaluation Committee, 1974, p. 166); demographic attributes of non-persisting students (Berger, 1973); demographic attributes of freshmen (Office of Institutional Research, 1973); and the relation of students' grades to their reading skills (Ehrlich & Ellis, 1974). In separate technical papers (Ellis, 1974a, 1974b) certain features of RSFILE were described in some detail.

Continuing work on the construction of RSFILE has resulted in several computer-based analyses of student performance. These

findings, which are presented below, are derived from magnetic research files which are in turn based on other EDP sources (student history file, registration tapes) maintained by the College's Registrar and processed by its Office of Computer Services. Because all data are sorted, stored, and analyzed in EDP systems, very large amounts of information are processed. Statistical manipulation of research data is included in the system software, and relies on standard statistical packages like SPSS (Statistical Package for the Social Sciences), or special processing algorithms developed in conjunction with RSFILE (e.g., the SPAN report and the Institutional Research Grade Summary; see Ellis, 1974a, 1974b). Most of these data have not previously been reported in any form.

Attendance pattern

A summary of students' performance as a function of their official attendance status is given in Table 1. (An explanation of statistics reported in this and other tables, and a glossary of statistical abbreviations which appear at the head of table columns, will be found in Appendix A.) The college admission average (CAA) of full-time students is slightly higher than that of part-timers and, not surprisingly, the totals for the former of credits attempted (CA), credits earned (CE), and total accrued quality credits (QC) is quite the higher of the two groups. Part-time students have nearly the same efficiency ratio (ER) and grade-point index

(GPI[1]) as full-time students.

Admission code

Upon admission to the College, students are assigned one of a number of admission codes, which denotes admission status in one of the Open Admission or other categories (see Table 2). The Extended Day Session category contains the largest number of students although the four Open Admission (OA) categories combined include a somewhat larger number. An examination of OA students' performance clearly demonstrates that high school performance (CAA) is a superior predictor of college performance (GPI). Efficiency ratio is also directly related to CAA. The highest ER and GPI figures among non-OA categories are found among Permit, Advanced Standing, and Direct Admission students, while poorest performance is contributed by Senior Citizens, Adapter Program enrollees, and students with undetermined CAA. The considerable range of ER and GPI values may be noted; it is likely that these are fairly stable and characteristic indices for the various admission categories. Undoubtedly these findings have implications for assessing the cost and educational quality of many of the College's programs.

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[1] May be interpreted as a mean grade-point average; see footnote b, Appendix A.

Credit standing

Table 3 provides an analysis of students' performance as a function of the number of credits they have accrued. There are six credit-accrual categories, ranging from 0 credits to over 70, plus one category of non-matriculants. Although it is hardly surprising to find a clear-cut relationship between earned credit and credit-standing category -- since one is a dependent function of the other -- the orderly and marked upward trend in derivative performance indices (ER and GPI) associated with increasing accrued credit is quite striking. This effect can only be ascribed to the progressive influence of attrition, with higher-standing categories being increasingly less affected by the grades of less able, non-persisting students, as well as to the fact that many students who maintain matriculated status still fail to advance in standing due to insufficient credit accrual.

Chronological analysis

A quarter-by-quarter listing of grades received by LaGuardia students since the College opened in the fall of 1971 is presented in Table 4. The figures given for each quarter reflect grades received by all Day and Extended Day students, regardless of their standing, matriculation status, or attendance pattern. GPI's have been computed from the total number of entries in each quality-grade category and therefore represent a synthesized performance index for the quarter. (A similar procedure has been adopted in

subsequent tables.) Efficiency ratios have not been computed for these data, but presented in Table 4 is the quality-grade ratio (QGR), which represents the proportion of all grades assigned as E, G, P, or N. (As will be seen in subsequent analyses, the QGR is a proportion-based performance index which typically runs somewhat higher than the ER.) An examination of these GPI figures shows that for the first two academic years of the College's operation, students' performance improved somewhat from the fall to the summer quarter, which should, perhaps, be expected due to the attrition of poorer students throughout the four-quarter sequence. This effect does not appear during the third (1973-1974) academic year. The situation is somewhat complicated in this instance due to the fact that significant numbers of incomplete (I) and late (Z) grades[1] remain unconverted to quality grades, which is reflected -- especially during the last two quarters -- in low QGR's. The ultimate conversion of these grades will increase the QGR's but it is unlikely that the GPI's will also increase, since I grades, which constitute the bulk of unconverted grades, tend to become N's and P's more often than G's and E's.

