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Heacock, Ronald C.; Jenkins, Jacqueline L.

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ABSTRACT

A study was conducted f students enrolled in fall 1991 at Howard Community College (HCC) in Columbia, Maryland, by matching student addresses to one of 29 populated census tracks in Howard County. The study sought to understand what part of Howard County students were coming from; whether HCC was serving more remote areas of the county; and differences in residence patterns for part and full-time students, and day and evening students. To determine HCC's penetration rate into each tract, the study examined the relationship between HCC's 1991 enrollment from each tract and each tract's total 1990 census population. Of the 4,883 HCC students enrolled in fall 1991, 592 student addresses were unmatched and were not assigned to a census tract. Study findings included the following: (1) for the county as a whole, the average tract enrollment at HCC was 2.29% of the tract population; (2) 18 of the 29 tracts fell below the 2.29% average; (3) there was a definite concentration of enrollees living in tracts nearest the college, while the tracts with low percentage enrollment were bordering on other counties; (4) on average, students were enrolled for 6.98 credits; (5) no particular distribution pattern emerged for mean credits earned by tract, although outer tracts, particularly in the west and south, had higher means for day credit enrollments; and (6) the highest concentrations of part-time enrollment were from areas closest to the college. Maps and data tables are included. (PAA)





HOWARD COMMUNITY COLLEGE ENROLLMENT BY CENSUS TRACT FALL 1991

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RESEARCH REPORT NUMBER 81
MARCH 1993

HOWARD COMMUNITY COLLEGE ENROLLMENT BY CENSUS TRACT FALL 1991

Prepared by:

Dr. Ronald C. Heacock Jacqueline L. Jenkins

RESEARCH REPORT NUMBER 81 MARCH 1993

Office of Planning and Evaluation Howard Community College Columbia, Maryland



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INTRODUCTION

Data exists for many aspects of the student population at Howard Community College (HCC). The college's detailed enrollment data file contains general demographic information such as age, sex, and race, as well as data on HCC majors and programs. But there are characteristics of HCC enrollment never explored before. What part of Howard County are students coming from? Does HCC serve the more remote areas of the county? Do certain areas draw more part-time students than full-time? Is there a pattern to the distribution of day and evening credits? The subject of this report is to examine fall 1991 enrollment at HCC by census tract and provide answers to these and other questions concerning the residence of the students served by HCC. This report also gives insight into student access to HCC and the degree to which the college is serving the entire community. Fall 1992 and future enrollments will be studied and compared in subsequent reports.

There is an advantage to looking at enrollment by census tract as opposed to zip codes. Unlike the stable areas of a census tract, zip codes are often split creating new codes making comparison between different years difficult or impossible. For instance, in 1991 two new zip codes were created in the Ellicott City area. With expected growth in other areas of the county, further zip code changes are a distinct possibility. Census tracts, on the other hand, are stable. While they may be broken down into smaller units, the tracts can be summarized over time.

The neighborhood area names referred to in this report are used only for reference. The census tracts encompass an area similar to but not exactly the same as the neighborhood. For this report the area names were assigned by using the approximate neighborhood name or by an identifying feature located in that tract. A list of the census tracts and the corresponding neighborhood areas can be found in Table One. Map 1 illustrates the 29 populated census tracts of Howard County.

METHODOLOGY

In order to assign students to census tracts, addresses of students enrolled at HCC in the Fall 1991 semester were matched to census tracts using Atlas Pro and Streetbase Plus for Howard County. Atlas Pro is a Strategic Mapping software package and Streetbase Plus is Strategic Mapping's version of the U. S. Census Bureau's TIGER/Line files. The TIGER/Line files contain a set of digital street maps of the U. S. developed for the 1990 Census. A list of student addresses was compared to the street index in Streetbase Plus in a process called address matching. When addresses are matched they are assigned a latitude and a longitude. If the latitude and longitude of an address is known, it can be physically placed on the map making it possible to determine its census tract.

