DOCUMENT RESUME

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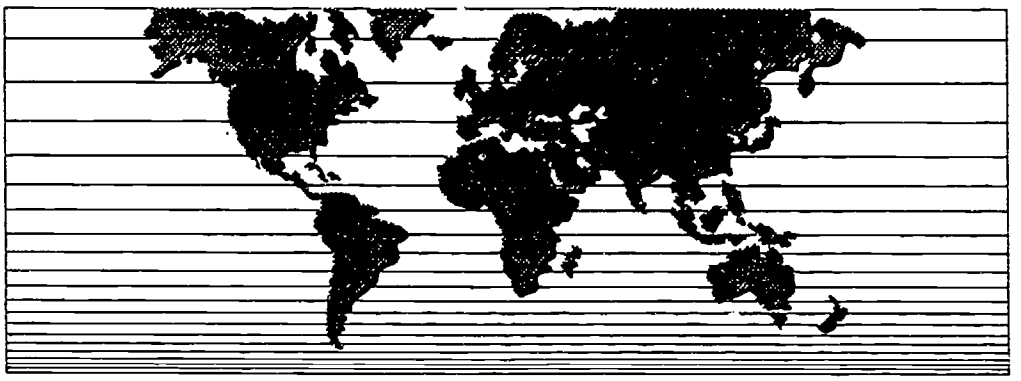
IDENTIFIERS	Ohio; Sinclair Community College OH

ABSTRACT

In the past, environmental scanning reports produced by Sinclair Community College (SCC) in Ohio were designed to provide a brief, eclectic, and provocative overview of major trends and issues likely to influence the development of the institution during the upcoming fiscal year. The 1993 Environmental Scan report speculates about long-term environmental forces affecting SCC to the year 2005. Data presented in the report are organized into the following 11 sections: service area demographics; economic and employment outlook; state higher education policy; access; enrollment; teaching/learning; student support services; human resources; infrastructure; vision and organization; and fiscal outlook. Selected findings include the following: (1) the principal demographic influence on the state and region will be the "middle aging" of baby boomers; (2) shifts in the economy will require individuals with technical, communication, management, and problem-solving skills largely attained through higher education; (3) to face the challenges of global competitiveness, Ohio must reverse its past history of under-investing in higher education; (4) SCC's orientation will shift from providing access to programs and credentials to providing access to knowledge; (5) by the year 2005, SCC's enrollment will increase by over 40%; (6) SCC will transform its focus on teaching to a focus on learning; and (7) digitized electronic technologies for interactive learning will be a major infrastructure consideration. Supplemental information making up more than half the document, consists of data tables and charts. (Contains 32 references to resources and sources.) (PAA)

Environmental Scan:



1993-94 PLANNING/BUDGETING CYCLE

January, 1993

SINCLAIR COMMUNITY COLLEGE

Office of Institutional Planning & Research

NOT Quite the Same Old Environmental Scan Anymore

Each year an Environmental Scan is provided to the Board of Trustees and College budget managers as part of the materials used to initiate the Sinclair's annual planning/budgeting cycle. Those other materials include five-year enrollment projections, basic operational data, and results of the Initiatives for Action sessions. In the past the Scans have provided brief, eclectic, and provocative overviews of major trends and issues likely to influence the development of the institution during the upcoming fiscal year. Scans are not intended to convey either a sense of optimism or pessimism about the future, but rather to reflect that some things may be better, some may be worse, and some will be simply different. Scans have served as internal resource documents for decisionmaking related to program development and forecasting fiscal and enrollment conditions. The 1992 Scan expanded scope of speculation out to the next five years. Undaunted, the 1993 Scan ventures further -- halfway into first decade of the next millennium, the year 2005.

Why this expansion of scope, the planning horizon? It is increasingly clear that in planning for the year ahead Sinclair must chart a course that leads into the future. That future must be based on a vision of what the institution should become in the next millennium which is fast approaching. What we do today and next year and in the remainder of this decade will determine what we will be once the new century is underway. Speculating about the possible long-term consequences of environmental forces affecting Sinclair now should challenge our imaginations and creativity, stimulating us to re-examine what we carry forward from the 1992-93 objectives into the 1993-94 objectives. Should those new objectives be farther reaching or at least more cognizant of whether we are so focused on the here and now that we fail to see outlines of the new Sinclair we are creating with our daily actions?

This 1993 Environmental Scan is only a scenario which speculates about what might be only one version of Sinclair's future. As such it makes a few *basic assumptions* about the College's response to developments in the world around it:

* *The world, nation, state, and region are in the initial stages of a profound economic transformation which will continue through the planning horizon of this document and perhaps up to 10 years beyond the target year of 2005.*

* *With this transformation, knowledge is replacing natural resources and labor as the major capital of the world marketplace.*

* *Organizations will be the principal vehicles whereby specialized knowledge is integrated into common tasks.*

* *Organizations will organize for innovation, seeking to acquire new knowledge and actually planning for the abandonment of successful products, practices, and policies as they strive for continuous improvement.*

* *In responding to this transformation process, Sinclair will transform itself through continuous improvement.*

* *This future scenario is Sinclair's to create. Business as usual will not make it happen. The College cannot achieve the projected level of enrollment or serve the anticipated needs of a transformed economy without deliberate efforts to make strategic choices about its future and commit resources accordingly. As an organization, learn how to manage change if it is remain vital in the world to come.*

As Sinclair plans for a new fiscal year, the search for a future vision will be very much in the forefront of planning activities. Hopefully, this document will stimulate you to envision a future for your own unit and to consider how that vision for your unit might contribute to the continuous improvement of the College. For even though an overall vision for Sinclair's future may not emerge during the coming year, it should be apparent that we all want the future to be an improvement on both the present and the past.

The following categories are used to organize the 1993 Environmental Scan:

* Service Area Demographics
* Economic and Employment Outlook
* State Higher Education Policy
* Access
* Enrollment
* Teaching/Learning
* Student Support Services
* Human Resources
* Infrastructure
* Vision and Organization
* Fiscal Outlook

INTO THE NEXT MILLENNIUM:
Possible Consequences of Trends and Issues Likely to Influence Sinclair's Future by 2005

Service Area Demographics

* Ohio in general and the Miami Valley in particular will experience slightly reduced population levels during the planning horizon. This will be in contrast with the nation as a whole which will experience accelerated growth compared to 1980s due to higher levels of immigration, increased fertility rates, and greater longevity.

* Minority populations will continue to grow in the metropolitan area, exceeding somewhat their current 20% level due principally to higher (but not necessarily increased) fertility rates. Immigration will contribute to a greater presence of Asians and Hispanics in the area, but that trend will not approach the influence it will have nationally or in other regions of the country. While nationally the Hispanics will be on their way to out-numbering (by 2015) African Americans as the nation's largest minority, African Americans will remain by far the predominant minority in the Miami Valley. Significant racial segregation will continue to characterize residential neighborhoods and public school systems.

* Greater decentralization of population, accelerated by and in turn triggering more decentralization of economic activity, will continue in the region. Stabilization of the inner city population will be due as much to the increased concentration of disadvantaged groups in affordable older housing as to the attraction of the middle class to rehabilitated neighborhoods. Older suburbs will experience more of the stresses of the inner city as their housing stock ages and will be preoccupied with the concerns of senior citizens in independent living situations. New development will shift out of Montgomery County into Greene, Miami, and Warren counties.

* As will be true for the nation as a whole, the principal demographic influence on the state and region will be the "middle aging" of the Baby Boom. By the turn of the century, the 40-59 age group will constitute 27% of the metropolitan Dayton population compared to 23% in 1990 while the proportion of those in the 15-29 age group will be only 19% compared with 23% in 1990. This middle aging trend will accelerate as the new century begins, with the state and the region reflecting a greater proportion of older age groups than will be the case nationwide.

* This middle-aged society will:
  value time as its most precious commodity
  spend more on health care
  want quality
  be more concerned about security
  ask for information
  place personal comfort as a higher priority
  demand less clutter
  save more
  decrease partisanship
  be more experience-oriented
  foster activist consumers
  have more home computers
  move less
  look to prolong youth.

Service Area Demographics (cont.)

* Higher education will be challenged as never before to gain the support of an aging population in an increasingly competitive public policy arena. Will an older population that is better-educated (but more distracted by competing public policy priorities) than preceding generations reverse the trend of declining support for and enrollment in higher education that has historically been true among older age groups? Higher education will be faced with balancing accountability and service to an older population with stronger demand from youth for post-secondary opportunities.

Economic and Employment Outlook

* During the planning horizon, the local and state economies will be in the throes of fundamental transformation as both adapt to competing in a global market where knowledge has emerged as the principal capital for economic activity.

* Since this transformation will likely extend yet another ten years beyond the planning horizon, there will be a high degree of uncertainty and flux which mitigate against business and public policy decisions that assume sustained economic growth.

* Ohio and the Miami Valley will continue to have greater concentrations of manufacturing than the nation as a whole. Retaining a competitive advantage in the manufacturing sector will be tied to the extent to which those industries meet or exceed world standards for quality which thus offset the disadvantages of higher production costs. The restructuring necessary to attain this competitive advantage will result in a net loss of manufacturing jobs, particularly in the automotive industry. The manufacturing which remains will be tied to worldwide operations influenced primarily by global rather than national issues.

* As will be the case nationally, local employment growth during the planning horizon will be fueled principally by the "other" services area of the economy: health services, business services (especially computer and data processing), education (perhaps less so locally due to a lack of population growth), legal services, engineering and management firms, and social services. This is that area of the overall services sector which fueled the job growth of the '80s and the only one to experience job increases during the 1989-92 recession (even though those increases did not offset the loss of both managerial/professional and blue collar jobs in the manufacturing sector).

* The structural shifts in the economy will require individuals with technical, communication, adaptability, management, problem-solving, and influencing skills largely attained through higher education. Most jobs in the other services fields will require these skills, so colleges and universities will be viewed more than ever as fundamental infrastructure for the formation of the very capital (knowledge) which underlies the global economy.

* There will continue to be job growth at the opposite end of the educational continuum of the overall services sector as well during the planning horizon. The emergence of the bimodal workforce will become more apparent as jobs in the middle economic range continue to decline while higher and lower end jobs expand. A key role for higher education in this respect will be to prepare women and minorities, who will constitute the majority of new workers entering the labor force, for increased representation in high end jobs.

Economic and Employment Outlook (cont.)

* If it is to retain public support, Sinclair will need to play a major role in assisting with the profound transformation in the economy and the workforce which will be underway during and continuing beyond the planning horizon . Finding its appropriate niche among a growing number of highly competitive knowledge providers spawned by this transformation will be critical to the success with which Sinclair fulfills its mission.

State Higher Education Policy

* As it faces up to the challenges of global competitiveness, Ohio will recognize that it must reverse its past history of under-investing in higher education if it is to halt the decline in personal income its citizens have suffered in the last half of the 20th century.

* Future state investment in higher education will be guided by the following priorities:
  Meeting the diverse needs of students and optimizing their achievement
  Assuring excellence in academic programming
  Increasing productivity and reducing costs
  Ensuring accountability
  Strengthening leadership and management effectiveness
  Securing resources to make higher education affordable.

* Service expectations of lower division institutions will include
  A range of career/technical programs which prepare citizens for employment in a specific career at the technical or paraprofessional level
  Commitment to an effective array of developmental education services which provide meaningful opportunities for the enhancement of academic skills
  Partnerships with industry, business, government, and labor for training and retraining the workforce and the economic development of the community
  Non-credit continuing education opportunities
  Transfer programs which permit the completion of lower division requirements for the completion of a baccalaureate degree
  Linkages with high schools to ensure that graduates are adequately prepared for post-secondary instruction
  Student access and program quality provided at an affordable price and at a convenient schedule
  A high level of community involvement in decisionmaking in such critical areas as course delivery, range of services, fees and budgets, and administrative personnel.

Access

* The historical community college concept of access will shift from one of primarily extending lower division programs and credentials to underserved groups to one of providing universal access to knowledge. Knowledge will be the new capital (primary resource) of 21st century society, and securing access to knowledge will be viewed as the key to how individuals as well as economic, social, and political units achieve their goals of economic and social advancement as well as personal enrichment.

* Sinclair will continue to operate as a single-campus institution in downtown Dayton with satellite locations in its current service area.

Access (cont.)

* Properties adjoining the campus will continue to be evaluated for acquisition as feasible opportunities arise.

