Injury control activities in specific communities not specifically initiated by the committees may also be a factor. For example, in one service unit visited during this study, a fence to keep animals from wandering onto the road had been constructed by the State after a lawsuit was filed regarding injury to persons in a vehicle that struck a horse in the road. Documentation of all the factors that could have changed the injury rates was beyond the scope of this investigation, if such documentation is possible from existing records.

IHS is examining its CIC programs in an attempt to accelerate improvement in injury rates. Although some success related to specific injury control activities can be inferred from this preliminary evaluation, it is evident that more precise targeting of activities toward specific hazards is needed. At the current rate of training a few percent of the population annually on a wide range of aspects of the injury problem, a new generation will be born and will grow up by the time the present population is trained, assuming that they were all reachable. A comprehensive surveillance program should reveal specific hazards for amelioration. The logic supporting such a program should be obvious. For example, it makes no sense to distribute friction strips for bathtubs if most injuries from falls occur on icy porches.

Detailed protocols for injury surveillance have been developed, and menu-driven computer programs for data gathering and analysis are being distributed to CIC committees. A cooperative agreement with the Centers for Disease Control, Public Health Service, for demonstration programs has been concluded. These activities could prove to be models in community injury control for the nation.

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Urban AHECs: A Comparison With Rural AHECs

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Synopsis

The first generation of projects in the Federal Area Health Education Center (AHEC) Program was funded in 1972. Those AHEC projects, located in predominantly rural areas, focused on problems that resulted from the geographic maldistribution of health professionals, especially primary care physicians. Education programs for health professionals, students, and practitioners were used to influence the geographic distribution of health professionals and to improve access to and quality of health care for underserved populations. In 1976, the Congress redrafted the law authorizing the expenditure of funds for AHECs and emphasized that improving access to health care in urban underserved areas also was to be addressed by the program.

During the early years of urban AHEC development, it was not clear which lessons learned from rural AHEC experiences could be applied to urban communities and what would be the best focus for AHEC activities in the complex urban environment. Some said that urban areas were so different from rural areas—in economic, racial, and cultural terms and in the subtlety of barriers to health care—as to make the rural AHEC experience largely irrelevant. Others maintained that basic AHEC principles could be applied, regardless of setting, with changes only in tactics to address the problems of the urban inner city. Now that 18 of the total 53 AHECs nationally are urban, and a decade of experience in developing them has been

accumulated, it is appropriate to compare the types of educational interventions supported by AHECs in urban and rural environments and the relative priorities of such programs.

In this report we examine the experiences of the California AHEC System, which includes 17 urban and rural centers and the 9 medical schools with which they are affiliated. Although the AHEC Program concept was found to be equally applicable to both urban and rural settings, significant differences in implementation were noted. Those differences were evidenced both by relative budgets, such as the large expenditures for undergraduate medical education in urban areas and for nursing in rural areas, and by subtler differences in the types of programs developed within budget categories.

IN OCTOBER 1970, the Carnegie Commission on Higher Education published its landmark report "Higher Education and the Nation's Health: Policies for Medical and Dental Education" (*1*). In the report the commission recommended:

> . . . the development of area health education centers in areas at some distance from university health science centers which do not have sufficiently large populations to support university health science centers of their own, and in a few metropolitan areas needing additional training facilities but not full health science centers.

This recommendation was intended primarily to improve access to health care in rural communities that were underserved or had unmet basic health needs. The commission also acknowledged the importance of developing strategies to deal with the needs of urban inner-city areas and concluded that both rural and urban areas need "area health education centers." These centers

> . . . would provide facilities for patient care, often on a referral basis from surrounding areas; education programs for house officers and, to some extent, for M.D. candidates who could rotate through an area health education center from a university health sciences center; clinical experience for allied health students; and continuing education programs for health manpower.

First Generation (Rural) AHECs

Even though the needs of urban areas were recognized from the outset by the Carnegie Commission, the first generation AHEC Programs were focused mainly on rural areas.

On November 18, 1971, the Congress passed Public Law 92-157 of which Section 774, "Health Manpower Education Initiative Awards," provided authorization for the expenditure of public funds "for the purpose of improving the distribution, supply, quality, utilization, and efficiency of health personnel and the health services delivery system . . . ." (*2*).