In order to demonstrate the distribution of number of assigned grades throughout the academic year, the data in columns n_q and $n_{\bar{q}}$

[1]See Appendix B for a glossary of grades used at LaGuardia Community College.

of Table 4 have been combined in Table 5, and percentage distributions through the quarters of each of three academic years have been calculated. The findings reflect the fact that, due to the combined effects of attrition and the heavy concentration of cooperative education internships in the spring and summer quarters, there is a regular and sharp decline in the number of grades assigned during the academic year. The data also show that the crowding of assigned grades toward the beginning of the year has become more exaggerated during the last three academic years. This last fact may have important implications in the control of utilization patterns, since these are closely tied to the number of awarded grades. A surprising aspect of Table 5 is the three-year decline in summer-quarter activity. Apart from exaggerating the beginning-of-the-year weighting noted above, these figures do not uphold the expectation that holdover students will increasingly offset the effects of end-of-the-year cooperative education internships on registration activity.[1]

Year of admission

Table 6 provides an analysis of performance factors as a function of students' date of admission. In order to provide equivalent sampling periods for students who have been at LaGuardia for differing

[1]There remains the possibility that updatings of registration tapes will alter the pattern of grade distribution in quarters of the 1973-1974 academic year.

periods of time, the figures shown represent, for individuals who entered in the freshman cohorts of 1971, 1972, and 1973, a cumulation of grades restricted to the four consecutive calendar quarters following first-time matriculation. Taking into consideration the fact that the 1973 cohort have received a significant number of yet-unconverted I and grades, there is the possibility that a declining trend in overall performance, as judged by ER and GPI figures and established for the 1971 and 1972 groups, may continue. Especially vulnerable in this instance is the GPI, which can be expected to decrease if the majority of I grades are converted to P's and N's. The decreasing performance by successive cohorts of matriculants cannot be accounted for in simple terms, but is consistent with the finding of progressively lower levels of basic skills among entering LaGuardia freshmen for these years (Ehrlich, Ellis, & Berge . 1974), and the growing concern among LaGuardia faculty with issues pertaining to academic standards at the College.

Curriculum

The performance of students enrolled in LaGuardia's various programs is given in Table 7. The curricula are ranked, from high to low, according to GPI. The data in the table represent all grades earned during the four quarters of the 1973-1974 academic year. Superior by far, in terms of both GPI and ER, are the Edu-

cation Associate and Family Assistant students. An interesting facet of these data is the fact that the GPI rank according to major groupings of curricula is: (1) teaching paraprofessionals; (2) allied health/social service paraprofessionals; (3) business curricula; and (4) liberal arts and no curriculum. (The one exception to this ordering, an inversion of Business Management and Liberal Arts, does not occur in ER figures.) Although, with the exception of the two teaching paraprofessional curricula, differences between any two adjacent programs are not very large, the range in GPI (1.31 to 1.79) and ER (67.2 to 77.8) is significant, and presumably has implications for policy-related decision-making in various administrative and academic matters.

An obvious feature of the data in Table 7 is the extremely close relationship of ER and GPI values. Although the categories are ranked according to GPI, they are also -- with a single exception, noted above -- ordered by ER as well. A correlational analysis based on all individuals in the four-quarter sample yielded a product-moment coefficient of .808. This value, while moderately high, indicates a fair degree of independence of GPI and ER for individuals.

Grade-awarding division

An analysis of grades and derivative indices of performance according to the awarding division is presented in Table 8. As in Table 7, these figures are derived from grades given during the 1973-1974 academic year, and the divisional categories are rank-

ordered according to GPI. The range in GPI is even more marked than is the case in the analysis by curriculum. Cooperative Education is by far the highest-grading division, with nearly half of all grades awarded being E.[1] Human Services is also a very high grading division. At the opposite extreme, the Division of Communication Skills, which offers the College's remedial reading courses, provides by far the lowest grades of any division. The remaining Business and Liberal Arts divisions do not differ by much and fall in between Human Services and Communication Skills. There is also a general correlation of ER with GPI, although a notable exception is provided by Cooperative Education, a division which gives high grades but also grants many I and Z grades, many of which have not been converted to quality grades for the present sampling period.