* Convenient public transportation, adequate parking, adaptability for the disabled, and assurance of safety and security will continue to be dominant concerns with respect to physical access to College facilities.

* The campus and its satellite locations will have interactive telecommunications links with each other and with worldwide locations from which learning opportunities will be transmitted.

* Instructional delivery, no longer constrained by traditional classroom locations and times, will increasingly focus on tailoring "portable" learning opportunities customized for individual needs that give students maximum flexibility in achieving their goals.

* Sinclair will serve a not only more diverse mix of students, but also community groups of varying ages and cultures in need of a wide variety of lifelong learning opportunities.

* As Sinclair's orientation toward access shifts toward providing access to knowledge, it will face significant competition from a host of other knowledge providers that will attempt to provide access to wider and/or specialized bodies of knowledge through more efficient, faster, and convenient modes of delivery. Sinclair will be challenged to find an appropriate niche in this new, highly competitive knowledge marketplace.

Enrollment

* By 2005 Sinclair's headcount enrollment will grow to 28,500 an increase of over 40% from Fall 1992. FTE enrollment will be in excess of 14,000 by then, an increase of nearly 30% over Fall 1992.

* While the student body will continue to remain predominantly part-time, the balance between part-time (1 to 11 credits) and full-time (12 or more credits) will shift somewhat during the planning horizon, perhaps as much as from the current 70% part-time/30% full-time ratio to 65% part-time/35% full-time.

* Growth in full-time student enrollment (and heavier student credit loads) will result from two factors: greater proportions of recent high school graduates choosing to start their college education at Sinclair, and larger numbers of working adults participating in intensive re-training programs sponsored by government and/or private industry that operate on collapsed, short-term schedules.

* A greater proportion of the student body, perhaps as much as 20% (twice the current proportion), will be individuals who have already earned baccalaureate or even graduate degrees. The bulk of such students will be part-timers, although a significant number as well will be among the ranks of those older full-time students enrolled in intensive re-training programs that operate on collapsed, short-term schedules.

Enrollment (cont.)

* The student body will be somewhat younger by the end of the planning horizon, shifting from an average age of 31 to perhaps 29 because of an upturn in the number of recent high school graduates and the College's greater share of that portion of the market. Partnerships such as Tech Prep with area secondary schools will enhance Sinclair's share of this youth market.

* Minority enrollment will continue to increase at a somewhat faster rate than overall enrollment. If current trends continue, by the end of the planning horizon, minorities could constitute as much as 1/4 of the total enrollment. The growth in minority enrollment will come more from recent high school graduates attending full-time than from older adults attending part-time.

Teaching/Learning

* By the end of the planning horizon, Sinclair will have made major progress toward transforming itself from teaching to learning, essentially re-focusing from the teacher-to-student transmission of knowledge to emphasizing and encouraging self-directed learning on the part of the student. The teacher will have become the facilitator who often as part of an instructional team which empowers students to manage their own learning through a wide variety of alternatives to traditional teaching. Instruction will focus less on the content of knowledge and more on the process of acquiring and managing knowledge. Use of community service internships to augment student learning will increase.

* The teaching/learning process will be carried on through a variety of interactive technologies that accommodate individual learning styles, life situations, personal objectives, collaborative group learning, and team teaching which transcends the constraints of location, time and individual capacity. Faculty will rely on alternatives to traditional teaching methods to facilitate students' acquisition and management of knowledge.

* College curricula will be organized to impart five competencies:
  Resources: the student can identify, organize, plan, and allocate time, money, material and facilities, and human resources.
  Interpersonal: the student can participate as a member of a team, teach others new skills, serve clients/customers, exercise leadership, negotiate agreements regarding the exchange of resources and the accommodation of divergent interests, and work.
  Information: the student acquires and evaluates information, organizes and maintains information, interprets and communicates information, and uses computers to process information.
  Systems: the student understands complex inter-relationships, monitors and corrects performance, and improves or designs systems.
  Technology: the student works with a variety of technologies, including the selection of appropriate technologies, the application of technologies to tasks, and maintaining and "troubleshooting" equipment.

Teaching/Learning (cont.)

* College curricula will no longer be dominated primarily by discreet lower division programs and credentials but will focus as well on facilitating the student's efforts to expand her/his knowledge in a wide variety of fields. The traditional orientation toward pre-service preparation for employment in occupations or preparation for upper division majors will be increasingly challenged by an orientation toward specialized knowledge that permits career change and/or mobility as well as personal enrichment. Consequently, in developing new curricula the College will find itself trying to balance the needs of students who have little or no previous collegiate education with those of students who have baccalaureate or even graduate degrees. The demand to specialize beyond the preparatory level and to provide offerings focused on the needs of those with more sophisticated levels of knowledge in various fields will accelerate.

* In order to accommodate Sinclair's transformation from teaching to learning, instructional spaces will have to accommodate a wider variety of instructional situations, ranging from large groups to individual consultations. Accommodating all of these situations will include ready access to a host of interactive technologies that permit faculty to facilitate student learning in both off- and on-campus settings, often even simultaneously.

* Instructional scheduling will be challenged to accommodate both classroom teaching and one-on-one learning. Accommodating the former will involve offering programs and degree tracks on weekends and at other unconventional times while the latter will give faculty greater flexibility with regard to how they schedule and manage individualized learning situations.

Student Support Services

* Finite limits with respect to the extent to which student support services can be delivered at varying times and locations will force a greater reliance on interactive electronic approaches to meeting students' needs through methods that transcend the traditional constraints of location and time.

* Registration, payments, financial aid, assessment testing, advising, counseling, and learning resource materials will be provided to students through new technologies on an individualized and even remote basis with immediate confirmation of completed transactions.

* Just as new technologies will challenge facilities to be more flexible in accommodating a wider variety of instructional situations, a similar degree of flexibility will be required for those areas where student support services are housed. With student support services, the critical issue will be increasingly how, when and where to retain an appropriate degree of personal contact with the student in providing support services.

* A greater proportion of full-time, younger students coupled with increased enrollments and a larger campus area will create greater need for additional locations for student and auxiliary services.

* The use of community service employment as forgiveness for educational loans will lead to a re-structuring of student financial aid programs in light of the need to monitor such activities. Where such employment is also used for teaching/learning purposes, faculty will become partners in the operation of financial aid programs.

Human Resources

* Sinclair will devote greater time, money, and effort to the development of its human resources. Investing in the continual improvement of its human resources will be the principal means by which the College maintains its niche among a growing number of competing knowledge providers.

* Deployment of staff will be restructured to recognize the need for development opportunities. The evolution of more flexible instructional practices, settings, and roles as well as greater reliance on technologies will be the key to this restructuring. Professional development will be an integral, routine part of every job rather than an occasional extra assignment. Each employee will have professional growth responsibilities as part of her/his job.

* The College will operate resource centers for employees which provide assistance the development and improvement of a wide variety of learning materials and instructional practices as well as training in the use of technologies which enhance productivity.

* A major emphasis of the College's continuous improvement of its human resources will be in assisting employees to deal with change. The capability to understand and adapt to change and to learn how to harness it as a force for continual improvement will be a distinctive feature of the College's workforce as it enters the 21st century.

Infrastructure

* Digitized electronic technologies that permit interactive learning and include high definition image transmission will be the major infrastructure consideration for the College during the planning horizon. Retrofitting existing facilities to accommodate the changing nature of instructional spaces, will dominate facilities planning.

* Facilities planning will continue to be concerned as well with maintaining the integrity of the current infrastructure -- roofs, pavement, grounds, HVAC, plumbing, etc. Reliance on new electronic technologies to monitor the conditions of traditional, as well as new infrastructures, will increase and form the basis for scheduled maintenance activities.

* Design/adaptation of infrastructures to accommodate the physically disabled and to provide enhanced personal security for students, employees, and visitors will be more dominant in College decisionmaking by the end of the planning horizon.

* Meeting the need for more flexible scheduling of instruction and student support services will require expanded availability of campus and perhaps even some off-campus facilities. Maintaining adequate infrastructure support for such activities will challenge the College to devise greater operating efficiencies while trying not to compromise quality.

* Environmental regulations will increasingly challenge the College in various respects: waste recycling and reduction, control of hazardous materials, and alternatives to the automobile travel for students and employees commuting to and from the campus. Maintenance of existing and development of future facilities will be required to address these considerations.

* Employee work stations will have to accommodate new multi-facted, interactive electronic technologies as well as reflect greater accommodation to advancements in human factors engineering and ergonomics.

Vision and Organization

* A central vision of what constitutes quality at Sinclair will emerge as the basic organizational touchstone of the institution. Ensuring the integrity of that vision will be recognized as the basic responsibility of all employees.

* Sinclair's vision of quality will be that of an organization which empowers learners with the processes for acquiring and managing knowledge which in turn will enable them to utilize society's new capital (knowledge) to achieve economic and social advancement as well as personal enrichment.

* A new style of leadership will emerge for the achievement of the central vision. Successful leaders will:
  Believe in the enterprise, thus inspiring a loyalty born of commitment to the vision.
  Give purpose to the enterprise, recognizing actions and individuals who further the vision.
  Set standards by listening to those the organization serves, thereby analyzing obstacles to meeting those standards and devising strategies for overcoming them.
  Communicate often and effectively, establishing trust in the decisionmaking process.
  Teach the enterprise to succeed, coaching its employees to achieve personal and professional goals which help the organization as a whole grow in confidence.

* Hierarchial organizational structures will give way to an array of "self-managed" functional teams engaged in shared, collaborative decisionmaking about issues pertinent to the central vision of the institution.

Fiscal Outlook

* The current practice of basing state subsidy on FTE enrollment will be seriously challenged during the planning horizon and consequently modified due to continuing fiscal pressures, other competing public policy priorities, and changing ways for the delivery of instruction.

* Sinclair will be forced to maximize the operating efficiency of existing facilities. The likelihood of state fiscal support for any new facilities will be at best marginal and, should such support be forthcoming, it will not be at the higher pre-recession levels.

* Since personnel costs represent over 75% of the current College operating budget, SCC will rigorously evaluate staffing needs in light of the promise of more efficient, effective instructional delivery systems.

1990 United States Census

American Demographics

Area Progress Council, *Labor/Management Relations Committee Report*, Dayton, Ohio

Benchmark Ohio, School of Public Policy & Management, The Ohio State University, Columbus, Ohio, 1991

Carothers, Robert L., "Translating Quality for the Academy", *AAHE Bulletin*, pp. 6-10, vol. 45/no. 3, November 1992

Community College Week, Cox, Matthews & Associates, Inc.

Dayton Area Chamber of Commerce

Dayton Daily News

Drucker, Peter F., "The New Society of Organizations," *Harvard Business Review*, pp. 95-104, vol.70/no. 5, September-October 1992

Economic & Social Imperatives for Ohio, Ohio Board of Regents, 1988

Employment Outlook Survey, 1st quarter 1993, Manpower, Inc.

