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A STUDY OF THE EFFECTS OF EDUCATIONAL
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UNIVERSITIES IN
TENNESSEE**

Gary Whaley

**A dissertation presented to the
Graduate Faculty of Middle Tennessee State University
in partial fulfillment of the requirements
for the degree Doctor of Arts**

August, 1976


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UNIVERSITIES IN
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ABSTRACT

A STUDY OF THE EFFECTS OF EDUCATIONAL BILL 1445 IN
RELATION TO SENIOR CITIZENS AND ITS IMPLICATION
FOR EDUCATION, PHYSICAL EDUCATION AND
RECREATION IN SELECTED STATE
SUPPORTED COLLEGES AND
UNIVERSITIES IN
TENNESSEE

by Gary Whaley

This study was conducted to investigate the effects of Educational Bill 1445 in relation to senior citizens and its implications for education, physical education, and recreation in selected state supported colleges and universities in Tennessee. The sub-problems of this study were designed (1) to determine the extent to which senior citizens at the selected state supported colleges and universities in Tennessee have taken the opportunity to utilize the benefits of Educational Bill 1445 and (2) to survey the members of senior citizen centers in the vicinity of the selected colleges and universities to determine their needs, interests, and preferences for courses in relation to physical education and recreation.

Admission records were examined to determine the extent to which senior citizens at the seven selected state supported colleges and universities in Tennessee have taken the opportunity to utilize the benefits of Educational Bill 1445. A total of 82 senior citizen students enrolled for 124 courses at the seven selected institutions.

The subjects for this study were composed of 193 active male and female members of seven senior citizen centers selected for their proximity to the seven selected state supported community colleges and universities in Tennessee.

A questionnaire with a personal information form was used to evaluate the effects of Educational Bill 1445 in relation to its implications for physical education and recreation in selected state supported colleges and universities.

Analysis of the data dealt primarily with 8 variables on the personal information form and 60 variables on the Senior Citizen Questionnaire. Frequencies, percentages, and means were calculated on the areas of responses. Cross-tabulations were used when applicable. If cross-tabulation indicated the possibility of significant difference, the chi square was run to determine the significance of apparent differences.

Analysis of data resulted in a number of frequency distribution and chi square tables which described the enrollment of senior citizens at the state supported colleges and universities, the senior citizens in the seven related centers, knowledge concerning Educational Bill 1445, and existing relationships between personal information and knowledge of Educational Bill 1445.

Based upon the data obtained from this study and in the interest of improving educational programs for senior citizens, several recommendations were made for colleges and universities which included a full-time director and coordinator of all programs directed toward older adults, the establishment of a local council on education for the older adults, the collection and study of data on this group, elimination of educational barriers, informal as well as formal educational activities, pre-retirement education, library privileges, and linkage with other community programs and services for the older persons by establishing cooperative relationships with other agencies and organizations.

ACKNOWLEDGMENTS

The writer wishes to express sincere appreciation to Dr. Guy Penny, Dr. Wallace Maples, and Dr. Robert C. Aden, committee members, for their suggestions and interest in this study. Special gratitude is due Dr. Stanley Hall for his patience, cooperation, support, and continual encouragement during this study.

Appreciation for assistance in the survey is extended to the seven senior citizen directors and the senior citizens who participated in the study (see Appendix D).

The writer also wishes to acknowledge the directors of admissions and records at each of the participating state universities and community colleges for their excellent cooperation (see Appendix D).

To the many other people who have been especially helpful in the course of this study, the writer expresses his personal gratitude.

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Chapter 1

INTRODUCTION

Older Americans are going back to school and college. For the first time in history, there are sufficient numbers of older people to constitute a significant segment of the population. There are now well over twenty million people in the United States over age 65, and 1,000 persons a day will join their ranks through the next decade.¹ If zero population growth is attained as it is expected by the year 2000, approximately 16 percent of our population (30-45 million) will be over 65.²

This shift in population may work profound changes on all educational institutions. The older adults could be a boost for schools and colleges faced with decreasing enrollment figures--if the legislators, administrators, and educators are farsighted enough to begin preparation now. There is evidence that many are doing just that.

¹Gregg W. Downey, "The Graying of America," Nation's Schools and Colleges, I (September, 1974), 36.