Interaction between curriculum and grade-awarding division

The extent of variations in performance observed as a function of grade-awarding division and students' curriculum suggested that it might be interesting to examine the interaction between these two factors. For this purpose, GPI's were separately computed for each cell in a curriculum × grade-awarding-division matrix (Table 9).

[1] After conversion of outstanding I and Z grades, this figure will undoubtedly exceed 50 percent.

(In the table, cell values based on $n_q < 25$ have been omitted.) These findings represent extremes of performance, with, on the high end, Education Associate students earning nearly a straight-E average (equivalent to a GPI of 3.00) in their cooperative education internships, while, at the opposite extreme, Data Processing, Liberal Arts, and Business Management students barely achieve a P average in Communication Skills courses.

Among the notable findings arising from these data are the following: (1) Liberal Arts students, who rank among the poorest-performing curricula, earn moderately good grades in Human Services and Social Science courses, and do about as well on their cooperative education internships as some other, higher-ranking divisions; (2) four business curricula -- Accounting, Secretarial Science, Data Processing, and Business Management -- perform especially well in Business Division courses, in proportion to their overall performance in academic courses; (3) students with no curriculum, who comprise the worst-performing category, do surprisingly well in Communication Skills courses; and (4) the highest grades outside of cooperative education are earned by Human Services students taking courses in their own division.

A certain degree of lack of specificity enters into this analysis due to the fact that curricula and divisions do not entirely correspond in administrative organization. There are, for example, three liberal arts divisions (Language and Culture,

Natural Environment, and Social Sciences) but only one Liberal Arts curriculum; and there are five business curricula, but only one Business Division. Thus these data fail to indicate how well Accounting students do in Accounting (as opposed to other Business Division) courses, or how well Liberal Arts [illegible] do in liberal arts courses as a whole.[1]

LaGuardia compared with other CUNY community colleges

The data presented in the foregoing tables quite naturally invite comparison with similar materials for sister community colleges in the CUNY system. Unfortunately, the most obvious point of comparison, the GPI, cannot be used for this purpose, since LaGuardia uses a non-traditional, four-category system, while her sister colleges use the standard A-B-C-D-F system.

As a simplified approach to the problem of interinstitutional comparison, grade distributions for LaGuardia and other CUNY community colleges have been analyzed in terms of a modified efficiency ratio, where

$$ER_{mod} = \frac{\text{number of passing grades}}{\text{number of quality grades}} = (100\text{-}N\%).$$

Data published for the spring, 1972 semester at other CUNY colleges (Kramer, Kaufman, & Podell, 1974) were reanalyzed and compared with

[1]Technical developments associated with the construction of RSFILE are expected to overcome this deficiency.

the performance of LaGuardia students during the spring, 1972 quarter. These are summarized in Table 10.

Ranked in order of ER_{mod}, LaGuardia -- at 79.7 -- stands lowest in the group, separated by seven percentage points from the next highest unit, Staten Island Community College. The highest figure for the group, 94.9 for Bronx Community College, is about 8 percentage points above Staten Island.

There seems little doubt that, simply taken at face value, these data clearly indicate that LaGuardia awards a higher proportion of non-passing (N) grades than do her sister community colleges (F, W, and other miscellaneous failing grades in the case of these institutions). The difference is large and significant, and undoubtedly stems largely from the nominally "non-punitive" attributes of the N grade. Since Table 10 concerns only one semester (quarter), there is, of course, the issue of how representative the given values are. While no data exist for other colleges, ER_{mod} values for LaGuardia for twelve consecutive quarters beginning with fall, 1971 indicate that the spring, 1972 figure is in fact an upper-limit aberration, and the proportion of N's awarded actually runs over 24 percent on the average.

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Table 1

Attendance Pattern and Performance[a]

Pattern	n_s	E%	G%	P%	N%	CAA	CA	CE	ER	GPI	QC
Full-Time	3157	23.9	30.3	23.2	22.7	72.7	40.0	30.0	75.0	1.55	36.0
Part-Time	2850	27.1	29.2	18.3	25.4	70.5	20.1	14.8	73.8	1.58	17.5

[a]Weighted statistics based on data in summer, 1974 files

Table 2

Admission Code and Performance[a]