In 1972 the Department of Health, Education, and Welfare (DHEW) signed contracts with 11 university medical schools to establish AHEC Programs in predominantly rural areas such as North Carolina, South Carolina, Maine, North Dakota, portions of West Virginia, and the central San Joaquin Valley of California. Although AHECs were intended to be multidisciplinary, they dedicated more than half their resources to physician education. Teaching activities were focused largely on the goal of improving physician distribution in remote areas.

A major characteristic of AHECs was that community agencies were involved in decisions on how to allocate funds among competing educational programs. The medical school–community partnership formed by the AHECs flourished in many of the AHEC programs. Those AHEC Programs were examined by the Carnegie Commission and the Secretary of DHEW and were found to be successful in meeting the needs of the target communities (*3,4*). Subsequent legislation placed great value on this partnership concept, and the statute specifically required that the community be represented by a corporate entity (such as a community hospital) and that consumers, providers, and students participate with the faculty in establishing program priorities and allocating resources.

Second Generation AHECs

In 1975, as the Congress reviewed the progress made by the original AHEC projects and prepared to redraft the legislation authorizing expenditure of public funds for such projects, it noted:

The only overall criticism the Committee feels should be directed to the AHEC program to date is that none of the eleven existing AHECs have been directed toward the health manpower problems of inner-city urban areas. The Committee expects that a significant portion of AHECs developed under the new legislation will be designed to influence geographic distribution to these areas (*5*).

In October 1976 the Congress passed Public Law 94-484 (*6*), which included authorization for the development of a new generation of AHECs. This law not only specified that the Secretary should award a significant portion of the funds to develop urban AHECs, but also emphasized the role of the community agencies in allocating resources and enumerated specific program areas to be addressed by each AHEC. The statute specified that not less than 75 percent of the Federal funds must be spent within the AHEC target area by a local agency serving as a subcontractor to the medical school. The law and its implementing regulations identified three classes of AHECs: rural, urban, and statewide. Statewide AHEC Programs could comprise multiple AHECs, some urban and some rural. Others would concentrate on limited urban or rural target areas. Thus, the new statute assured that urban AHECs would be launched in a way that would accentuate the impact of sociopolitical forces on the process of program selection and resource allocation.

Urban AHECs

A debate ensued as to the applicability of the tested, rural AHEC model to the urban environment. The Government held workshops during 1976 and 1977 to consider the issues involved in developing and operating urban AHEC projects. Proceedings of these workshops document the disparate perspectives of several hundred community leaders and education and government officials who debated how to implement the AHEC Program in urban areas (*7*).

The workshop reports reveal that some participants emphasized the special health manpower problems in the inner cities. They stated that social factors—such as racial and ethnic segregation—housing, and economic and political problems related to health needs required new and creative solutions. Consumer education on how to enter and utilize the health care system was a recurrent theme. Some maintained that the AHEC Program should move away from its mission of training health professionals toward experimentation with new modalities of health care delivery and financing.

The first urban AHECs were allowed considerable latitude in formulating an approach to inner-city health care needs. For example, the Hartford, CT, AHEC stressed community consumer education and advocacy and gave reduced emphasis to the training of new health professionals. Even those AHECs that stayed entirely within the boundaries of the AHEC law and regulation gave emphasis to programs of special interest to the inner city, such as the recruitment of students from minority and disadvantaged backgrounds.

Experienced AHEC managers and government officials anticipated differences in the application of the AHEC concept to the inner-city environment. Clark Kerr, Chairman of the Carnegie Council on Policy Studies in Higher Education, applauded this effort to meet new challenges (*3*). In 1980, Eugene Mayer of the University of North Carolina and Mervyn Landay of the University of Medicine and Dentistry (NJ) agreed that the urban setting would offer new challenges that would test the experience of the early AHEC years but that the goals of the program would be the same (*8a*, *8b*). Charles Gessert and Daniel Smith of the Division of Medicine, Bureau of Health Professions, suggested in a 1981 article (*9*) that greater flexibility was needed to permit medical schools to implement programs effectively in a variety of settings. In 1986, 9 years after the first urban AHEC entered its planning year, the federally funded AHEC Program numbers 18 urban centers among the total 53 AHECs that have become operational under Public Law 94-484.

We report in this paper the differences and the similarities between urban and rural AHECs in California.