²Joseph M. Stetar, "Community Colleges and the Educational Needs of Older Adults," The Educational Digest XV (April, 1975), 28.

Educational programs involving and blending the old with the young should prove beneficial for all. "Older people need education to maintain intellectual acuity. The best way to avoid senile dementia is to find regular intellectual stimulation in later years," states Eric Pfeiffer, a psychiatrist at Duke University and one of the nation's foremost authorities on mental health for the aged.³ Furnishing educational opportunities to any significant portion of these twenty million people is a task requiring the resources of many educational agencies--public and private schools and colleges, "Y" (Young Men's Christian Association and Young Women's Christian Association) organizations, libraries, museums, and voluntary agencies.

The importance of education for the older adult is underscored in a study sponsored by the American Association of Community and Junior Colleges, which suggests that an educational program provide the much needed "vehicle for reintegrating the elderly into community life."⁴ Robert De Crow, director of the Older Americans Project, Washington, D.C., citing a national survey, reports 72 percent of the community colleges responding report they have instituted new programs for the elderly in the past year.⁵ Former

³Downey, p. 36.

⁴Stetar, p. 28.

⁵Downey, p. 37.

Secretary of Labor, Willard Wirtz, suggested that older citizens be required to go back to school as a way of making their lives more rewarding.⁶

Robert J. Kibbee, Chancellor of the City University of New York, states,

I strongly believe that continued intellectual involvement is important for the physical and mental health of our senior citizens. The stimulation provided on the college campus should be a most enriching experience. The University must be responsive to the needs of all the people of New York City and senior citizens comprise 12% of the city's population.⁷

Since the spring of 1973, New York City's senior citizens, 65 years and older, have been able to enroll tuition-free in undergraduate credit-bearing courses at any unit of the City University of New York on a space-available basis.

"Program 65" at Ohio State University, Columbus, is offering senior citizens the chance to attend regular classes free of charge on a seat availability basis. "One of the most interesting things about the Program 65 people is their eagerness to take physical education courses," notes Mary Moffitt, assistant director. "That was one of the first requests. Another thing they wanted was group sports."⁸ Three alternatives have been developed for

⁶John F. Helling and Bruce M. Bauer, "Seniors on Campus," Adult Leadership, XXI (December, 1972), 205.

⁷Intellect, CI, No. 2348 (March, 1973), 348.

⁸Downey, p. 43.

Program 65 participants. They can sign up for individual sports, they can take "prescriptive" physical education and/or they can participate in group sports designed exclusively for Program 65.

Although programs are being offered, research is limited as to the successes and/or failures of institutions of higher education offering educational programs specifically designed by and for older Americans.⁹ The North Hennepin State Junior College Program for Senior Citizens in the state of Minnesota has been given national visibility by articles in Time magazine, American Education magazine, and Christian Science Monitor. This has resulted in numerous inquiries into the "why's" and "how's" of the North Hennepin program. The program at North Hennepin certainly indicates that older Americans need and desire more education and will take full advantage of educational opportunities offered to them.¹⁰

It is fair to say that education for the aged is one of the areas in the field of aging with unlimited potential for growth and development. The development of education for the aged offers a challenge to those responsible for planning programs as well as to older people themselves. Social scientists have substantiated the positive aspects of

⁹Helling and Bauer, p. 205.

¹⁰Helling and Bauer, p. 205.

the learning ability of older persons. Learning ability does not on the average decline significantly among middle-aged and older people.¹¹

Opportunities for educational experiences should be made available to help meet the many needs of older people. The needs are usually classified under such headings as income, physical fitness, health, housing, medical care, family, education, and recreation. Many of these needs can be met directly by educational programs. One of the greatest needs is to maintain a level of well-being sufficient for full participation in the society.¹² There is a compelling need for better coordinated efforts to develop more effective programs for the aged. Three major problems confronting older people are: (1) inadequate information about the educational programs available, (2) interest, need and determination of courses to be offered, and (3) prohibitively expensive programs.

The Tennessee State Legislature recently adopted Bill 1445 which states,

Senior citizens sixty years of age or older who are domiciled in Tennessee may audit courses at any state supported college or university without paying tuition

¹¹E. Percil Stanford, "Education and Aging: New Task for Education," Adult Leadership, XX (February, 1972), 293.