Future Vision, Sourcebooks Trade, 1991

John Naisbitt's Trend Letter

Learning a Living and *What Work Requires of Schools*, The Secretary's Commission on Achieving Necessary Skills, U.S. Department of Labor, April 1992

Miami Valley Regional Planning Commission

Milestone One: a Synthesis Report, College of Education & Human Services, Wright State University

"Move Over, Boomers", *Business Week*, no. 3297, 14 December 1992

NACUBO Business Officer, National Association of College & University Business Officers

Occupational Projections and Training Data, U.S. Dept. of Labor, Bureau of Labor Statistics, May 1992

Ohio Data Users Center, Columbus, Ohio

Ohio Labor Market Projections, 1988 - 2000, Ohio Bureau of Employment Services

Ottinger, Cecilia, "What is the Service Sector?", *Research Briefs*, vol. 3/no. 4, American Council on Education

Outlook 1990 - 2005, U.S. Dept. of Labor, May 1992

Outlook '93, recent forecasts from *The Futurist Magazine*, The World Future Society

Patten, Joan E., Research Associate, Sinclair Community College

Sales & Marketing Management, 26 October 1992, Bill Publications

Securing the Future, Ohio Board of Regents, December 1992

Sinclair Community College Environmental Scanning Team

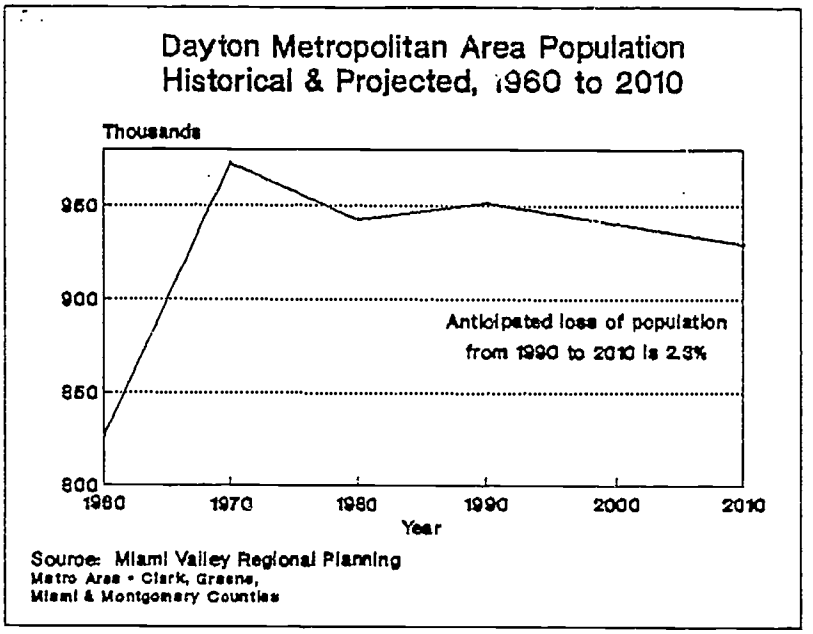
TERM(Technical Education Resource Monitor), Atlanta Information Services, Inc., 1992

The Chronicle of Higher Education

The Kiplinger Washington Letter

Wall Street Journal

SUPPLEMENTAL INFORMATION

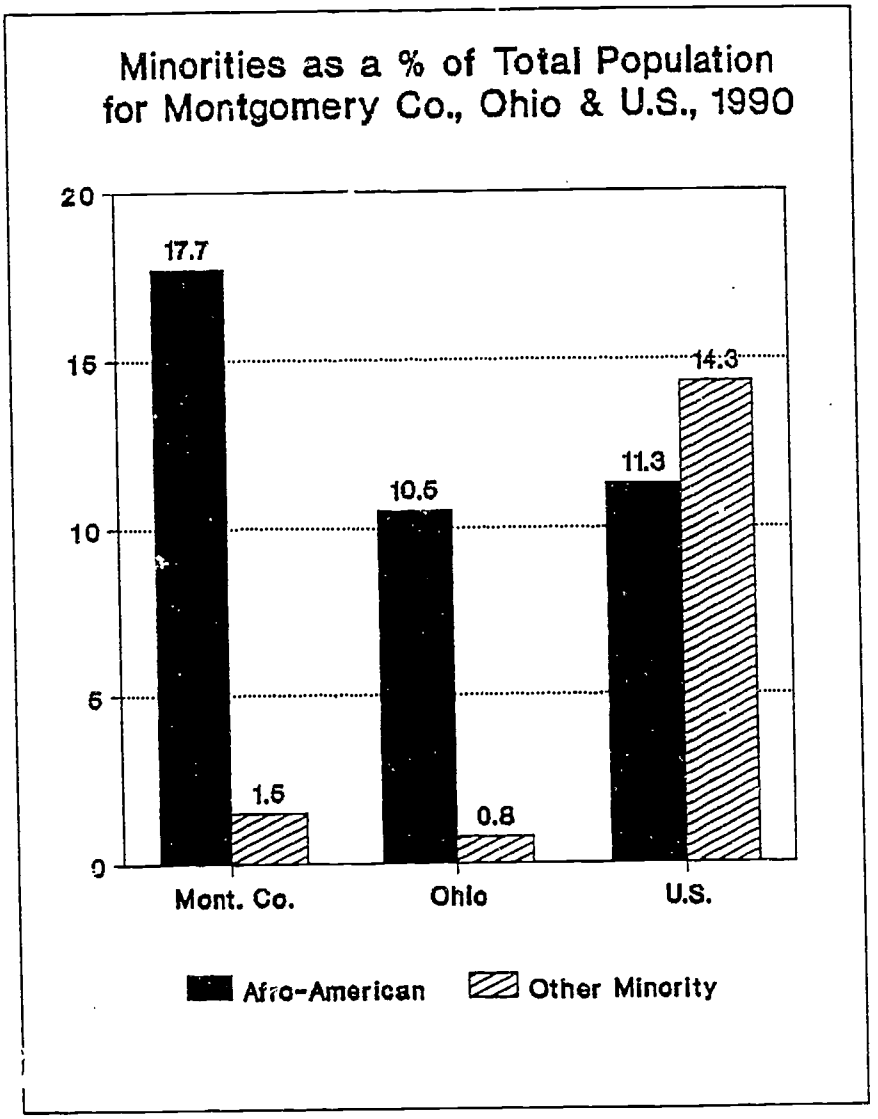


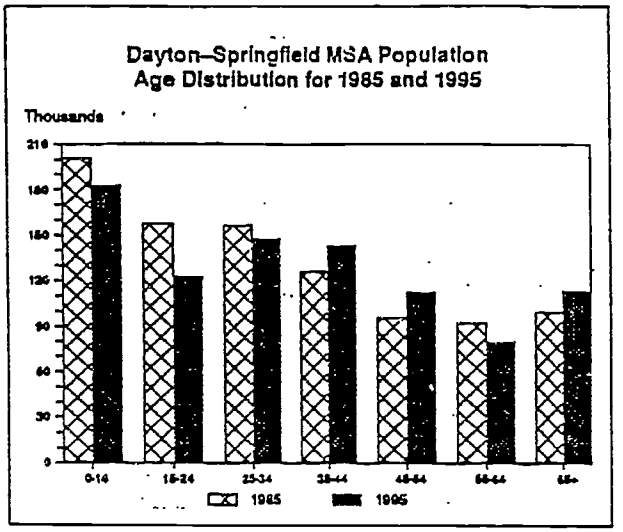
Ohio's Resident Population Projected Size, 1989-2010

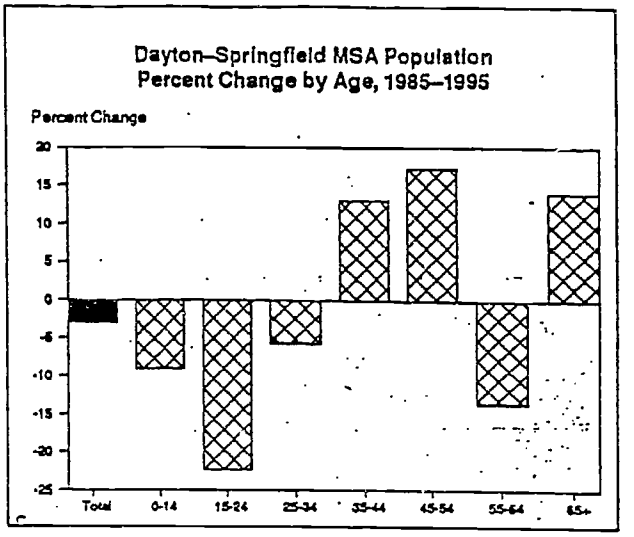
Year	Resident Population[1] (1000)
2010	10,397
2005	10,510
2000	10,629
1995	10,742
1990	10,791
1989	10,787

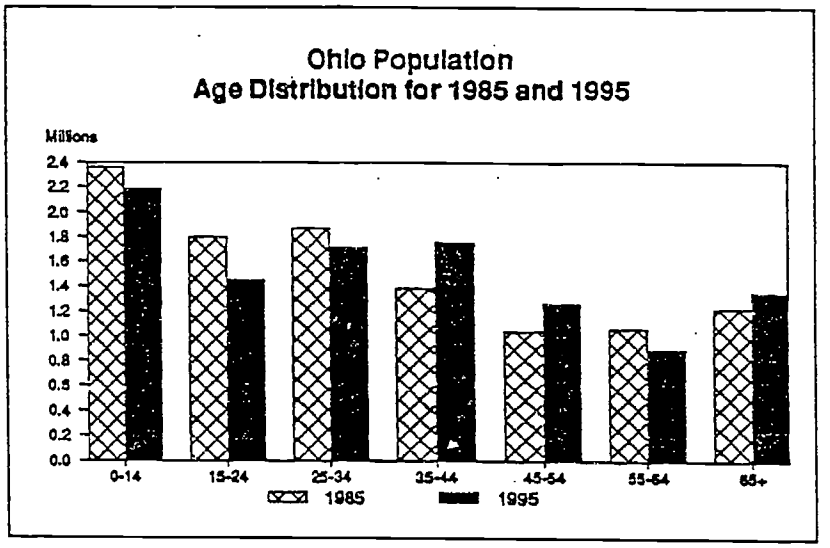
[1] Civilians and military personnel who usually reside in Ohio.

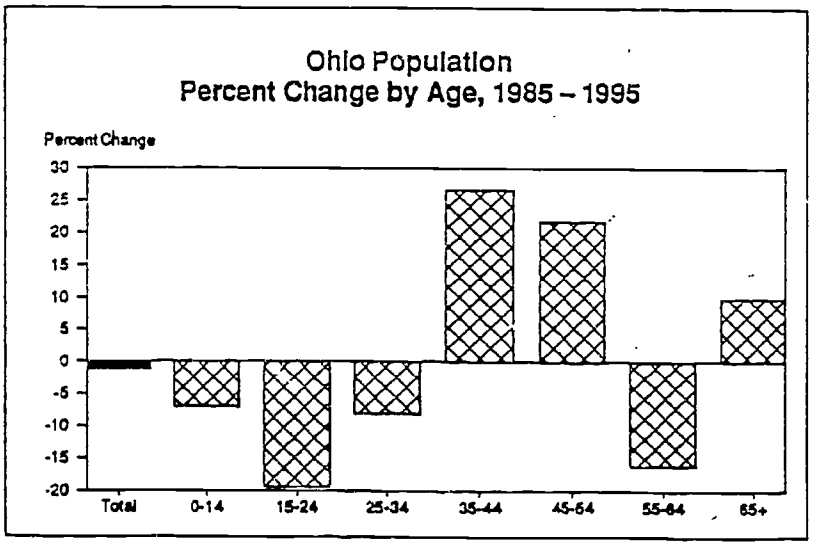
Source: U.S. Bureau of the Census, *Current Population Reports*, Series P-25, No. 1017.


Minorities as a % of Total Population
for Montgomery Co., Ohio & U.S., 1990
20
15
10
5
0
17.7
1.5
10.5
0.8
11.3
14.3
Mont. Co.
Ohio
U.S.
Afro-American
Other Minority


Dayton–Springfield MSA Population
Age Distribution for 1985 and 1995
Thousands
0-14
15-24
25-34
35-44
45-54
55-64
65+
1985
1995


Dayton–Springfield MSA Population
Percent Change by Age, 1985–1995
Percent Change
Total
0-14
15-24
25-34
35-44
45-54
55-64
65+


Ohio Population
Age Distribution for 1985 and 1995
Millions
0-14
15-24
25-34
35-44
45-54
55-64
65+
1985
1995