Code	n_s	E%	G%	P%	N%	CAA	CA	CE	ER	GPI	QC
Open Adm.,CAA Under 70	853	13.3	26.0	28.9	31.8	66.2	38.3	25.0	65.2	1.21	35.2
Open Adm.,CAA 70-74.9	748	20.1	32.2	25.9	21.8	72.2	42.6	32.1	75.5	1.51	39.0
Open Adm.,CAA 75-79.9	559	32.7	33.9	18.1	15.4	77.1	45.5	37.5	82.5	1.84	41.1
Open Adm.,CAA Over 80	195	45.1	32.8	13.2	9.0	83.7	39.6	35.1	88.6	2.14	35.8
Adapter Program	347	11.1	18.3	20.9	49.7	N.A.	32.9	16.4	49.7	0.91	29.4
Undetermined CAA	127	16.8	27.4	27.1	28.7	N.A.	41.1	28.5	69.3	1.32	37.4
Senior Citizen	92	21.4	27.5	13.2	38.0	N.A.	9.0	5.5	60.9	1.32	8.6
Permit	68	25.0	46.6	20.7	7.6	N.A.	7.1	6.4	90.7	1.89	6.9
Extended Day	2220	27.8	29.7	19.0	23.4	N.A.	21.2	16.0	75.1	1.62	18.4
Advanced Standing	128	36.3	29.7	14.6	19.4	N.A.	34.7	28.8	83.1	1.83	22.0
Direct Admission	675	37.9	35.8	16.0	10.4	N.A.	24.3	21.4	88.0	2.01	21.2

[a]Weighted statistics based on data in summer, 1974 files

Table 3

Credit Standing and Performance[a]

Standing	n_s	E%	G%	P%	N%	CAA	CA	CE	ER	GPI	QC
No Credits	541	0.0	0.0	0.0	100.0	70.6	9.3	0.0	0.0	0.00	8.8
Lower Freshman[b]	1366	12.7	17.7	16.9	52.7	70.4	14.6	6.7	45.7	0.90	13.3
Upper Freshman[c]	1019	18.2	28.1	26.4	27.3	71.9	29.9	20.6	69.1	1.37	26.2
Lower Sophomore[d]	1063	30.5	34.1	22.4	13.1	74.6	44.0	36.8	83.6	1.82	38.3
Upper Sophomore[e]	887	32.1	37.1	23.9	6.9	73.5	68.9	63.5	92.2	1.95	62.2
70+ Credits	63	43.6	34.2	17.9	4.3	73.8	77.0	73.9	95.9	2.17	64.2
Non-Matric	1073	10.9	18.5	16.5	54.1	68.9	14.4	6.2	43.3	0.86	12.9

[a] Weighted statistics based on data in summer, 1974 files
[b] 0.5-13.0 credits
[c] 13.5-27.5 credits
[d] 28.0-49.5 credits
[e] 50.0-70.0 credits

Table 4

Quarter-by-Quarter Distribution of Grades[a]

Quarter	E%	G%	P%	N%	n_q	$n_{\bar{q}}$	QGR	GPI
Fall 1971	23.7	31.0	24.6	20.7	2175	343	86.4	1.58
Winter 1971	24.7	26.7	24.9	23.7	2208	117	94.9	1.52
Spring 1972	25.2	30.6	23.9	20.3	1765	162	91.5	1.61
Summer 1972	25.3	31.5	21.6	21.6	1617	134	92.4	1.60
Fall 1972	20.5	29.9	23.0	26.6	5495	1040	84.1	1.44
Winter 1972	22.1	28.6	22.3	27.0	5271	265	95.2	1.46
Spring 1973	23.3	31.0	19.2	26.4	4915	321	93.8	1.51
Summer 1973	25.6	31.5	20.7	22.2	3671	530	87.4	1.60
Fall 1973	23.9	29.8	24.0	22.3	9250	1642	84.9	1.55
Winter 1973	26.3	29.5	20.2	24.0	8150	911	90.1	1.58
Spring 1974	26.3	28.0	21.1	24.6	6829	1163	85.4	1.56
Summer 1974	26.8	28.3	20.7	24.2	5261	1051	83.3	1.58
OVERALL MEAN	24.5[b]	29.5[b]	21.9[b]	24.1[b]	--	--	88.1[c]	1.54[b]

[a]Column entries are unweighted statistics

[b]Weighted according to n_q column entries

[c]Weighted according to n_t (n_q + $n_{\bar{q}}$ column entries)