¹²Stanford, p. 293.

charges, maintenance fees, student activity fees, or registration fees; however, this privilege may be limited on an individual classroom basis according to space availability.¹³

Older people are a valuable resource in our society; therefore, we should do all we can to preserve and improve on that resource.

STATEMENT OF THE PROBLEM

This study was conducted to investigate the effects of Educational Bill 1445 in relation to senior citizens and its implications for education, physical education, and recreation in selected state supported colleges and universities in Tennessee. The sub-problems of this study were designed (1) to determine the extent to which senior citizens at the selected state supported colleges and universities in Tennessee have taken the opportunity to utilize the benefits of Educational Bill 1445 and (2) to survey the members of senior citizen centers in the vicinity of the selected colleges and universities to determine their needs, interests, and preferences for courses in relation to physical education and recreation.

¹³Tennessee Code Annotated, Title 49, Section 1, March, 1974.

PURPOSE OF THE STUDY

The purpose of this study was to collect information concerning the knowledge, the notification, interest, preference, and participation of older adults in educational programs in the state supported community colleges and universities in Tennessee. This study should promote better understanding and further communications between older adults and the community colleges and universities. More specifically, the results of this study should provide information useful to educational professionals for program planning. An important aspect of this study is that it alerted senior citizens to education as an option. Physical education and recreation planners are informed of the activity classes desired by these prospective students. Hopefully, this study will aid community colleges and universities in obtaining state and/or federal funds for reimbursement for educational services offered to the older adult.

DEFINITIONS OF TERMS

For the purpose of this study, the following terms and definitions were used.

AAHPER. Currently the American Alliance of Health, Physical Education and Recreation, formerly the American Association of Health, Physical Education, and Recreation.

AARP. American Association of Retired Persons.

Audit. To register for and attend a college course without receiving academic credit.

Bill 1445.

Senior citizens sixty years of age or older who are domiciled in Tennessee may audit courses at any state supported college or university without paying tuition charges, maintenance fees, student activity fees, or registration fees; however, this privilege may be limited on an individual classroom basis according to space availability.¹⁴

Domiciled. To establish a person or oneself in a residence.¹⁵

Gerontology. The scientific study of the psychological and pathological phenomena associated with aging.¹⁶

NRTA. National Retired Teachers Association.

Physical activity. Physical activity is defined as activity above and beyond that activity associated with a daily occupation or normal functioning of the body.

Recreation. Refreshment in body or mind, as after work, by some form of play, amusement or relaxation. Any

¹⁴Tennessee Code Annotated, Title 49, Section 1, March, 1974.

¹⁵William Morris, ed., The American Heritage Dictionary of the English Language (New College ed.; New York: Houghton Mifflin Co., 1975), p. 389.

¹⁶Morris, p. 553.

form of play, amusement, or relaxation used for this purpose as games, sports, hobbies, reading, and walking.¹⁷

Senior citizen. Senior citizens are primarily retired persons 60 years of age and over.

DELIMITATIONS OF THE STUDY

1. The study was limited to those participating in educational classes at selected state supported colleges and universities in Tennessee and to 50 percent of the active members (60 years of age or older) of the senior citizen centers.

2. This study was limited to a smaller number of male senior citizens than female senior citizens.

3. The findings of this study in regard to educational programs for the older adults was limited to Tennessee senior citizens.

LIMITATIONS OF THE STUDY

1. No attempt was made to assess the effectiveness of educational programs for the older adult at any of the selected state supported colleges and universities in Tennessee.

¹⁷Morris, p. 1090.

2. No attempt was made to generalize the findings of this study to all educational programs for the older adults in other states.

BASIC ASSUMPTION

It was assumed that the subjects, the senior citizens, answering the questionnaires and personal information forms responded honestly, thus reflecting their true feelings and situations.