Ohio Population
Percent Change by Age, 1985 – 1995
Percent Change
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15-24
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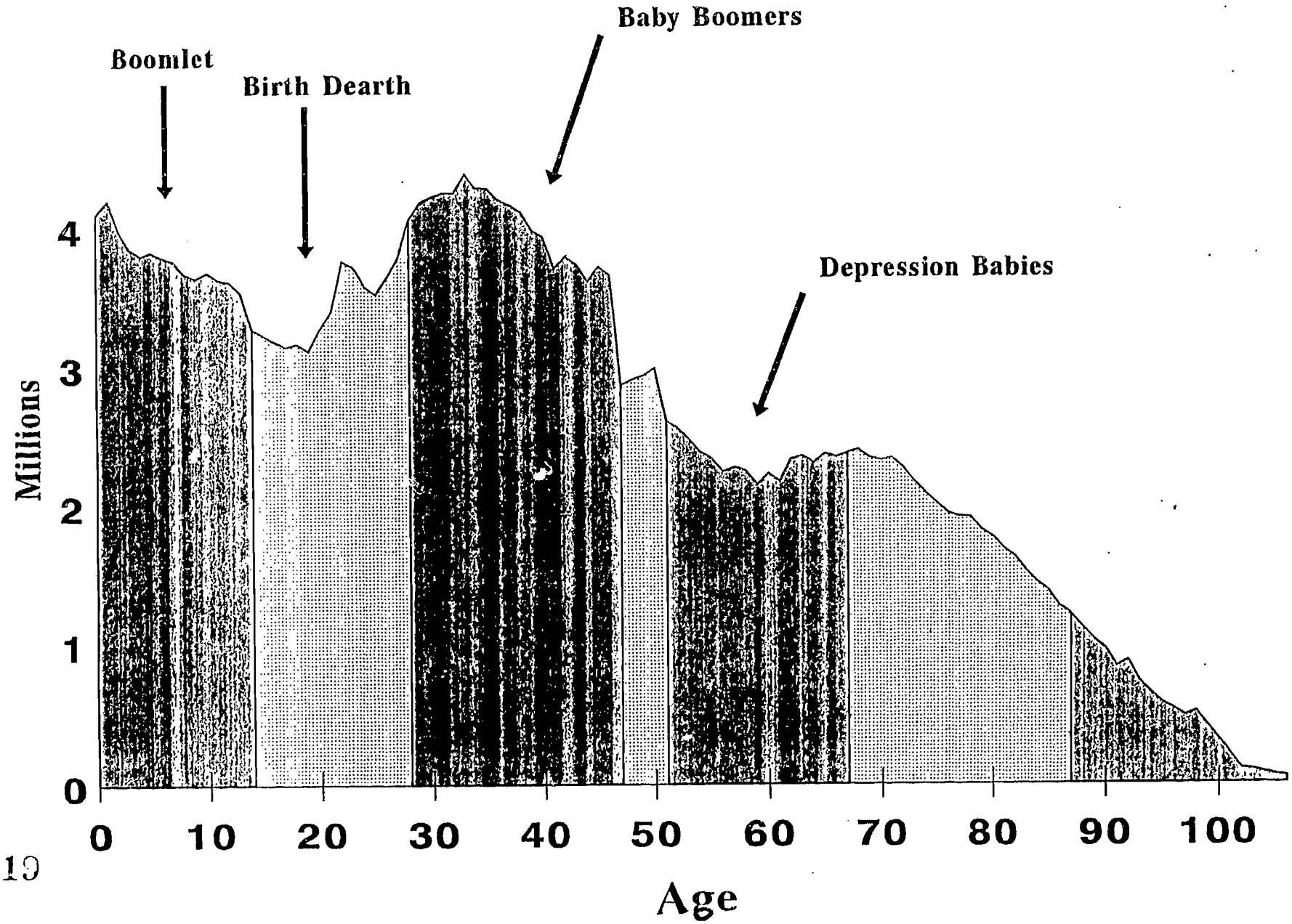
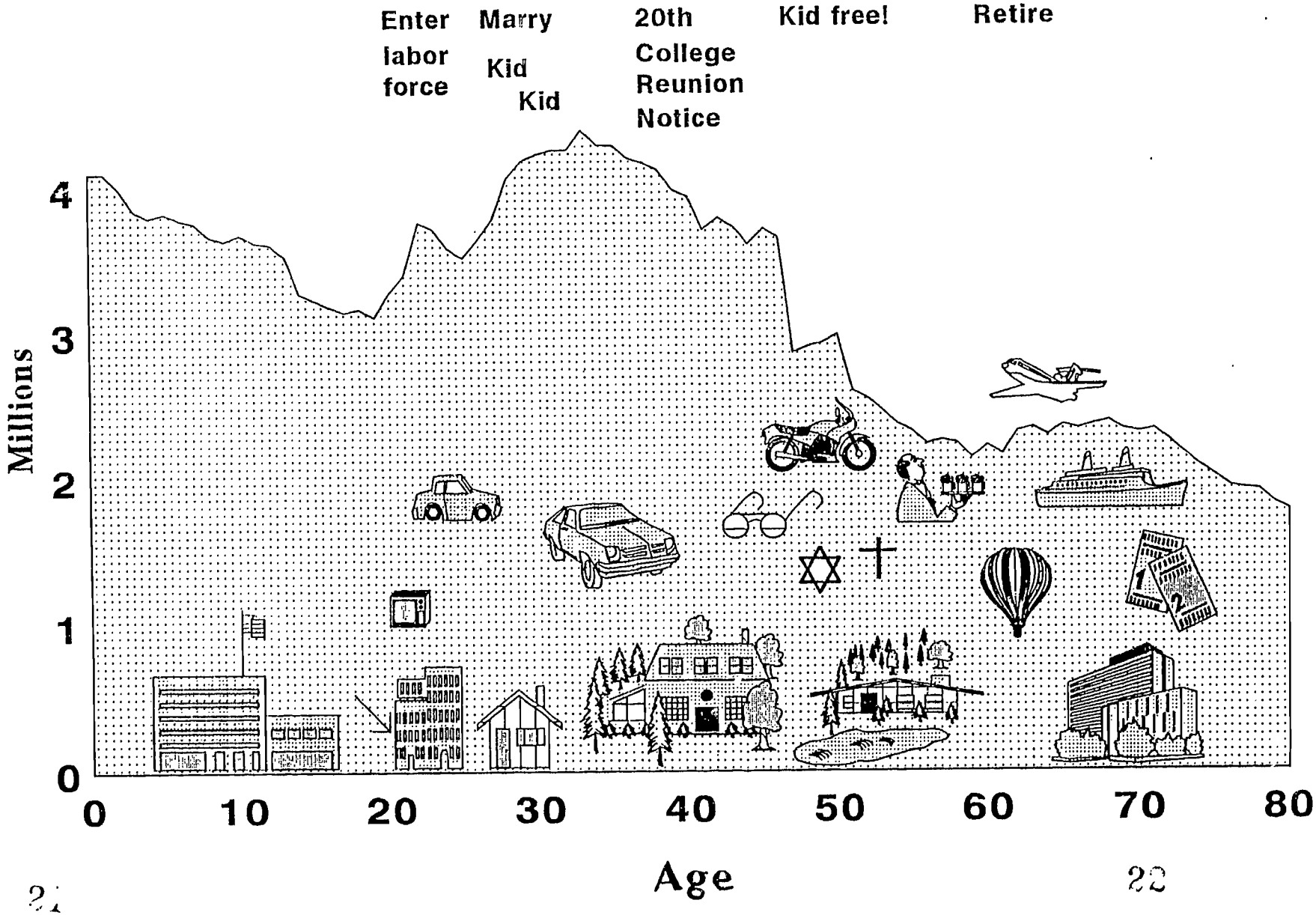
65+

United States Population 1992



Lifestyle


Enter labor force
Marry
Kid
Kid
20th College Reunion Notice
Kid free!
Retire
Millions
4
3
2
1
0
0
10
20
30
40
50
60
70
80
Age

EMPLOYEES BY INDUSTRY
DAYTON MSA

TRENDS AND PROJECTIONS
1976 - 2000

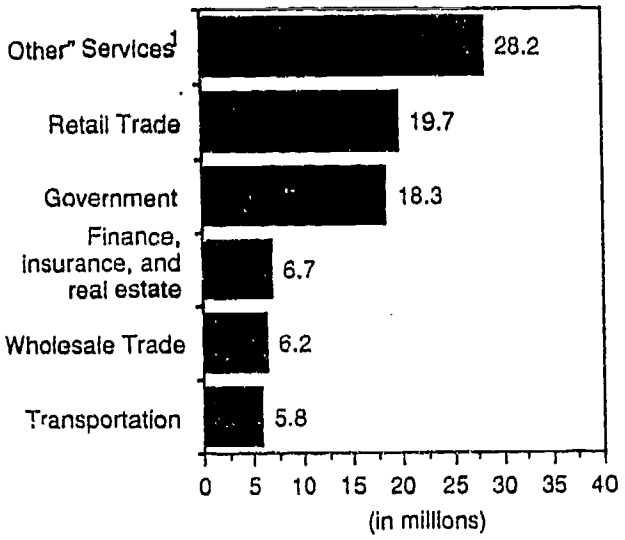
(% of Total Nonagricultural Employment)

	1976	1988	2000+
GOODS PRODUCING INDUSTRIES			
Manufacturing	31.4	23.9	20.9
Construction	3.5	4.1	4.0
Mining	0.1	0.1	0.1
SUB-TOTAL	35.0	28.1	25.0
SERVICE PRODUCING INDUSTRIES			
Services	18.3	24.5	28.0
Transportation & Utilities	3.9	3.8	3.8
Trade	20.8	22.8	23.3
Finance, Insurance & Real Estate	3.5	4.1	4.3
Government	18.3	16.7	15.6
SUBTOTAL	65.0	71.7	75.0
TOTAL	**100.0**	**100.0**	**100.0**

Source: Ohio Bureau of Employment Services

U.S. STATISTICS

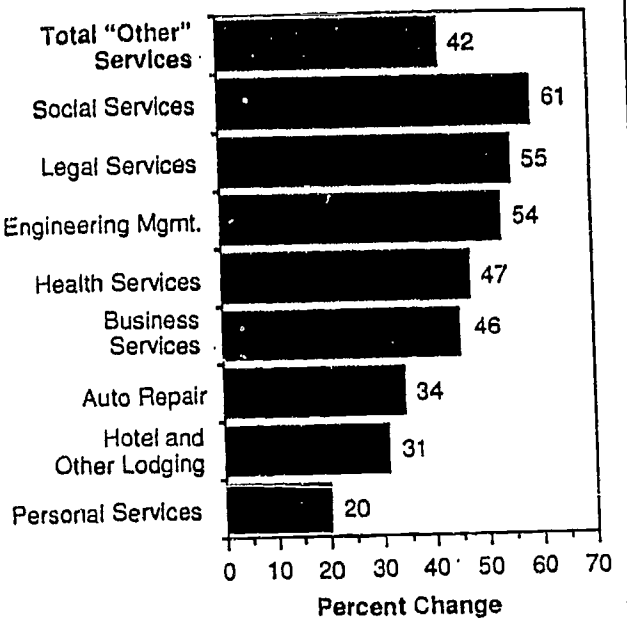
Employment in Service-Producing Industries, 1990



Source: Max L. Carey and James C. Franklin, "Industry Output and Job Growth Continues Slow Into Next Century," *Monthly Labor Review*, November, 1991.

The "other" services division includes the following industries: hotels and other lodging places, personal services, business services, educational services, auto repair services, and garages, miscellaneous repair shops, motion pictures, amusement and recreation services, health services, legal services, social services, engineering and management services, and museums, zoos and membership organizations.

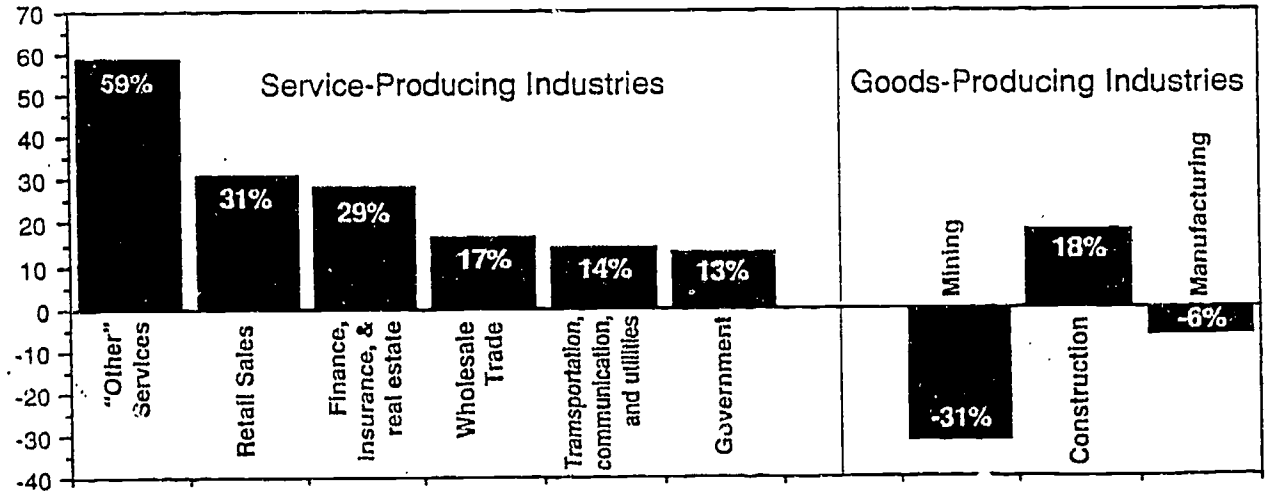
Projected Growth in the "Other" Services, 1990 to 2005*



Source: Max L. Carey and James C. Franklin, "Industry Output and Job Growth Continues Slow Into Next Century," *Monthly Labor Review*, November, 1991.