Table One: Place of Residence of HCC Students, lists the number of students enrolled at HCC for fall 1991 and the percent of the total enrollment for each census tract. The place of residence of students with unmatched addresses is also listed. Of the 4,883 students enrolled at HCC in the fall of 1991, 592 student addresses were unmatched and therefore were not assigned to a census tract or included in this report. Of those students,



193 or 4% of the total enrollment, resided in Howard county. Their addresses were unmatched because they were incorrect or contained post office box numbers or rural route numbers which *Streetbase Plus* does not recognize. The remaining 399 unmatched students resided in other counties. The largest number of out-of-county students came from Prince Georges (193 or 3% of the enrollment), followed by Anne Arundel (69 or 1.4%), Baltimore County (58 or 1.2%), Infontgomery (57 or 1.2%), Carroll (35 or .7%), Baltimore City (16 or .3%), and Frederick (9 or .2%).

These figures give a general picture of where HCC's students came from. However, to accurately depict our penetration rates in each tract, the percent of tract population must be examined. Tables Two, Three, and Four, and the maps in this report look at the percentage of the tract population enrolled at HCC for the fall semester of 1991.

The maps in this report geographically display the data from the tables. They illustrate the relationship between the census tracts and enrollment. This visual display makes it easier to see a relationship or trend that would be easily overlooked in a spreadsheet. The data is divided equally into four ranges or quartiles.

ENROLLMENT BY CENSUS TRACT

Table Two: Enrollment by Census Tract, looks at the fall 1991 credit enrollment at HCC. The table shows the total population of the tracts from the 1990 census and the number of students enrolled at the college from each tract. The percentage of the tract population enrolled at HCC is also shown and was computed by dividing the number of students enrolled by the tract population. Finally, the difference from the average for each tract was computed by subtracting the average tract enrollment percentage for the county (2.29%) from the percent of enrollment for each tract.

Of the 29 inhabited census tracts of Howard County, 18 fell below the 2.29% average tract enrollment. Tract 6021 (Mt. Hebron area) with only 1.30% of its population enrolled, 6012 (Elkridge area) with 1.31%, and 6029 (Hollofield area of Patapsco State Park) with 1.46% were the areas with the lowest percentage of their population enrolled at HCC for the fall 1991 semester. Tract 6066.01 (Thunderhill) had the highest percentage with 4.24% of its tract population enrolled, followed by 6055 (Harpers Choice) with 3.79% and 6066.03 (Oakland Mills) with 3.25%.

Maps 2 and Map 3 were constructed using the enrollment data in Table Two. Map 2 shows the distribution of total student enrollment by census tract. A definite concentration of students can be seen in the tracts that encompass the central Columbia neighborhoods. This supports the commonly held belief that most of the enrollment comes from the area nearest the college. Two of the central tracts, 6066.01 (Thunderhill) and 6067.01 (Allview), did not show this concentration. Tract 6066.01 did not fall in the highest quartile on Map 2 which depicts the number of students enrolled by tract; however, it had a higher percentage of its tract population (4.24%) enrolled than any other tract. Therefore on Map 3, which shows the percent of each tract population enrolled, tract 6066.01 (Thunderhill) was part of the highest quartile. However, tract 6067.01 (Allview) with 1.84% of its population enrolled, still stood out as an area with a lower percentage of its population enrolled than the tracts surrounding it.



As in Map 2, Map 3 shows a clustering of the highest enrolled tracts in the central Columbia area. The areas with the lowest percentage of tract enrolled were in those tracts bordering on other counties. Due to their proximity to these tracts, Community colleges in neighboring counties, may be drawing students from these areas. Tract 6040, the western most inhabited tract in Howard County, fell into the quartile with the lowest percentage enrolled. Interestingly, even though tract 6040 had a relatively high number of students enrolled (146), that number represented a low percentage of the tract population (1.67%). Conversely, some of the tracts in the northeast section of the county with low numbers of students, had a relatively high percentage of their tract population enrolled. For example tract 6027 (the Worthington Elementary School area) with only 35 students enrolled, had 2.1% of its tract population enrolled.

MEAN CREDITS BY CENSUS TRACT

Table Three: Average Credits by Census Tract, contains the data concerning mean credits by census tract or the average number of credits taken by a student in each tract in the fall semester of 1991. The total student enrollment for each tract is listed along with the total mean credits, mean evening credits, and mean day credits. The total mean credits for the county was 6.98 credits. The difference from this average was computed by subtracting the total mean credits for the county from the mean credits for each census tract. This made it easy to see which tracts fell below or above the mean credits for the county. The difference between the mean evening and mean day credits were calculated in the same manner. Map 4, Map 5, and Map 6 were constructed from the data contained in Table Three.