Table 5

Proportional Distribution of Grades

Throughout the Academic Year

	1971-1972		1972-1973		1973-1974	
Quarter	n_{Σ} [a]	Pct.	n_{Σ} [a]	Pct.	n_{Σ} [a]	Pct.
Fall	2518	29.6	6535	30.4	10892	31.8
Winter	2325	27.3	5536	25.7	9061	26.5
Spring	1927	22.6	5236	24.3	7992	23.3
Summer	1751	20.5	4201	19.5	6312	18.4

[a]All recorded grades ($n_{\Sigma} = n_{q} + n_{\bar{q}}$; see Appendix A)

Table 6

Comparison of Performance by Year of Admission

(Four-Quarter Cumulation)[a]

Cohort	n_s	E%	G%	P%	N%	n_q	$n_{\bar{q}}$	QGR	ER	GPI
Fall 1971	690	24.3	30.1	23.9	21.7	6405	490	92.9	79.8	1.57
Fall 1972	1175	19.9	29.7	22.1	28.4	10640	1052	91.0	74.1	1.36
Fall 1973[b]	1837	24.2	30.4	22.8	22.5	16079	2618	86.0	71.8	1.47

[a]Unweighted statistics

[b]Grades for quarter contain a number of unconverted I and Z grades

Table 7

Distribution of Grades by Curriculum[a]

Curriculum	E%	G%	P%	N%	n_q	$n_{\bar{q}}$	QGR	ER	GPI
Education Associate	41.9	32.2	16.6	9.3	1600	203	88.7	88.2	2.0[illegible]
Family Assistant	39.9	36.0	14.7	9.3	258	31	89.[illegible]	86.[illegible]	2.0[illegible]
Occupational Therapy	33.0	30.2	20.2	16.6	673	137	83.1	77.8	1.7[illegible]
Human Services	28.4	36.3	18.6	16.7	3048	425	87.6	77.[illegible]	1.7[illegible]
Accounting	27.1	30.7	24.0	18.3	3598	373	90.[illegible]	77.6	1.6[illegible]
Secretarial Science	26.6	32.4	21.6	19.4	3891	757	83.7	75.9	1.66
Business Administration	24.2	29.4	24.2	22.2	3757	574	86.7	72.9	1.5[illegible]
Data Processing	20.9	28.5	26.3	24.3	2659	358	88.1	70.3	1.46
Liberal Arts	24.1	25.3	20.7	29.9	8902	1418	86.3	64.7	1.44
Business Management	19.1	26.8	26.6	27.5	790	124	86.4	66.[illegible]	1.38
None	22.5	23.2	17.5	36.8	1008	127	88.8	67.2	1.31
ALL CURRICULA	26.0[b]	29.3[b]	21.7[b]	23.0[b]	30184	4527	87.0[c]	72.3[c]	1.59[b]

[a]Unweighted statistics based on all grades earned during the 1973-1974 academic year

[b]Weighted according to n_q column entries

[c]Weighted according to n_Σ ($n_q + n_{\bar{q}}$) column entries

Table 8

Summary by Grade-Awarding Division[a]

Division	E%	G%	P%	N%	n_q	$n_{\bar{q}}$	QGR	ER	GPI
Cooperative Education	49.1	32.9	11.2	6.8	1527	954	61.5	63.2	2.24
Human Services	33.3	41.7	12.3	12.7	1217	289	80.8	78.6	1.95
Social Science	28.3	31.3	19.9	20.6	6044	1818	76.9	73.5	1.67
Business	25.8	29.2	22.8	22.1	7645	2052	78.8	75.9	1.59
Natural Environment	26.1	25.1	21.7	27.0	4866	1608	75.2	69.6	1.50
Language & Culture	23.2	29.0	21.8	26.0	6104	2070	74.7	66.0	1.49
Communication Skills	12.2	25.7	32.2	29.9	2843	1043	73.2	65.7	1.20
ALL DIVISIONS	26.0[b]	29.3[b]	21.7[b]	23.0[b]	30246	9834	75.5[c]	69.6[b]	1.59[c]

[a]Unweighted statistics based on all grades awarded during the 1973-1974 academic year
[b]Weighted according to n_q column entries
[c]Weighted according to n_Σ ($n_q + n_{\bar{q}}$) column entries

Table 9

Grade-Point Index:
Student's Curriculum × Grade-Awarding Division[a]