* Moderate growth projections

Percent Change in Industries, 1980 to 1990



Sources: Max L. Carey and James C. Franklin, Industry Output and Job Growth Continues Slow Into Next Century, *Monthly Labor Review*, November, 1991.

U.S. Department of Labor Statistics, unpublished data tabulations, 1992.

Table 1. Rankings of all occupations by selected characteristics[1]

Occupation as defined by National Industry-Occupation Matrix	Employment, 1990	Employment change, 1988-2000		Annual average job openings, 1990-2005		Median earnings of full-time workers	Unemployment rate	Part-time workers	Significant sources of formal training[2]
		Number	Percent	Growth plus total replacement needs	Growth plus net replacement needs				
MANAGERIAL AND MANAGEMENT-RELATED OCCUPATIONS									
Education administrators	H	H	H	H	H	VH	VL	A	CD
Financial managers	VH	VH	H	H	VH	VH	L	VL	CD PS E
Funeral directors and morticians	L	L	A	VL	L	-	VL	L	CD PS E
Marketing, advertising, and public relations managers	H	VH	VH	H	VH	VH	L	VL	CD E
Personnel, training, and labor relations managers	H	H	VH	A	H	VH	L	VL	CD PS E
Property and real estate managers	H	H	VH	H	H	A	L	A	PS
Purchasing managers	H	H	A	A	H	VH	VL	VL	CD PS E
Accountants and auditors	VH	VH	VH	VH	VH	H	L	L	CD
Construction and building inspectors	L	A	A	L	L	-	L	L	E
Employment interviewers and personnel specialists[3]	H	VH	H	H	H	VH	L	L	CD E
Management analysts	A	H	VH	H	H	VH	L	H	CD E
Purchasing agents, except wholesale, retail, and farm products	H	H	A	A	H	H	A	VL	CD PS
Underwriters	A	A	H	A	A	-	VL	L	CD E
Wholesale and retail buyers, except farm products	H	H	A	H	H	H	L	A	CD E
PROFESSIONAL SPECIALTY OCCUPATIONS									
Aeronautical and astronautical engineers	L	A	A	L	A	VH	VL	VL	CD
Chemical engineers	L	L	L	VL	L	VH	VL	VL	CD E
Civil engineers, including traffic engineers	H	H	H	A	H	VH	L	VL	CD E
Electrical and electronics engineers	H	VH	VH	A	VH	VH	VL	VL	CD E
Industrial engineers, except safety engineers	A	A	A	L	A	VH	L	VL	CD E
Mechanical engineers	H	H	H	A	H	VH	VL	VL	CD E
Architects[3]	A	H	H	A	A	VH	VL	A	CD E
Surveyors	A	A	A	A	L	-	A	L	
Biological scientists	L	A	VH	L	A	VH	L	L	CD
Systems analysts and computer scientists	H	VH	VH	H	VH	VH	VL	L	CD E
Operations research analysts	L	H	VH	L	A	VH	L	L	CD E
Chemists	A	A	A	L	A	VH	VL	VL	CD
Geologists, geophysicists, and oceanographers	L	A	H	L	L	-	A	VL	CD
Economists	L	A	A	L	L	VH	A	A	CD
Psychologists	A	H	VH	A	A	H	VI	H	CD
Clergy	H	A	L	A	A	A	VL	A	CD
Recreation workers	H	H	H	H	A	VL	H	H	CD
Social workers and human services workers[3]	VH	VH	VH	VH	VH	H	L	A	CD
Lawyers	VH	VH	VH	H	VH	VH	VL	L	CD
Teachers, elementary	VH	VH	H	VH	VH	H	VL	A	CD
Teachers, special education	H	VH	VH	H	H	H	VL	A	CD
Teachers, secondary school	VH	VH	VH	VH	VH	VH	VL	A	CD
Librarians, professional	A	A	L	A	A	H	VL	VH	CD
Counselors	A	H	VH	A	A	VH	VL	A	CD
Dentists	H	A	A	L	A	-	VL	A	CD
Physicians	VH	VH	VH	H	VH	VH	VL	L	CD
Veterinarians and veterinary inspectors	L	A	H	VL	L	-	VL	L	CD
Pharmacists	A	H	A	L	A	VH	VL	H	CD
Registered nurses	VH	VH	VH	VH	VH	VH	VL	H	CD PS
Physical therapists	A	H	VH	A	A	-	VL	VH	CD
Respiratory therapists	L	H	VH	L	A	-	VL	H	CD PS
Speech-language pathologists and audiologists	L	A	VH	L	A	-	VL	H	CD
Artists and commercial artists	H	H	VH	H	H	A	L	H	CD PS
Musicians	H	A	L	H	H	-	A	VH	CD
Photographers and camera operators	A	H	H	A	A	A	L	H	CD PS E
Producers, directors, actors, and entertainers	A	H	VH	A	A	-	VH	A	CD PS
Public relations specialists and publicity writers	A	A	A	A	A	VH	L	A	CD E
Radio and TV announcers and newscasters	L	A	A	L	L	-	A	VH	PS
Writers[3]	H	H	H	H	H	L	L	H	CD
TECHNICIAN OCCUPATIONS									
Clinical lab technologists and technicians	H	H	H	A	H	A	L	H	CD PS E

NOTE: Rankings are based on all detailed occupations in the National Industry-Occupation Matrix and those in the Current Population Survey with 40,000 or more employees. Codes for describing the variables are: VH = "Very high," H = "High," A = "Average," L = "Low," and VL = "Very low." A dash indicates data are not available.

See footnotes at end of table.

Table 1. Rankings of all occupations by selected characteristics[1]——Continued

Occupation as defined by National Industry-Occupation Matrix	Employment, 1990	Employment change, 1988-2000		Annual average job openings, 1990-2005		Median earnings of full-time workers	Unemployment rate	Part-time workers	Significant sources of formal training[2]
		Number	Percent	Growth plus total replacement needs	Growth plus net replacement needs				
Dental hygienists	A	H	VH	A	A	-	VL	VH	CD PS
Licensed practical nurses	VH	VH	VH	VH	VH	L	L	H	PS
Medical records technicians	L	H	VH	L	A	-	L	A	PS
Nuclear medicine and radiologic technicians and technologists[3]	A	VH	VH	A	H	H	VL	H	PS
Opticians, dispensing and measuring	L	A	VH	A	A	-	A	H	E
Electrical and electronic technicians and technologists	H	VH	VH	H	H	H	L	VL	CD PS E HS
All other engineering technicians and technologists	H	H	A	H	H	H	A	A	
Drafters	H	H	A	H	H	H	A	L	CD PS E HS
Science and mathematics technicians	H	H	H	H	H	VL	A	A	CD
Aircraft pilots and flight engineers	A	H	VH	L	A	VH	L	H	CD
Computer programmers	VH	VH	VH	VH	VH	VH	L	L	CD PS E
Legal assistants and technicians, except clerical	H	VH	VH	H	H	H	L	A	CD PS
MARKETING AND SALES OCCUPATIONS									
Cashiers	VH	VH	H	VH	VH	VL	VH	VH	
Counter and rental clerks	H	H	VH	VH	H	VL	H	VH	
Insurance sales workers	H	H	A	H	VH	H	VL	A	CD E
Real estate agents, brokers, and appraisers	H	H	A	H	H	H	VL	H	CD PS E
Salespersons, retail	VH	VH	H	VH	VH	VL	H	VH	
Securities and financial services sales workers	H	H	VH	H	H	VH	L	L	CD E
ADMINISTRATIVE SUPPORT OCCUPATIONS									
Adjustment clerks, credit authorizers and checkers, loan and credit clerks, and loan interviewers[3]	VH	VH	H	VH	H	A	A	A	
Bill and account collectors	H	H	VH	H	A	L	A	A	
Welfare eligibility workers and interviewers	A	A	A	A	A	A	A	A	PS E
Telephone operators	H	VL	VL	H	H	L	H	H	E
Computer operators, except peripheral equipment	H	H	A	H	A	A	A	A	PS
Billing, cost, and rate clerks	H	A	L	H	H	L	A	A	HS
Billing, posting, and calculating machine operators	A	L	L	A	A	-	A	H	
Bookkeeping, accounting, and auditing clerks	VH	VL	VL	VH	VH	L	A	H	PS HS
Payroll and timekeeping clerks	A	L	L	A	A	L	L	A	HS
Hotel desk clerks	A	H	VH	H	A	VL	VH	H	
Interviewing clerks, except personnel and social welfare	A	H	VH	H	H	L	H	H	HS
Receptionists and information clerks	VH	VH	VH	VH	VH	VL	H	VH	HS
Reservation and transportation ticket agents and travel clerks	A	H	VH	A	A	A	L	H	E
Mail clerks, except mail machine operators and postal service	A	A	L	H	A	L	H	H	
Messengers	A	A	L	H	A	L	H	VH	
Postal mail carriers	H	H	H	A	H	H	VL	L	
Postal service clerks	A	L	L	A	A	H	A	A	E
Dispatchers	H	H	H	H	H	A	A	L	E
Meter readers, utilities	L	VL	VL	L	L	-	VL	VL	
Procurement and stock clerks[3]	VH	H	L	VH	VH	L	H	H	
Production, planning, and expediting clerks	H	L	L	H	A	A	A	A	
Traffic, shipping, and receiving clerks	VH	H	A	VH	H	L	H	A	
Weighers, measurers, checkers, and samplers, recordkeeping	L	L	L	L	L	-	H	H	
File clerks	H	H	L	VH	H	VL	H	VH	HS
Library assistants and bookmobile drivers	A	A	L	H	A	VL	A	VH	
Order clerks and customer service representatives, utilities[3]	H	A	L	H	H	A	L	A	HS
Personnel clerks, except payroll and timekeeping	A	A	A	A	A	L	L	A	CD
Secretaries	VH	VH	A	VH	VH	L	A	H	PS HS
Stenographers	A	VL	VL	A	A	-	VL	H	CD PS
Typists and word processors	VH	VL	VL	VH	VH	L	H	H	HS
Bank tellers	H	VL	VL	VH	VH	VL	A	VH	E
Clerical supervisors and managers	VH	VH	A	VH	VH	H	VL	VL	E
Data entry keyers, except composing	H	H	L	VH	H	L	H	H	PS HS
Duplicating, mail, and other office machine operators	A	A	A	H	H	-	H	H	
General office clerks	VH	VH	H	VH	VH	L	A	VH	HS
Statistical clerks	A	VL	VL	L	L	A	L	H	CD PS
Teacher aides and educational assistants	VH	VH	VH	VH	VH	VL	A	VH	

NOTE: Rankings are based on all detailed occupations in the National Industry-Occupation Matrix and those in the Current Population Survey with 40,000 or more employees. Codes for describing the variables are: VH = "Very high," H = "High," A = "Average," L = "Low," and VL = "Very low." A dash indicates data are not available.

See footnotes at end of table.