Of the 29 inhabited tracts of Howard County, 14 tracts had higher mean credits than the 6.98 county average. Tract 6040 (Western Howard County) with 8.38 mean credits, 6068.02 (Scaggsville area) 8.33 mean credits, and 6029 (Hollofield area of Patapsco State Park) with 7.74 mean credits, were the areas with the highest mean credits. More than half of the tracts, or 17 tracts, had higher mean evening credits than the 2.61 county evening average. The tracts with the highest mean evening credits were tract 6069.01 (Jessup) with 3.67 mean evening credits, 6026 (Normandy), and 6056 (Hickory Ridge) with 3.01 mean evening credits each. Fourteen of Howard County tracts had higher mean day credits than the county average of 4.35. Tract 6040 (Western Howard County) with 5.74 mean day credits, 6068.02 (Scaggsville) with 5.51 mean day credits, 6069.02 (Savage area) 5.18 with mean credits had the highest mean day credits.

When looking at the distribution of mean credits on Map 4, no particular pattern emerged. However, Map 5, which depicts the mean day credits, clearly shows that some of the outer tracts, particularly in the west and the south, had the highest amount of mean day credits. Interestingly, tract 6056 (Hickory Ridge), the tract which contains Howard Community College, fell into the lowest quartile for mean day credits but the highest for mean evening credits. Other tracts with the highest amount of mean evening credits, with the exception of 6054 (Wilde Lake) and 6029 (Hollofield area of Patapsco State Park), were concentrated in the southeast section of the county, tracts 6012 (Elkridge), 6069.01 (Jessup),



and 6067.03 (Guilford). Tract 6068.02 (Scaggsville area), was the only tract in the highest quartile for both day and evening credits. Tracts 6027 (Worthington area) and 6023.02 (the area containing Howard High School) were in the lowest quartile for both mean day and mean evening credits.

PART-TIME AND FULL-TIME ENROLLMENT

Table Four looks at part-time and full-time enrollment by census tract. Students taking less than 12 credits were considered part-time and those taking 12 or more credits were counted as full-time students. The total tract population, along with the tract enrollment, was included in the table. The percent of the tract enrolled part-time was calculated as a ratio of the number of part-time students to tract population. The percent enrolled full-time was computed in the same manner using the full-time data. The data in Table Four was used to construct Maps 7, 8, 9, and 10.

The tracts with the highest percentage of their population enrolled part-time were 6066.01 (Thunderhill) with 3.22%, 6055 (Harpers Choice) with 2.92% and 6066.03 (Oakland Mills) with 2.54% of tract population enrolled part-time. The lowest percentage of population enrolled part-time was in tracts 6021 (Mt. Hebron) 1.01%, 6040 (Western Howard County) 1.06%, and 6012 (Elkridge) with 1.08%. As with part-time enrollment, tracts 6056.01 (Thunderhill) with 1.01% and 6055 (Harpers Choice) with .86% represented the tracts with the highest percentage of the population enrolled full-time. The tracts with the lowest percentage of enrollment full-time were 6011.02 (the area containing the MD School for the Deaf), 6023.02 (area containing Howard High School) with .2% each and 6012 (Elkridge) with .24%

The geographic location of part-time students and the percent of the tract enrolled part-time are shown on Map 7 and Map 8. As with the total enrollment, Map 7 shows that the highest concentration of part-time enrollment centers around the central Columbia tracts. Also like the total enrollment, tract 6066.01 (Thunderhill) and tract 6067.01 (Allview) were not included in the highest quartile. However, 6066.01 (Thunderhill) was included in the highest quartile when the percent of tract population enrolled part-time was examined on Map 8. Tract 6067.01 (Allview) still remained as an area that had a low percentage of its tract population enrolled. Other areas of low part-time enrollment were those tracts on the eastern edge of Howard county adjacent to Baltimore county.

A comparison of Map 7, Part-Time Enrollment, and Map 9, Full-Time Enrollment, reveals some similarities. The central Columbia tracts represented the area of highest enrollment with tract 6067.01 (Allview) as the exception. The areas of lower full-time enrollment were concentrated in the northeast section of the county, adjacent to Baitimore county. Map 9 and Map 10 indicates that the three western census tracts were well represented in both full-time enrollment and percent of tract population enrolled full-time.