Methodology

The California AHEC System received Federal funding, starting in 1979, based on an application that described the phased development of 17 centers over a total of 9 years. Each center was scheduled to receive Federal AHEC Program funds for 6 years, distributed as follows: 1 year of planning, 1 year of development, and 4 operational years. The California AHECs were developed on a staggered schedule, with new centers entering their planning years during each of the first 4 years of the California AHEC System (fig. 1).

Figure 1. Urban and rural centers of the California AHEC System matched according to planning, development, and operational years

Rural centers	Funding cycles (fiscal years)			Urban centers
	Planning year	Development year	Operational years	
Superior California (UC-Davis)—15 northeastern counties; northern Sacramento Valley and mountain counties	1979-80	1980-81	1981-85	Drew (UCLA)—inner city Los Angeles (Watts)
North San Joaquin (UC-Davis)—8 counties (San Joaquin Valley and Gold Rush country)	1980-81	1981-82	1982-85	Los Angeles Basin (UCLA)—large portions of Los Angeles County; all of Ventura and Santa Barbara Counties
Riverside-Inland Empire (Loma Linda U)—4 largely desert and mountain counties	1980-81	1981-82	1982-85	South Bay (Stanford)—San Jose and other southern San Francisco Bay Area urban areas
Kern (UC-Irvine)—Kern County at southern end of the San Joaquin Valley	1981-82	1982-83	1983-85	East Bay (UC-San Francisco)—Alameda County, including Oakland, Alameda, and Hayward

NOTE: Riverside-Inland Empire and South Bay began operation at midyear.

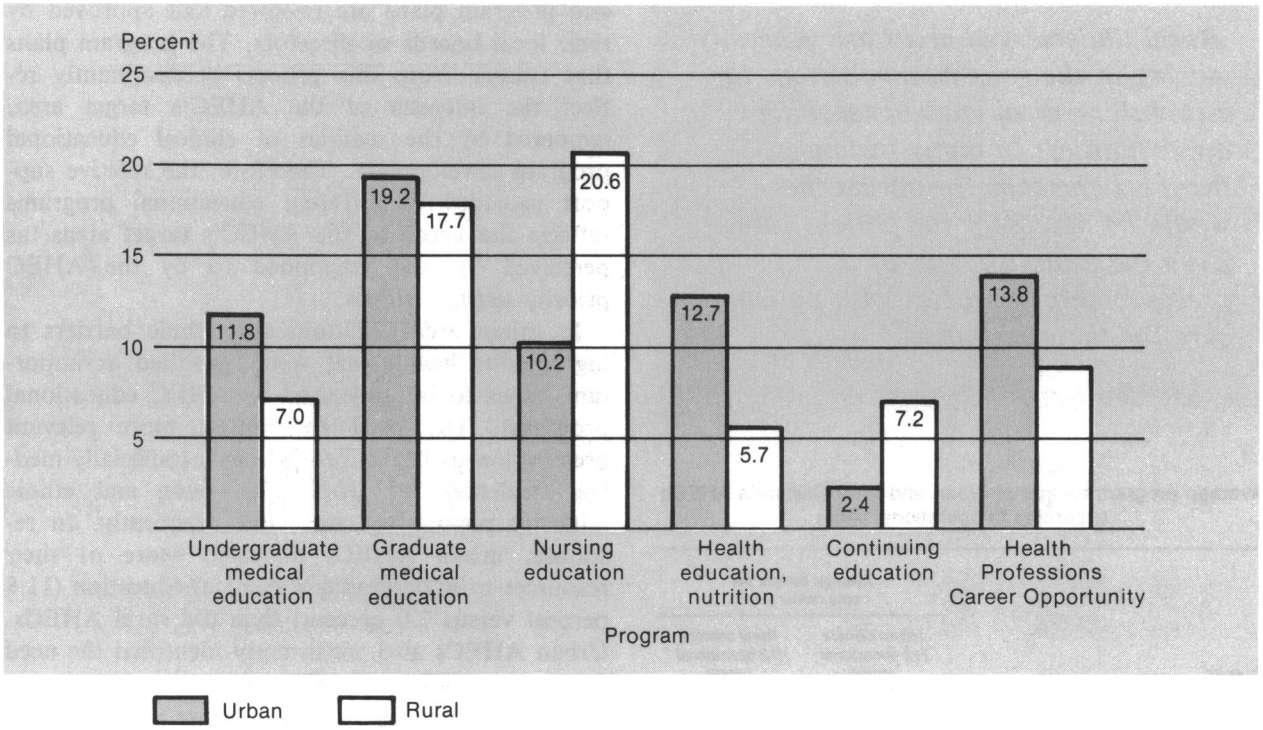
'The first urban AHECs were allowed considerable latitude in formulating an approach to inner-city health care needs. . . . Even those AHECs that stayed entirely within the boundaries of the AHEC law and regulation gave emphasis to programs of special interest to the inner city, such as the recruitment of students from minority and disadvantaged backgrounds.'