Table 1. Rankings of all occupations by selected characteristics[1]——Continued

Occupation as defined by National Industry-Occupation Matrix	Employment, 1990	Employment change, 1988-2000		Annual average job openings, 1990-2005		Median earnings of full-time workers	Unemployment rate	Part-time workers	Significant sources of formal training[2]
		Number	Percent	Growth, plus total replacement needs	Growth plus net replacement needs				
SERVICE OCCUPATIONS									
Janitors and cleaners, including maids and housekeeping cleaners	VH	VH	A	VH	VH	VL	VH	VH	
Pest controllers and assistants	L	L	L	A	L	-	H	L	
Cooks, except short order	VH	VH	VH	VH	VH	VL	VH	VH	
Cooks, short order and fast food	VH	VH	VH	VH	VH	-	VH	VH	
Food preparation workers	VH	VH	VH	VH	VH	VL	VH	VH	
Bartenders	H	A	L	VH	H	VL	VH	VH	
Dining room and cafeteria attendants and bar helpers	H	VH	VH	VH	VH	VL	VH	VH	
Food counter, fountain, and related workers	VH	VH	VH	VH	VH	VL	VH	VH	
Waiters and waitresses	VH	VH	H	VH	VH	VL	VH	VH	
Dental assistants	H	H	VH	H	H	VL	A	VH	PS
Nursing aides, orderlies, and attendants	VH	VH	VH	VH	VH	VL	H	H	PS E
Amusement and recreation attendants	H	H	H	H	H	VL	VH	VH	
Barbers	A	VL	VL	L	L	-	VL	H	PS
Child care workers	VH	VH	VH	VH	VH	VL	A	VH	
Hairdressers, hairstylists, and cosmetologists	VH	VH	H	VH	H	VL	L	VH	PS
Flight attendants	A	H	VH	A	A	-	L	VH	E
Child care workers, private household	H	VL	VL	VH	H	VL	H	VH	
Cleaners and servants, private household	H	VL	VL	H	A	VL	H	VH	
Housekeepers and butlers	L	L	L	L	L	-	VH	VH	
Fire fighters	H	H	H	A	H	H	L	VL	PS E
Fire fighting and prevention supervisors	L	A	H	VL	A	-	VL	-	
Correction officers	H	VH	VH	H	H	A	VL	VL	E
Police and detective supervisors	A	A	A	VL	A	VH	VL	VL	CD PS E
Police detectives and patrol officers[3]	H	VH	H	A	VH	VH	VL	VL	PS E
Guards	VH	VH	VH	VH	VH	L	H	H	
FARMING, FORESTRY, FISHING, AND RELATED OCCUPATIONS									
Animal caretakers, except farm	A	H	VH	H	A	-	A	VH	
Farm workers	VH	VL	VL	VH	VH	VL	VH	H	
Farmers	VH	VL	VL	VH	H	-	VL	H	
Farm managers	A	A	A	A	A	-	VL	A	
Fishers, hunters, and trappers	L	L	L	VL	L	-	VH	A	
Fallers, log handling equipment, and all other timber cutters[2]	A	VL	VL	A	L	-	VH	A	
Gardeners and groundskeepers, except farm	VH	VH	VH	VH	VH	VL	VH	VH	
Supervisors, farming, forestry, and agricultural related occupations	L	L	L	L	L	VL	A	VL	
PRECISION PRODUCTION, CRAFT, AND REPAIR OCCUPATIONS									
Blue-collar worker supervisors	VH	VH	L	VH	VH	H	L	VL	E
Bricklayers and stone masons	A	H	A	H	A	H	VH	L	PS E HS
Carpenters	VH	VH	A	VH	VH	A	VH	L	HS
Carpet installers	L	A	A	L	A	-	H	A	
Concrete and terrazzo finishers	A	A	A	VL	A	A	VH	L	
Drywall installers and finishers	A	H	H	H	A	A	VH	A	
Electricians	VH	VH	H	H	VH	H	H	VL	PS E HS
Glaziers	L	A	H	L	L	-	H	VL	
Hard tile setters	VL	L	H	VL	L	-	VH	A	PS E
Insulation workers	L	A	H	A	A	-	VH	VL	
Painters and paperhangers, construction and maintenance	H	VH	H	H	H	L	VH	H	
Plumbers, pipefitters, and steamfitters	H	H	A	H	H	H	H	L	E HS
Roofers	A	H	H	H	A	L	VH	A	
Structural and reinforcing metal workers	A	A	A	A	A	-	VH	VL	E
Central office and PBX installers and repairers; frame wirers; station installers and repairers, telephone[3]	A	VL	VL	A	A	VH	VL	VL	E
Data processing equipment repairers	A	H	VH	A	A	VH	L	L	CD PS E

NOTE: Rankings are based on all detailed occupations in the National Industry-Occupation Matrix and those in the Current Population Survey with 40,000 or more employees. Codes for describing the variables are: VH = "Very high," H = "High," A = "Average," L = "Low," and VL = "Very low." A dash indicates data are not available.

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Occupation as defined by National Industry-Occupation Matrix	Employment, 1990	Employment change, 1988-2000		Annual average job openings, 1990-2005		Median earnings of full-time workers	Unemployment rate	Part-time workers	Significant sources of formal training[2]
		Number	Percent	Growth plus total replacement needs	Growth plus net replacement needs				
Electrical powerline installers and repairers	A	A	L	L	A	VH	L	VL	E
Telephone and cable TV line installers and repairers	A	VL	VL	VL	A	VH	L	VL	E
Industrial machinery mechanics	H	H	L	H	H	H	A	VL	E
Millwrights	L	A	A	A	A	H	H	VL	PS E HS
Aircraft engine specialists	VL	L	H	VL	L	VH	L	VL	PS E
Automotive body and related repairers	H	H	H	H	H	A	H	L	E HS
Automotive mechanics	VH	VH	A	VH	VH	A	A	L	PS E HS
Bus and truck mechanics and diesel engine specialists	H	H	A	A	H	A	A	VL	E HS
Motorcycle, boat, and small engine mechanics	L	L	L	L	L	-	H	A	PS E HS
Heat, air-conditioning, and refrigeration mechanics and installers	H	H	A	A	A	A	A	L	PS E
Home appliance and power tool repairers	L	VL	L	L	L	-	L	L	PS E HS
Office machine and cash register servicers	L	A	A	VL	L	A	L	L	PS E
Electrical and electronic equipment assemblers, precision	A	VL	VL	A	A	L	VH	VL	
Butchers and meatcutters	H	VL	VL	H	A	L	H	A	
All other precision food and tobacco workers	L	L	L	L	L	-	H	H	
Machinists	H	H	L	H	H	H	A	VL	PS E HS
Sheet metal workers and duct installers	H	H	A	H	H	L	H	VL	
Tool and die makers	A	L	L	L	A	VH	L	VL	PS E HS
Compositors and typesetters, precision, and machine operators[3]	L	L	A	L	L	-	L	A	PS E HS
Lithography and photoengraving workers, precision, and machine operators[3]	A	H	H	A	A	-	A	L	
Upholsterers	L	L	L	L	L	-	A	A	HS
Woodworkers, precision	H	A	A	H	H	-	H	A	
Dental lab technicians, precision	L	L	L	L	L	-	L	H	PS
Stationary engineers and boiler operators, low pressure[3]	L	L	L	VL	L	VH	L	VL	PS E
Water and liquid waste treatment plant and system operators	A	A	H	VL	A	-	VL	VL	PS E
OPERATOR, FABRICATOR, AND LABORER OCCUPATIONS									
Grinding machine setters and setup operators, metal and plastic	L	VL	VL	A	L	A	H	VL	
Machine tool cutting operators and tenders, metal and plastic	A	VL	VL	L	L	A	H	L	HS
Punching machine setters and setup operators, metal and plastic	L	VL	VL	L	L	A	VH	VL	
Welders and cutters, machine operators, setters, and hand workers[3]	H	A	L	H	H	A	VH	VL	PS E HS
Metal molding machine operators and tenders, setters and setup operators	L	VL	VL	VL	L	L	VH	VL	PS E
Printing press operators	H	H	A	A	H	A	A	L	E HS
Pressing machine operators and tenders, textile, garment, and related materials	A	A	A	A	A	VL	VH	H	
Sewing machine operators[3]	VH	VL	VL	VH	H	VL	VH	L	
Head sawyers and sawing machine operators and tenders, setters, and setup operators	L	A	L	A	A	L	H	L	
Woodworking machine operators and tenders, setters and setup operators	L	A	A	A	L	-	VH	A	
Crushing and mixing machine operators and tenders	A	A	L	H	A	VL	H	L	
Cutting and slicing machine setters, operators, and tenders	A	L	L	A	L	L	VH	L	
Furnace, kiln, or kettle operators and tenders	L	VL	VL	L	L	H	H	VL	
Laundry and drycleaning machine operators and tenders, except pressing	A	H	H	H	A	VL	H	H	
Packaging and filling machine operators and tenders	H	VL	VL	H	A	VL	VH	A	
Painting and coating machine operators	A	VL	L	A	A	L	VH	L	
Separating and still machine operators and tenders	VL	VL	VL	L	L	H	A	VL	
Electrical and electronic assemblers	H	VL	VL	H	A	L	VH	VL	
Bus drivers	VH	VH	VH	VH	VH	A	A	VH	E
Taxi drivers and chauffeurs	A	H	H	H	A	L	H	H	
Driver/sales workers	H	H	A	H	H	H	A	A	
Truck drivers light and heavy	VH	VH	H	VH	VH	A	H	A	
Locomotive engineers and other rail vehicle operators[3]	VL	VL	VL	VL	L	-	A	VL	
Crane and tower operators	L	L	L	L	L	H	H	VL	E
Excavation and loading machine operators	L	A	L	L	L	A	VH	L	
Grader, dozer, and scraper operators	A	A	L	A	A	A	VH	L	
Industrial and logging truck and tractor operators[3]	H	H	L	H	H	A	H	VL	
Operating engineers	A	H	H	A	A	H	VH	VL	E

NOTE: Rankings are based on all detailed occupations in the National Industry-Occupation Matrix and those in the Current Population Survey with 40,000 or more employees. Codes for describing the variables are: VH = "Very high," H = "High," A = "Average," L = "Low," and VL = "Very low." A dash indicates data are not available.

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Table 1. Rankings of all occupations by selected characteristics[1]——Continued

Occupation as defined by National Industry-Occupation Matrix	Employment, 1990	Employment change, 1988-2000		Annual average job openings, 1990-2005		Median earnings of full-time workers	Unemployment rate	Part-time workers	Significant sources of formal training[2]
		Number	Percent	Growth plus total replacement needs	Growth plus net replacement needs				
Freight, stock, and material movers, hand	VH	VH	L	VH	VH	L	VH	H	
Hand packers and packagers	VH	H	L	VH	VH	VL	VH	H	
Helpers, construction trades	VH	H	A	VH	VH	VL	VH	A	
Machine feeders and offbearers	H	VL	VL	H	H	L	VH	A	
Parking lot attendants	L	A	H	A	L	-	VH	VH	
Refuse collectors	A	L	L	A	A	-	VH	A	
Service station attendants; tire repairers and changers[3]	H	VL	L	VH	H	VL	VH	VH	
Vehicle washers and equipment cleaners	H	H	H	VH	H	VL	VH	H	

[1] Each characteristic, and its data source, is discussed in the "Data sources" section of chapter I.

[2] Codes for source of formal training are: HS = high school vocational training program, E = formal employer training, PS = postsecondary school training, but less than a bachelor's degree, CD = 4-year college degree program.

[3] This title does not appear in the National Industry-Occupation Matrix, but was formed by combining several matrix occupations in order to achieve Current Population Survey comparability.

NOTE: Rankings are based on all detailed occupations in the National Industry-Occupation Matrix and those in the Current Population Survey with 40,000 or more employees. Codes for describing the variables are: VH = "Very high," H = "High," A = "Average," L = "Low," and VL = "Very low." A dash indicates data are not available.

Table 3. Rankings of occupations for which postsecondary school training, but less than a bachelor's degree, is significant, by selected characteristics[1]