CONCLUSION

The examination of the maps showing the fall 1991 credit enrollment at HCC showed that some interesting patterns emerged. For most aspects of enrollment, the central areas of Columbia showed the highest concentration of student enrollment. On almost every map, tract 6067.01 stood out as being different from the tracts surrounding it. Tract 6067.01 is comprised almost entirely of the neighborhood of Allview, a stable, pre-Columbia neighborhood. Tract 6067.01 also showed differences from its neighboring tracts in the 1990 Census of Housing Report for Howard County, MD (Research Report Number 76, July 1992). This tract had a lower percentage of houses per square mile, a higher percentage of white households, and a higher median value of housing unit than surrounding tracts. The demographics of tract 6067.01 were different from its neighboring tracts and the enrollment data for this tract reflected this difference.

Another recurring pattern was the tendency of tracts adjacent to other counties to be in the lower quartiles of percent enrolled, especially those tracts next to Baltimore, Anne Arundel and Prince Georges counties. The lower enrollment in these tracts, and their proximity to neighboring counties' community colleges, suggest the possibility that residents may have attended institutions outside of Howard county.



TABLE ONE PLACE OF RESIDENCE OF HCC STUDENTS FALL 1991

			% of Total
Census Tract	General Reference Area	Enroliment	Enrollment
6011.01	lichester area, Patapsco St. Park	37	0.8
6011.02	MD School for the Deaf	108	2.2
6012	Elkridge	116	2.4
6021	Mt. Hebron	54	1.1
6022	Turf Valley, Chatham	105	2.2
6023.01	Centennial	286	5.9
6023.02	Howard High School	64	1.3
6026	Normandy	80	1.6
6027	Worthington	35	0.7
6028	Downtown Ellicott City	69	1.4
6029	Hollofield Area of Patapsco St. Park	38	0.8
6030	West Friendship	136	2.8
6040	Western Howard County	146	3.0
6051.01	Brighton, Dayton	137	2.8
6051.02	Fulton	105	2.2
6054	Wilde Lake	272	5.6
6055	Harpers Choice	391	8.0
605€	Hickory Ridge	345	7.1
6066.01	Thunderhill	138	
6066.02	Long Reach	338	
6066.03	Oakland Mills	247	
6067.01	Allview	53	<u> </u>
6067.02	Owen Brown	252	
6067.03	Guilford	82	1.7
6068.01	Kings Contrivance	206	
6068.02	Scaggsville	138	2.8
6069.01	Jessup	72	
6069.02	Savage	103	
6069.03	North Laurel	138	2.8
Unmatched Addr			
Howard C	193		
Prince Ged	145	3.0	
Anne Arur	69		
Baltimore	58		
Montgome	57		
Carroll Co	unty	35	
Baltimore		16	
Frederick	County	9	
Other		10	
Total		4883	100

^{*}Students with unmatched addresses were not included in this report.

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TABLE TWO ENROLLMENT BY CENSUS TRACT HOWARD COUNTY ENROLLMENT - FALL 1991

Census	Tract	Student	% Of Trac	Difference
Tract	Population	Enrollment	Enrolled	From Average
6011.01	2,067	37	1.79	-0.50
6011.02	6,581	108	1.64	-0.65
6012	8,823	116	1.31	-0.98
6021	4,149	54	1.30	-0.99
6022	6,151	105	1.71	-0.58
6023.01	15,482	286	1.85	-0.44
6023.02	3,465	64	1.85	-0.44
6026	3,393	80	2.36	0.07
6027	1,665	35	2.10	-0.19
6028	3,563	69	1.94	-0.35
6029	2,608	38	1.46	-0.83
6030	7,469	136	1.82	-0.47
6040	8,748	146	1.67	-0.62
6051.01	6,239		2.20	-0.09
6051.02	4,757	105	2.21	-0.08
6054	9,421	272	2.89	0.60
6055			3.79	1.50
6056	12,205	345	2.83	0.54
6066.01	3,256	138	4.24	1.95
6066.92	11,637	338	2.90	0.61
6066.03	7,610	247	3.25	0.96
6067.01	2,876	53	1.84	-0.45
6067.02	9,163	252	2.75	0.46
6067.03	3,064	82		
6068.01	8,705	206	2.37	0.08
6068.02				
6069.01	3,976	72		-0.48
6069.02	6,362	103		-0.67
6069.03			1.81	-0.48
Total	187,328		2.29	