The California AHEC System includes centers that have purely urban target areas such as the Southeast San Francisco AHEC, which serves approximately one-third of San Francisco County, and the Drew AHEC in the Watts District of Los Angeles. Other centers serve rural target areas such as the 13 farming and mountain counties of northeastern California, which make up the target area of the Superior California AHEC. Several centers have programs in both rural and urban areas, for example, the Delta-Sierra AHEC. For the purposes of this analysis, purely urban or rural centers were selected and, as illustrated in figure 1, were matched for their year of operation. This attention to year of operation, rather than calendar year, was important to minimize the effects of the planned increments and decrements of Federal support for the centers. The Drew, Los Angeles Basin, South Bay, and East Bay AHECs were chosen as representative of urban AHECs, and Superior California, North San Joaquin, Riverside-Inland Empire, and Kern AHECs were chosen as matching rural centers.

In the California AHEC funding plan, centers are allocated a core budget that varies with their year of planning, development, or operation but that is similar for all AHECs over their 6-year Federal funding cycle. The AHECs compete internally (statewide) for a limited amount of additional support, provided under the Federal contract, based on priorities set by the statewide project office and its advisory groups. Thus, each year urban and rural centers prepare funding-program plans under the same Federal guidelines for a relatively fixed budget.

For the purposes of this study, the annual plans and proposed budgets for operational years of matched urban and rural AHECs within the California AHEC System were compared. These plans reflect direct community input, by way of

Figure 2. Percentages of urban and rural California AHECs' operational year budgets used for selected programs



advisory boards (and, generally, a number of discipline-specific task forces) and the local AHEC's board of directors. Local needs and opportunities for health professions educational programs are weighed, and plans are developed and prioritized with the use of input from the community and the faculties of the professional schools that are to be involved in conducting the educational programs. Program plans must adhere to Federal program requirements but otherwise have great latitude. Program plans were used for this analysis (as opposed to final awards) because they most accurately reflect the priorities established by the community–health sciences center partnership.

The plans and budgets from 12 operational years of four urban centers were averaged, and these averages were compared with those of 12 operational years of four matched rural centers.

Results

The average annual budget for the four urban and four rural AHECs amounted to $374,317 over the 24 operational years included in this analysis. The slightly larger average annual budgets for the urban centers ($386,738 versus $361,896) reflected differences in funds allocated by competitive processes within the California AHEC System. The table demonstrates that approximately 90 percent of those funds were allocated among 13 program areas, with the remaining 10 percent supporting evaluation, manpower planning, administration, and other programs.

Urban and rural centers allocated funds in different ways. The top program priorities were as follows:

Urban AHECs	*Rural AHECs*
Graduate medical education	Nursing education
Health Professions Career Opportunity	Graduate medical education
Health education, nutrition	Health Professions Career Opportunity
Undergraduate medical education	Continuing professional education
Nursing education	Undergraduate medical education

There were considerable differences in resource allocations between urban and rural centers in five of the six largest program areas, with graduate medical education being the exception (fig. 2). In several smaller program areas, dramatic differences were noted, with rural centers allocating more of their resources for National Health Services Corps support (1.9 percent versus 1.0 percent) and library and other learning resources (2.9 percent versus 1.0

'Rural underserved areas are generally lacking in the resources necessary to establish medical student teaching opportunities. In many instances, these are the same resources that would be necessary for patient care. Even the establishment of a preceptorship competes with patient care for these resources.'