Occupation as defined by National Industry-Occupation Matrix	Employment, 1990	Employment change, 1988-2000		Annual average job openings, 1990-2005		Median earnings of full-time workers	Unemployment rate	Part-time workers	Significant sources of formal training[2]
		Number	Percent	Growth plus total replacement needs	Growth plus net replacement needs				
MANAGERIAL AND MANAGEMENT-RELATED OCCUPATIONS									
Financial managers	VH	VH	H	H	VH	VH	L	VL	CD PS E
Funeral directors and morticians	L	L	A	VL	L	-	VL	L	CD PS E
Personnel, training, and labor relations managers	H	H	VH	A	H	VH	L	VL	CD PS E
Property and real estate managers	H	H	VH	H	H	A	L	A	PS
Purchasing managers	H	H	A	A	H	VH	VL	VL	CD PS E
Purchasing agents, except wholesale, retail, and farm products	H	H	A	A	H	H	A	VL	CD PS
PROFESSIONAL SPECIALTY OCCUPATIONS									
Registered nurses	VH	VH	VH	VH	VH	VH	VL	H	CD PS
Respiratory therapists	L	H	VH	L	A	-	VL	H	CD PS
Artists and commercial artists	H	H	VH	H	H	A	L	H	CD PS
Photographers and camera operators	A	H	H	A	A	A	L	H	CD PS E
Producers, directors, actors, and entertainers	A	H	VH	A	A	-	VH	A	CD PS
Radio and TV announcers and newscasters	L	A	A	L	L	-	A	VH	PS
TECHNICIAN OCCUPATIONS									
Clinical lab technologists and technicians	H	H	H	A	H	A	L	H	CD PS E
Dental hygienists	A	H	VH	A	A	-	VL	VH	CD PS
Licensed practical nurses	VH	VH	VH	VH	VH	L	L	H	PS
Medical records technicians	L	H	VH	L	A	-	L	A	PS
Nuclear medicine and radiologic technicians and technologists[3]	A	VH	VH	A	H	H	VL	H	PS
Electrical and electronic technicians and technologists	H	VH	VH	H	H	H	L	VL	CD PS E HS
Drafters	H	H	A	H	H	H	A	L	CD PS E HS
Computer programmers	VH	VH	VH	VH	VH	VH	L	L	CD PS E
Legal assistants and technicians, except clerical	H	VH	VH	H	H	H	L	A	CD PS
MARKETING AND SALES OCCUPATIONS									
Real estate agents, brokers, and appraisers	H	H	A	H	H	H	VL	H	CD PS E
ADMINISTRATIVE SUPPORT OCCUPATIONS									
Welfare eligibility workers and interviewers	A	A	A	A	A	A	A	A	PS E
Computer operators, except peripheral equipment	H	H	A	H	A	A	A	A	PS
Bookkeeping, accounting, and auditing clerks	VH	VL	VL	VH	VH	L	A	H	PS HS
Secretaries	VH	VH	A	VH	VH	L	A	H	PS HS
Stenographers	A	VL	VL	A	A	-	VL	H	CD PS
Data entry keyers, except composing	H	H	L	VH	H	L	H	H	PS HS
Statistical clerks	A	VL	VL	L	L	A	L	H	CD PS
SERVICE OCCUPATIONS									
Dental assistants	H	H	VH	H	H	VL	A	VH	PS
Nursing aides, orderlies, and attendants	VH	VH	VH	VH	VH	VL	H	H	PS E
Barbers	A	VL	VL	L	L	-	VL	H	PS
Hairdressers, hairstylists, and cosmetologists	VH	VH	H	VH	H	VL	L	VH	PS
Fire fighters	H	H	H	A	H	H	L	VL	PS E
Police and detective supervisors	A	A	A	VL	A	VH	VL	VL	CD PS E
Police detectives and patrol officers[3]	H	VH	H	A	VH	VH	VL	VL	PS E
PRECISION PRODUCTION, CRAFT, AND REPAIR OCCUPATIONS									
Bricklayers and stone masons	A	H	A	H	A	H	VH	L	PS E HS
Electricians	VH	VH	H	H	VH	H	H	VL	PS E HS
Hard tile setters	VL	L	H	VL	L	-	VH	A	PS E

NOTE: Rankings are based on all detailed occupations in the National Industry-Occupation Matrix and those in the Current Population Survey with 40,000 or more employees. Codes for describing the variables are: VH = "Very high," H = "High," A = "Average," L = "Low," and VL = "Very low." A dash indicates data are not available.

See footnotes at end of table.

Table 3. Rankings of occupations for which postsecondary school training, but less than a bachelor's degree, is significant, by selected characteristics[1]——Continued

Occupation as defined by National Industry-Occupation Matrix	Employment, 1990	Employment change, 1988-2000		Annual average job openings, 1990-2005		Median earnings of full-time workers	Unemployment rate	Part-time workers	Significant sources of formal training[2]
		Number	Percent	Growth plus total replacement needs	Growth plus net replacement needs				
Data processing equipment repairers	A	H	VH	A	A	VH	L	L	CD PS E
Millwrights	L	A	A	A	A	H	H	VL	PS E HS
Aircraft engine specialists	VL	L	H	VL	L	VH	L	VL	PS E
Automotive mechanics	VH	VH	A	VH	VH	A	A	L	PS E HS
Motorcycle, boat, and small engine mechanics	L	L	L	L	L	-	H	A	PS E HS
Heat, air-conditioning, and refrigeration mechanics and installers	H	H	A	A	A	A	A	L	PS E
Home appliance and power tool repairers	L	VL	L	L	L	-	L	L	PS E HS
Office machine and cash register servicers	L	A	A	VL	L	A	L	L	PS E
Machinists	H	H	L	H	H	H	A	VL	PS E HS
Tool and die makers	A	L	L	L	A	VH	L	VL	PS E HS
Compositors and typesetters, precision, and machine operators[3]	L	L	A	L	L	-	L	A	PS E HS
Dental lab technicians, precision	L	L	L	L	L	-	L	H	PS
Stationary engineers and boiler operators, low pressure[3]	L	L	L	VL	L	VH	L	VL	PS E
Water and liquid waste treatment plant and system operators	A	A	H	VL	A	.	VL	VL	PS E
OPERATOR, FABRICATOR, AND LABORER OCCUPATIONS									
Welders and cutters, machine operators, setters, and hand workers[3]	H	A	L	H	H	A	VH	VL	PS E HS
Metal molding machine operators and tenders, setters and setup operators	L	VL	VL	VL	L	L	VH	VL	PS E

[1] Each characteristic, and its data source, is discussed in the "Data sources" section of chapter I.

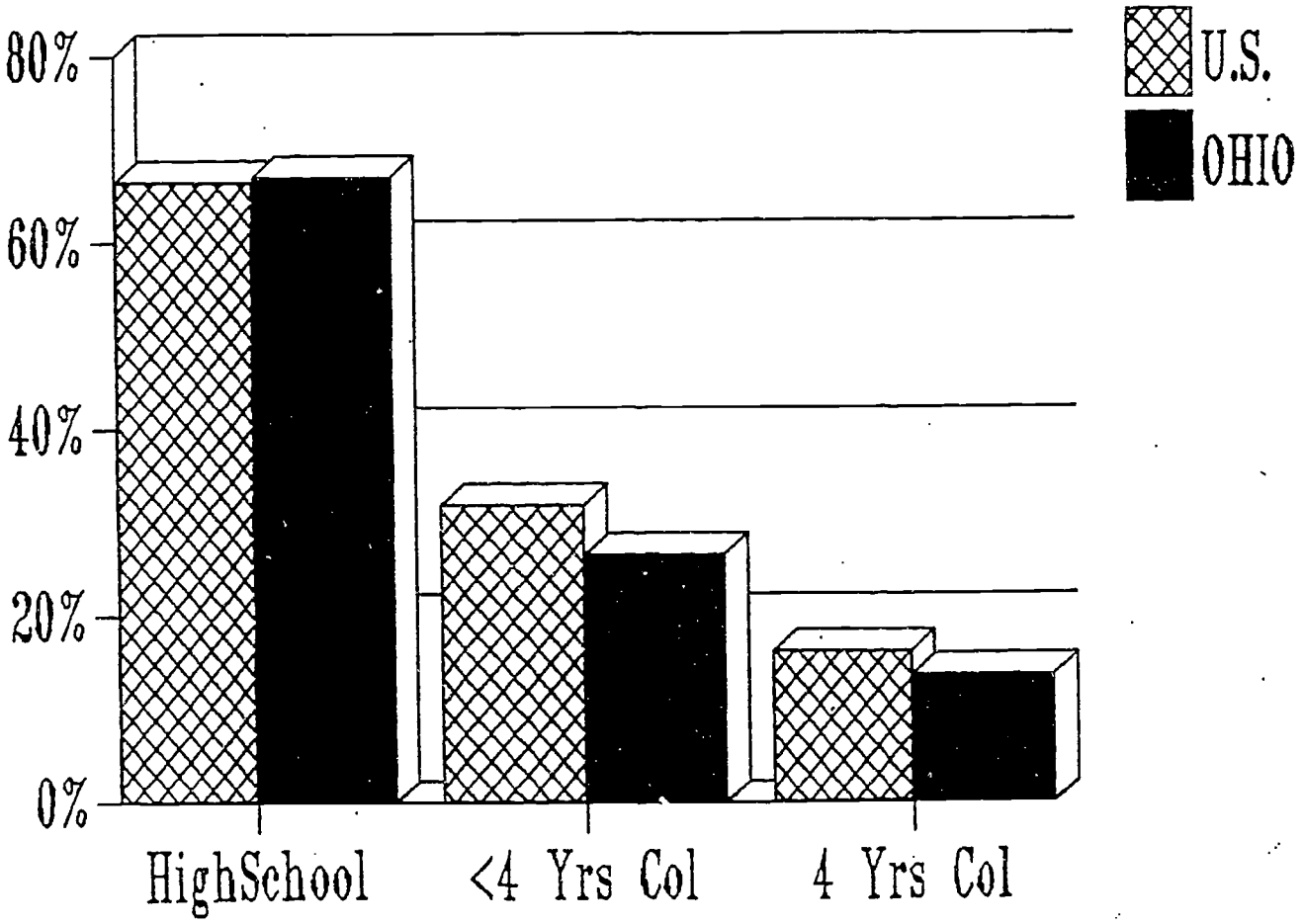
[2] Codes for source of formal training are: HS = high school vocational training program, E = formal employer training, PS = postsecondary school training, but less than a bachelor's degree, CD = 4-year college degree program.

[3] This title does not appear in the National Industry-Occupation Matrix, but was formed by combining several matrix occupations in order to achieve Current Population Survey comparability.

NOTE: Rankings are based on all detailed occupations in the National Industry-Occupation Matrix and those in the Current Population Survey with 40,000 or more employees. Codes for describing the variables are: VH = "Very high," H = "High," A = "Average," L = "Low," and VL = "Very low." A dash indicates data are not available.

EDUCATION LEVELS, 1980

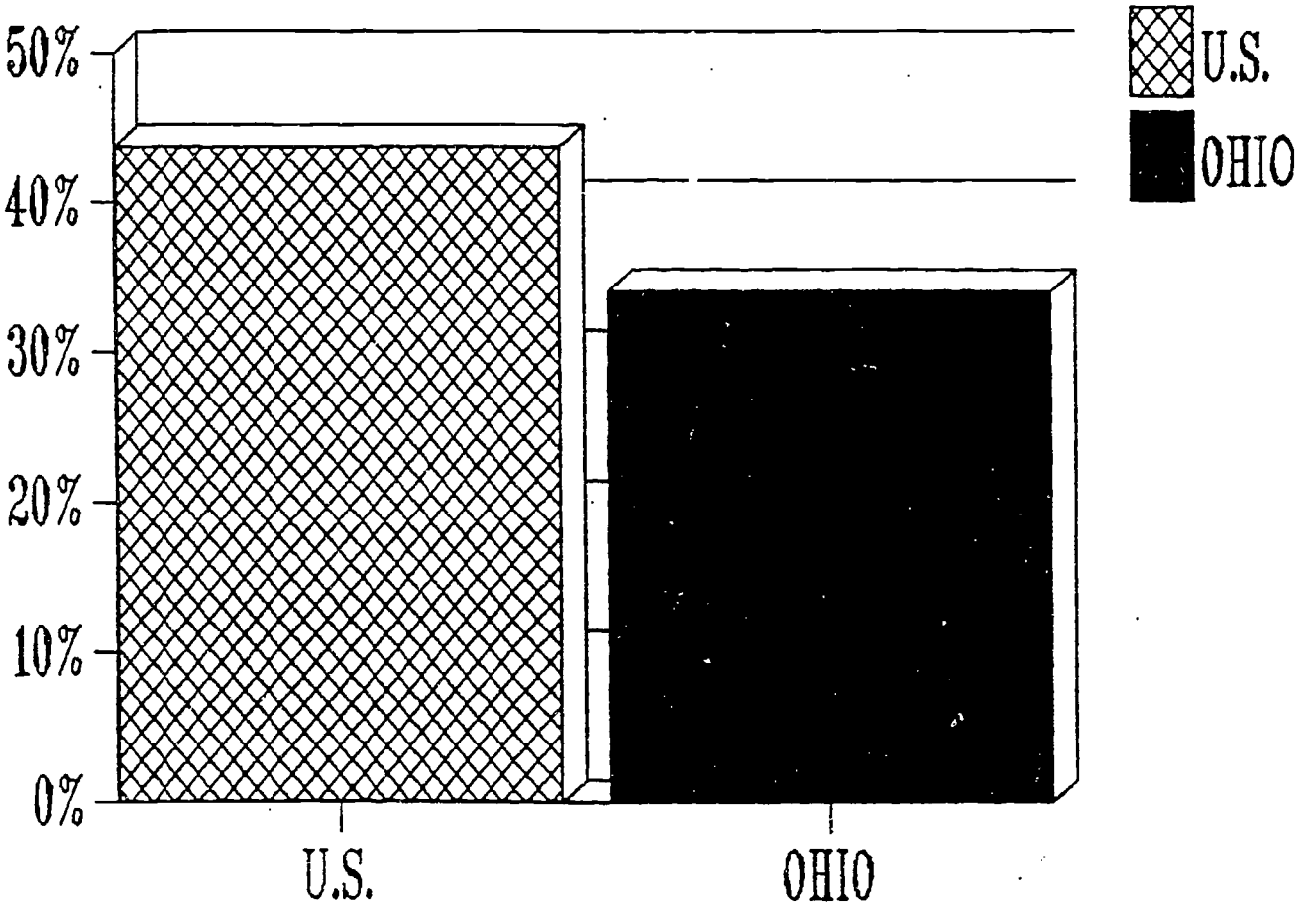
Ohio vs. U.S.