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AVERAGE CREDITS BY CENSUS TRACT HOWARD COUNTY ENROLLMENT - FALL 1991

	<u> </u>	M	MEAN	MEAN	MEAN EVENING	MEA	MEAN DAY
Census	Student		Difference		Difference		Difference
Tract	Enrollment	Credits	From Average	Credits	From Average	Credits	From Average
6011.01	37	11	н	2.62		4.35	
6011.02			-1.45	2.64		2.89	-1.46
6012		6.08	06:0-	2.85	0.24	3.22	-1.12
6021	54		-0.03	2.76		4.22	_C.13
6022		7.18	0.20	2.70	60.0	4.51	0.17
6023.01	286		0.13	2.45		4.71	0.36
6023.02		5.61	-1.37	2.41	-0.21	3.23	-1.11
9209	8			3.01	0.40	3.69	99.0-
6027		5.23	-1.75	1.91	-0.70	3.31	-1.83
6028				2.58		4.07	-0.28
6029			92'0	2.74	0.12	5.00	9.0
9030		:		2.48	-0.14	4.50	0.15
6040		8.38	1.41	2.73	0.11	5.74	1.39
6051.01	137			1.93		5.54	1.19
6051.02		6.61	-0.37	2.52	•	4.12	22 .0-
6054			0.08	2.87		4.22	-0.13
6055			-0.18	2.51	-0.10	4.30	90.0-
9209			-0.13	3.01		3.89	9+0-
6066.01	138	7.20		2.64	0.02	4.58	0.23
6066.02			-0.34	2.73		3.91	44.0-
60.66.03		6.91	-0.07	2.68	90.0	4.25	-0.10
6067.01			-0.19	1.89	1	4.98	0.63
6067.02		7.22		2.65	0.04	4.64	0.29
6067.03				2.84		4.45	0.10
6068.01		8.9	-0.16	2.51		4.34	-0.01
6068.02				2.85			1.16
6069.01	72			3.67			-0.47
6069.02			0.54	2.33			0.84
6069.03		7.09	0.11	2.27	-0.34	4.85	0.50
Total				2.61		4.35	00.00

TABLE FOUR

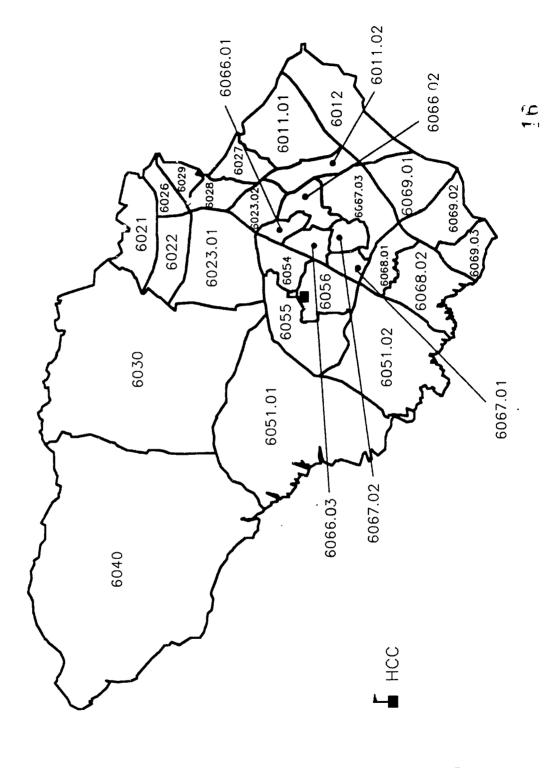
PART-TIME AND FULL-TIME ENROLLMENT BY TRACT HOWARD COUNTY ENROLLMENT - FALL 1991