Average program budget of urban and rural California AHECs according to operational years

Program	Average budget per operational year	
	Urban centers (12 operational years)	Rural centers (12 operational years)
Undergraduate medical education	$ 45,733	$ 25,228
Graduate medical education	74,206	64,167
Faculty development	11,180	1,662
Nurse practitioner, physician assistant	20,631	13,716
Dental education	14,252	17,423
Pharmacy education	10,269	18,597
Nursing education	39,507	74,388
Allied health	17,151	13,026
Health education, nutrition	49,263	20,608
Continuing professional education	9,148	26,096
National Health Service Corps	3,693	6,933
Library, learning resources	3,894	10,526
Health Professions Career Opportunity	53,210	32,056
Subtotal	$352,137	$324,426
Evaluation, manpower planning, and administration; other programs	34,601	37,470
Total	$386,738	$361,896

percent), while urban centers spent more on faculty development (2.9 percent versus 0.5 percent).

Discussion

The observed differences in resource allocation reflect the differing needs of urban and rural underserved areas and the differences in opportunities to mount educational programs. AHECs use input from their advisory boards and task forces, and program plans are reviewed and approved by their local boards of directors. The program plans that emerge from this process predominantly reflect the interests of the AHEC's target area, tempered by the realities of clinical educational program development. Therefore, the relative support provided to different educational programs reflects the needs of the AHEC's target areas, as perceived by and responded to by the AHEC priority-setting process.

In urban areas, cultural and ethnic barriers to high-quality health care were identified as important issues to be addressed by AHEC educational programs. The need for better, more relevant preparation of health professionals (especially medical students) for work with poor and ethnic minority populations was cited frequently. In response, urban AHECs allocated more of their resources to undergraduate medical education (11.8 percent versus 7.0 percent) than did rural AHECs. Urban AHECs also consistently identified the need for more ethnic minorities in the health professions. This need reflected the larger average absolute number, 507,288, and percentage, 26.9 percent, of underrepresented minorities in the populations in the target areas of the 4 urban AHECs, compared with 167,816 and 17 percent, respectively, in the populations of the rural counterparts. The urban AHECs responded by allocating a larger percentage of their resources to Health Professions Career Opportunity Programs (13.8 percent versus 8.9 percent).

AHEC-supported efforts to attract and retain health professionals in rural areas focus on providing health professions students and residents with satisfying training experience in such places and on providing educational services to reduce professional isolation. The latter include continuing professional education, the development of library and other learning resources, and the provision of support service for National Health Service Corps personnel. In most instances, professional isolation is not as significant a problem in urban areas as it is in remote rural communities, and urban AHECs allocated a smaller portion of their resources to these programs than did their rural counterparts. The most striking difference was found in continuing professional education, which received 2.4 percent of urban AHEC budgets and 7.1 percent of rural AHEC budgets.

Overall, the development of career mobility for nurses was given high priority in California and was especially important to most rural communi-

ties. In general, it was thought that nurses in urban areas had better opportunities for career advancement. Therefore, urban AHECs put only 10.2 percent of their resources into nursing, compared with the 20.6 percent allocated by rural AHECs.

In some instances, the differences in resource allocation between urban and rural AHECs reflect differences in opportunities to conduct training programs. Undergraduate medical education provides an illustration of this difference. In rural AHECs, especially those that have target areas several hundred miles from their affiliated medical school, it is difficult to mount programs that will reach large numbers of students. Underserved communities need physicians, not students. Rural underserved areas are generally lacking in the resources necessary to establish medical student teaching opportunities. In many instances, these are the same resources that would be necessary for patient care. Even the establishment of a preceptorship competes with patient care for these resources. Small hospitals without formal educational programs are in most instances inefficient places to set up clerkships. Therefore, in contrast to urban areas, the development of medical education programs in rural areas must progress through several stages before reaching maturity. In the first stage, continuing medical education programs must be augmented to reduce professional isolation, provide for faculty-community physician interaction, and identify community resources—including local preceptors and potential faculty. In the second stage, graduate medical education programs, which in most instances can be based at a community hospital in the rural area, are developed. Only when the residency programs are in place will the faculty and clinical training sites be able to accommodate medical students in significant numbers.

Even if unlimited support were available, problems with scheduling, transportation, housing, and family life limit the involvement of students in the remote rural rotations. Conversely, in urban areas, many AHECs have supported the development of rewarding medical student experiences in inner-city clinics, where the students are able to work with underserved populations on a longitudinal continuity-of-care basis under the supervision of the medical school faculty. Thus, the opportunity to reach large numbers of medical students is generally greater in urban than in rural target areas and is reflected in larger budgetary allocations to undergraduate medical education (11.8 percent urban compared with 7.0 percent rural).

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