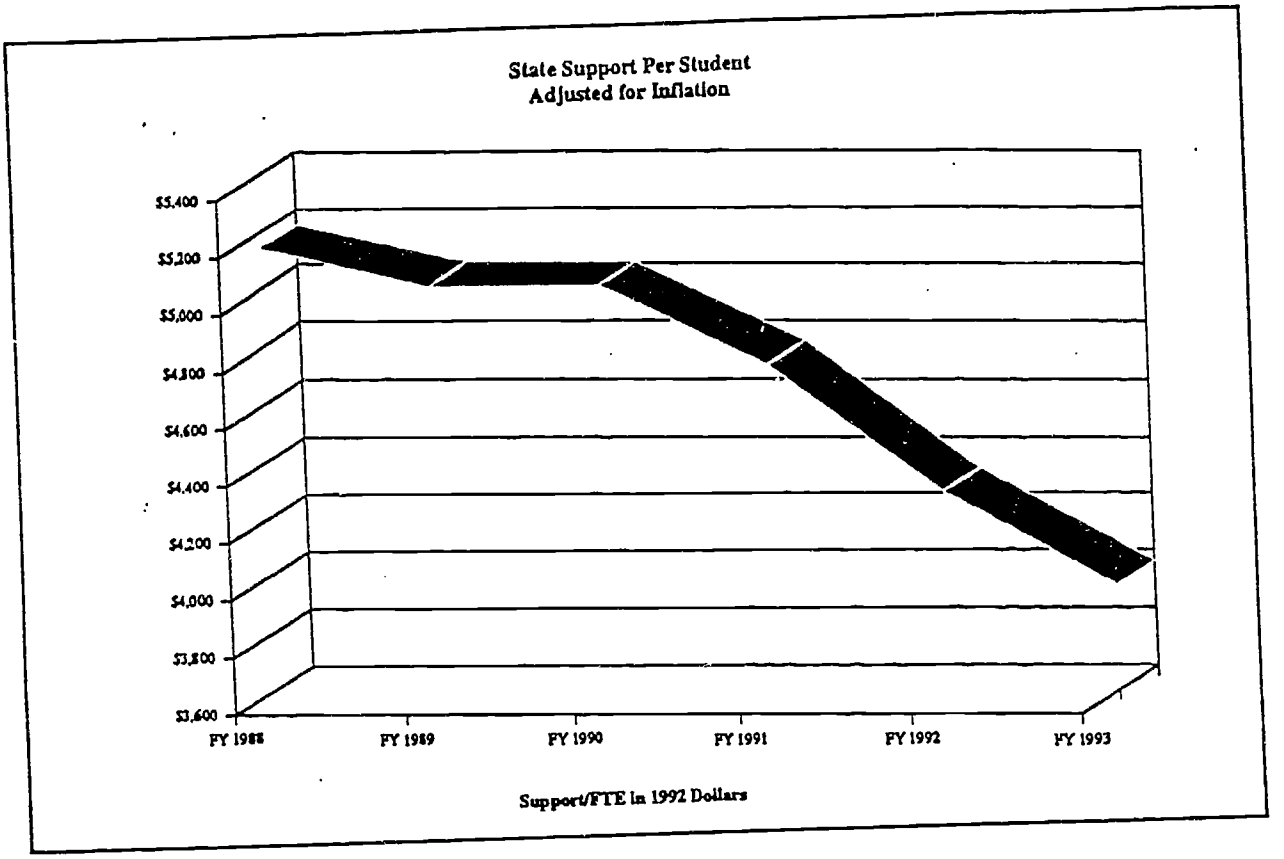
Source: Economic & Social Imperatives for Ohio, Ohio Board of Regents

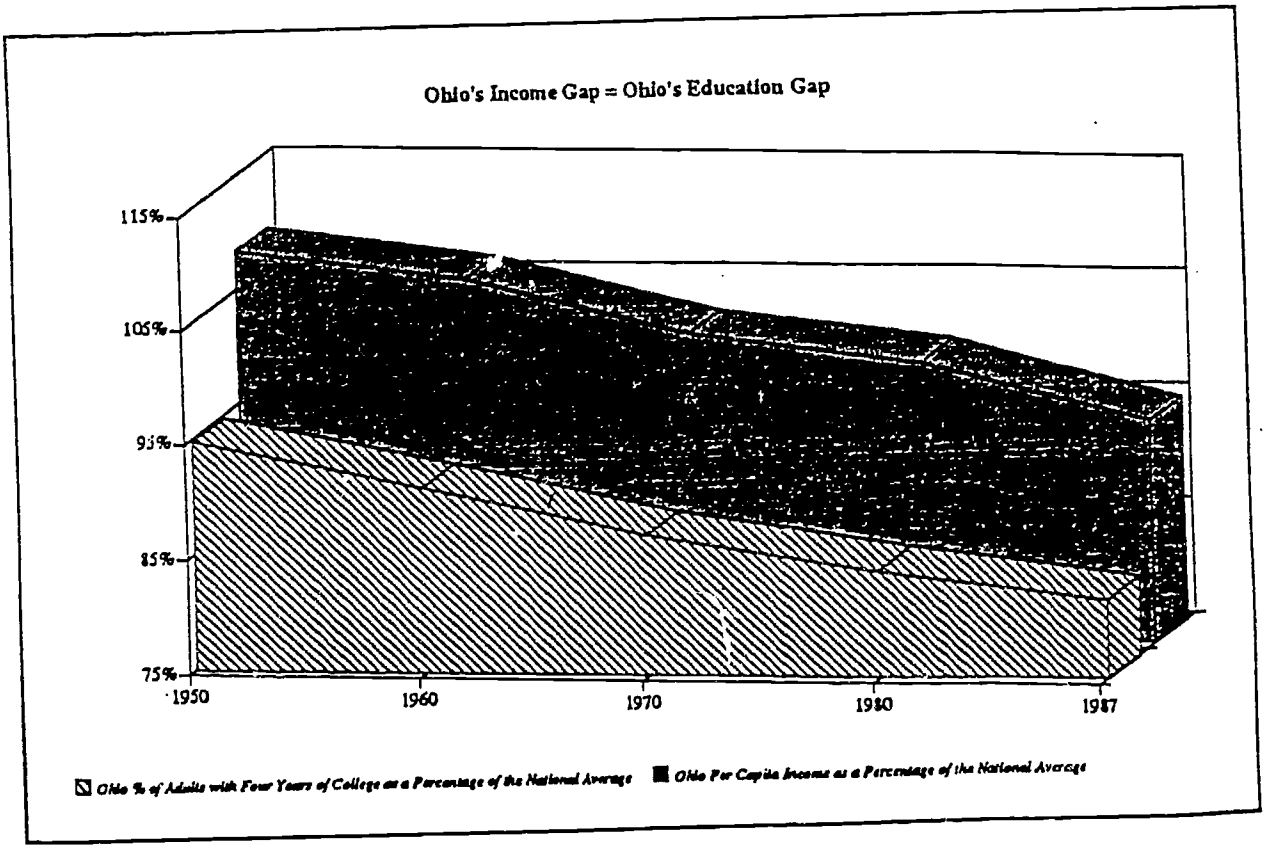
COLLEGE GOING RATES 1986

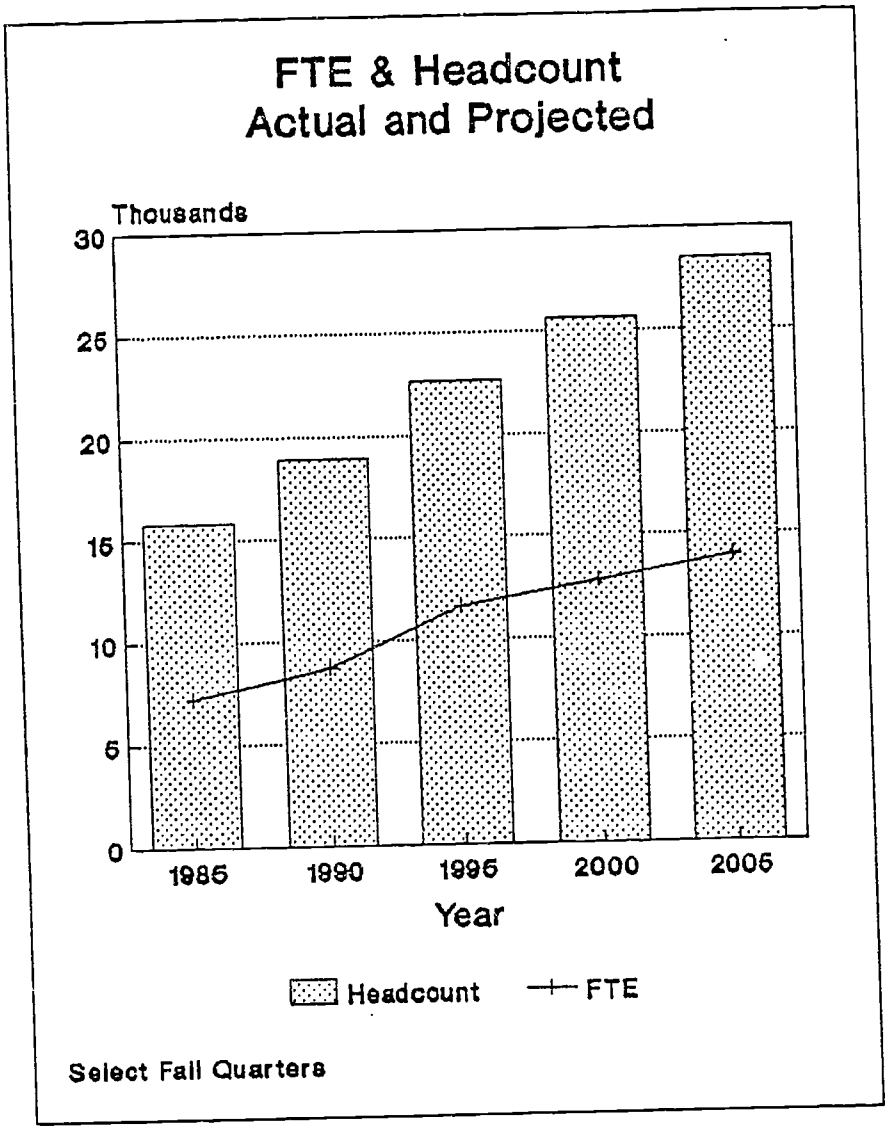
OHIO vs. U.S.



Source: Economic & Social Imperatives for Ohio, Ohio Board of Regents


State Support Per Student
Adjusted for Inflation
$5,400
$5,200
$5,000
$4,800
$4,600
$4,400
$4,200
$4,000
$3,800
$3,600
FY 1988
FY 1989
FY 1990
FY 1991
FY 1992
FY 1993
Support/FTE in 1992 Dollars


Ohio's Income Gap = Ohio's Education Gap
115%
105%
95%
85%
75%
1950
1960
1970
1980
1987
Ohio % of Adults with Four Years of College as a Percentage of the National Average
Ohio Per Capita Income as a Percentage of the National Average


FTE & Headcount
Actual and Projected
Thousands
30
25
20
15
10
5
0
1985
1990
1995
2000
2005
Year
Headcount
FTE
Select Fall Quarters

R

Age Cohort	1990	1991	Change	% Change	1992	Change	% Chang
16 and younger	17	26	9	52.9%	65	39	150.
17-19	2088	2184	96	4.6%	2257	73	3.
20-29	7746	8676	930	12.0%	8938	262	3.
30-39	4482	4877	395	8.8%	4964	87	1.
40-49	2262	2404	142	6.3%	2399	-5	-0.
50-72	1490	1477	-13	-0.9%	1416	-61	-4.
73+	853	773	-80	-9.4%	761	-12	-1.
Total	18938	20417	1479	7.8%	20800	383	1.