CENSUS	TRACT	TRACT	NUMBER	% OF TRACT	NUMBER	% OF TRACT
TRACT	POPULATION	ENROLLMENT	PART-TIME	PART-TIME	FULL-TIME	FULL-TIME
6011.01	2,067	37	27	1.31	10	0.48
6011.02	6,581	108	95	1.44	13	0.20
6012	8,823	116	95	1.08	21	0.24
6021	4,149	54	42	1.01	12	0.29
6022	6,151	105	81	1.32	24	0.39
6023.01	15,482	286	213	1.38	73	0.47
6023.02	3,465	64	57	1.65	7	0.20
6026	3,393	80	66	1.95	14	0.41
6027	1,665	35	30	1.80	5	
6028	3,563	69	53	1.49	16	
6029	2,608	38	25	0.96	13	
6030	7,469	136	102	1.37	34	0.46
6040	8,748	146	93	1.06	53	0.61
6051.01	6,239	137	94	1.51	43	0.69
6051.02	4,757	105	82	1.72	23	0.48
6054	9,421	272	206	2.19	66	
6055	10,325	391	302	2.92	89	
6056	12,205	345	271	2.22	74	0.61
6066.01	3,256	138	105	3.22	33	
6066.02	11,637	338	271	2.33	67	
6066.03	7,610	247	193		54	
6067.01	2,876	53	38	1.32	15	
6067.02	9,163	252	187	2.04	65	
6067.03	3,064	82	60	1.96	22	0.72
6068.01	8,705	206	167	1.92	39	
6068.02	5,961	138	95	1.59	43	0.72
6069.01	3,976	72	55		17	0.43
6069.02	6,362	103	72		31	0.49
6069.03	7,607	138	100	1.31	38	0.50
TOTALS	187,328	4,291	3,277	1.69	1,014	0.52

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Howard County

1990 Census Tracts



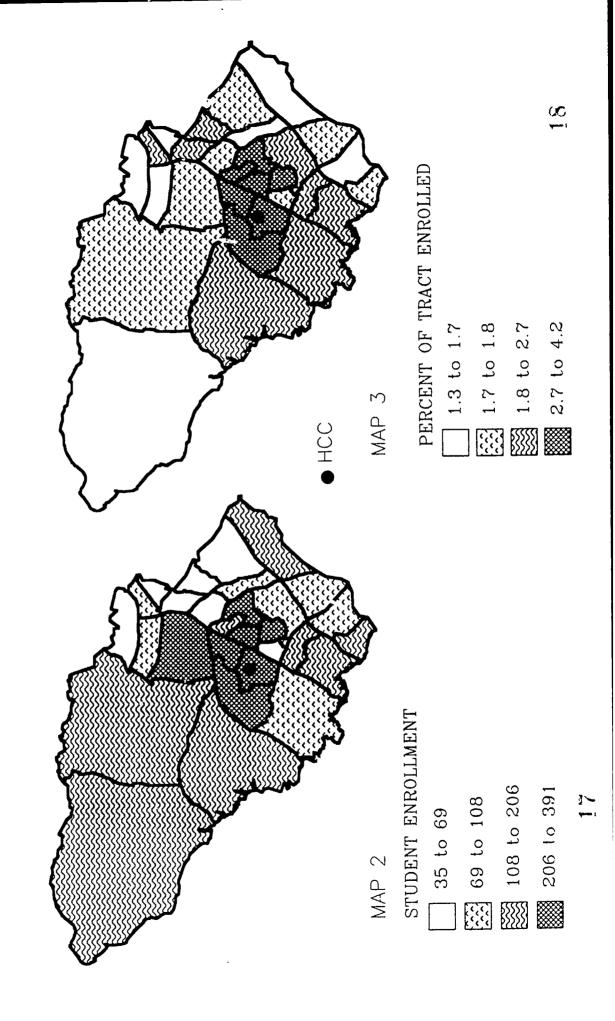
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MAP 1