Curriculum	Coop.Ed.	Hum.Svc.	Soc. Sci.	Busin.	Nat.Env.	L&C	C.Skills	ALL DIVS.
Ed. Asso (n_q=1600)	2.80	--	2.14	--	2.08	1.78	1.66	2.07
Fam. Asst.(n_q=258)	2.69	--	2.12	--	2.00	1.72	--	2.07
Occ.Ther.(n_q=673)	--	--	1.99	--	1.70	1.85	1.58	1.79
Hum. Serv.(n_q=3048)	2.16	2.03	1.78	1.24	1.49	1.56	1.14	1.76
Acctg.(n_q=3598)	2.21	1.42	1.61	1.73	1.74	1.53	1.20	1.67
Sec. Sci.(n_q=3891)	2.44	--	1.61	1.68	1.58	1.60	1.40	1.66
Bus. Adm.(n_q=3757)	2.11	--	1.68	1.52	1.55	1.53	1.32	1.56
Data Proc.(n_q=2659)	2.24	--	1.40	1.57	1.42	1.28	1.05	1.46
Lib. Arts(n_q=8902)	2.12	1.64	1.54	1.17	1.36	1.43	1.07	1.44
Bus. Mgt.(n_q=790)	1.88	--	1.38	1.49	1.38	1.25	1.06	1.38
None (n_q=1008)	--	--	1.38	1.41	1.14	1.44	1.82	1.31
ALL STUDENTS(n_q=30184)[b]	2.24	1.95	1.67	1.59	1.50	1.49	1.20	1.59

[a] Unweighted statistics based on all grades recorded for the 1973-1974 academic year. No data (--) shown for $n_q < 25$

[b] Weighted according to n_q values for each curriculum

Table 10

Modified Efficiency Ratio[a]: Comparison of Seven CUNY Community Colleges for Spring, 1972[b]

College	n_q[c]	n_p[c]	ER_{mod}[d]
Bronx Community College	21,635	20,523	94.9
Kingsborough Community College	15,351	13,991	91.1
Borough of Manhattan Community College	12,449	13,745	90.6
Queensborough Community College	15,865	17,921	88.5
New York City Community College	32,542	36,840	88.3
Staten Island Community College	12,772	14,734	86.7
LaGuardia Community College	1,765	1,406	79.7

[a]Defined as $ER_{mod} = \frac{\text{number of passing grades}}{\text{number of quality grades}}$. See Appendix A for comparison with standard ER

[b]Spring, 1972 semester for LaGuardia's sister colleges; spring, 1972 quarter for LaGuardia

[c]Extrapolated from percentage figures given in Kramer et al.(1974). An error equivalent to a small fraction of a percent may be expected in these figures

[d]Unweighted values

Appendix A

Glossary of Performance Statistics and Their Abbreviations

Abbreviation or Symbol[a]	Interpretation
n_s	Total number of students
n_a	Number of students in active file
n_i	Number of students in inactive file
n_p	Number of passing grades
n_q	Number of quality (E,G,P,N) grades
$n_{\bar{q}}$	Number of non-quality (I,Z,$) grades
n_Σ	Total number of grades ($n_q + n_{\bar{q}}$)
E%	Proportion of E grades in n_q
G%	Proportion of G grades in n_q
P%	Proportion of P grades in n_q
N%	Proportion of N grades in n_q
CAA	College admission average
CA	Credits attempted (all grades)
CE	Credits earned (E,G,P,O,$)
QC	Total number of quality (E,G,P,N) credits
QGR	Quality grade ratio, $QGR = \frac{\text{number of quality grades}}{\text{number of grades}}$
GPI[b]	Grade point index, computed on the basis of E=3, G=2, P=1, and N=0 (other grades not used)
ER	Efficiency ratio, or CE/CA
ER_{mod}	Modified ER, or $\frac{\text{number of passing grades}}{\text{number of quality grades}} = (100\text{-}N\%)$
--	Weighted statistic (computed according to the number of credits in each contributing grade category; see individual tables)
--	Unweighted statistic (computed with all grades assigned equal weight; see individual tables)

[a]For LaGuardia Community College grades, see Appendix B

[b]Because this index is computed for chronological units and instructional divisions as well as for individuals, it is referred to as grade-point index rather than the more usual grade-point average

Appendix B

Glossary of LaGuardia Community College Grades

Grade	Interpretation
E	Excellent
G	Good
P	Pass
N	No Credit
I	Incomplete
Z	Late
$	Exemption
0	Transfer/Advanced Standing