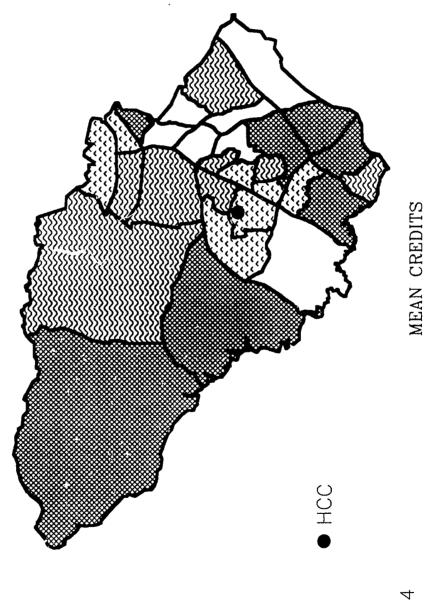
ENROLLMENT BY CENSUS TRACT

HOWARD COUNTY ENROLLMENT - FALL 1991





HOWARD COUNTY ENROLLMENT - FALL 1991 MEAN CREDITS



MAP 4

5.23 to 6.65

6.65 to 6.94

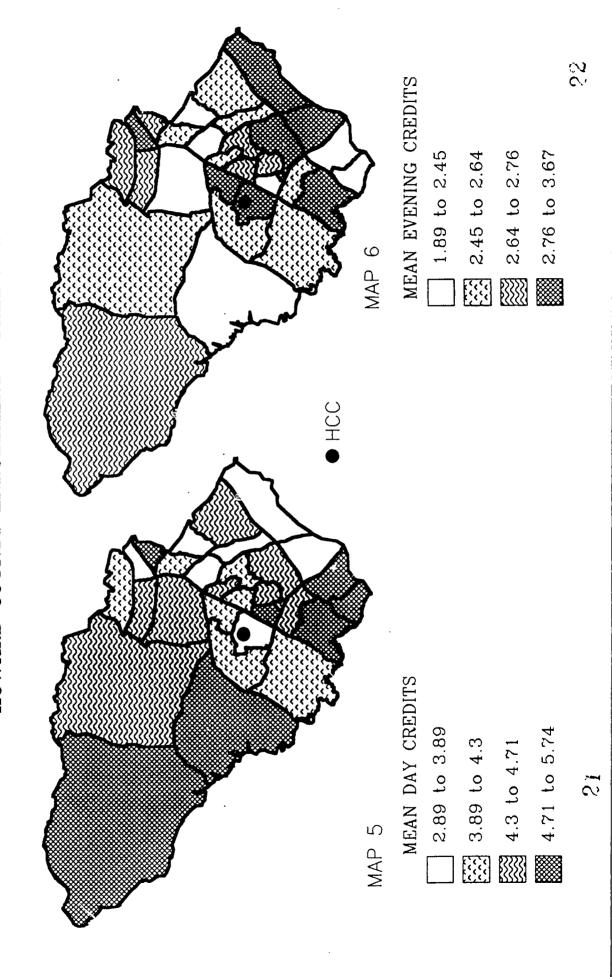
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6.94 to 7.22

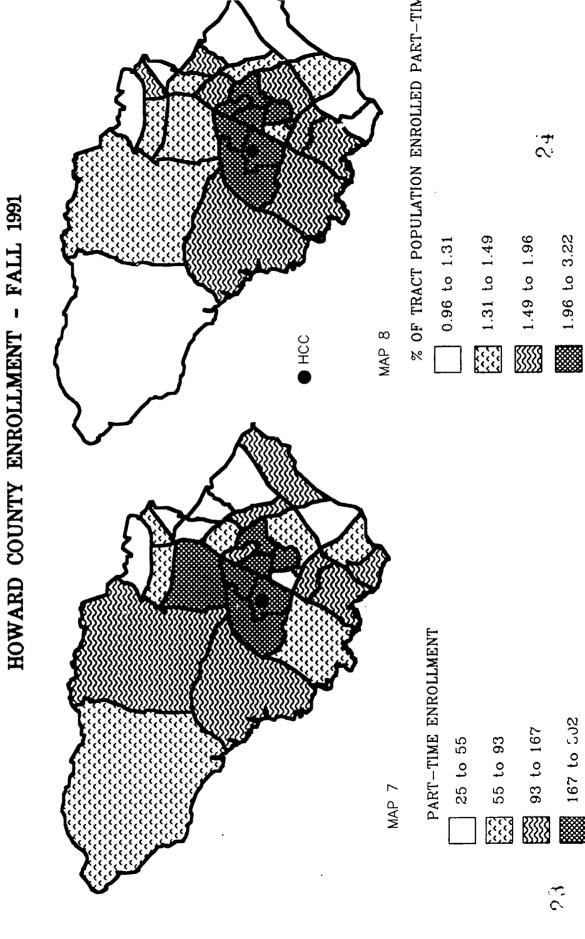
7.22 to 8.38

17.

MEAN DAY AND EVENING CREDITS HOWARD COUNTY ENROLLMENT - FALL 1991



PART-TIME ENROLLMENT





FULL-TIME ENROLLMENT

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HOWARD COUNTY ENROLLMENT - FALL 1991