Chapter 2

REVIEW OF RELATED LITERATURE

At the White House Conference on Aging in 1971, the section on education adopted this preamble:

Education is a basic right for all persons of all age groups. It is continuous and henceforth one of the ways of enabling older people to have a full and meaningful life, and as a means of helping them develop their potential as a resource for the betterment of society.¹

Mr. Foster Pratt, past president of the American Association of Retired Persons, writes,

We have proved that retirement can be a beginning, not an end. New doors can be opened. New vistas can be revealed. New traits can be forged. New heights can be reached. Retirement can be the first time in our lives when we can find true opportunity for service, for involvement, for concern.²

The related literature will be presented in three parts: (1) educational programs for older persons limited

¹Earl Kauffman ("Aging and the College Curriculum, a Paper Prepared for the Workshop, Aging and the College Curriculum, Sponsored by the West Virginia Commission on Aging, the School of Social Work and the Department of Psychology, University of West Virginia, April 23, 1973"), p. 17.

²Kauffman, p. 17.

to campuses of colleges and universities, (2) educational programs for older persons not limited to campuses of colleges and universities, and (3) physical education and recreation programs for older persons.

EDUCATIONAL PROGRAMS ON CAMPUS

A number of colleges and universities are beginning to provide opportunities for older people to continue their education. One such institution is the University of Kentucky. Since 1964, the Herman L. Donovan Fellowship has been available for senior citizens over age 65. The Donovan program, one of the oldest and perhaps the most comprehensive in the country, annually enrolls approximately 225 people on the main campuses at Lexington and a similar number at the fourteen community colleges affiliated with the university.³

The Donovan Fellowship is a living memorial to the late Dr. Herman L. Donovan, President, University of Kentucky, 1940-1955. In the latter years of his tenure, he attended a seminar on aging at the University of Michigan where he met Dr. Wilma Donohue, Dr. Clark Tibbitts, and other pioneer leaders in social gerontology.⁴ Dr. Donovan became a strong advocate of higher education for senior citizens. In a paper he wrote for the Kentucky Committee

³Kauffman, p. 3.

⁴Kauffman, p. 3.

on Education and the Uses of Free Time, in preparation for the 1961 White House Conference on Aging, Dr. Donovan proposed that all colleges and universities, both public and private, should throw open the gates of their campuses to older people so they could pursue their interest in learning as long as they lived, and, he added, they should be invited to come without payment of fees.⁵ His reasoning was very valid then--it is just as appropriate today--our colleges and universities owe their greatness to the work and support of people now grown old. Through gifts, taxes, votes, and dedication they supported higher education, often at considerable personal sacrifice. They believed so much in a college education that they saw to it that their sons and daughters got it even though it was a privilege denied to themselves.⁶

In 1962, the Board of Trustees created the Council on Aging and, in 1964, established the Donovan Fellowship according to Dr. Donovan's own design. Now any person over 65, living anywhere in the United States, can attend the university and take any course listed in the general catalog for credit, or as an auditor, without the payment of fees. The only criteria for admission is a personal estimate of health good enough to stand the rigors of academic life and

⁵Kauffman, p. 4.

⁶Kauffman, p. 4.

a motivation sufficient to accept the challenge of being a college student. No new classes were required, and enrollment is on a space available basis in existing courses. The University of Kentucky does not limit its programs to residents of the state.

The Council on Aging is responsible for many other programs for adults besides the Donovan Fellowship:

1. Continuing Education--16 clock-hour short courses based on expressed interests of older people.
2. The Writing Workshop for People over 57--A nationally advertised program limited to an enrollment of 50. A week-long program in its seventh year, with classes in fiction, non-fiction, poetry, and script writing by people who are highly skilled and well known.
3. The Study-Travel-Study Seminar--The group meets to study where to go, to become acquainted, and to understand problems of traveling. After returning there are several meetings to continue the study.
4. The Forum--The Forum presents an opportunity for older adults to meet in an academic setting on regular semester-long schedules to study great issues in American life and propose effective courses of action.⁷

Other institutions of higher education are also serving older people.

North Hennepin State Junior College, Minnesota, through the North Hennepin Community Service Department, offers senior citizens aged 55 years or older a variety of

⁷Kauffman, p. 6.

courses on a tuition-free basis.⁸ Transportation is provided by college buses and by car pools.

The University of Connecticut and four state colleges by state statute waive tuition fees and/or other charges for persons 62 years or older. In 1971, the legislative assembly extended this waiver provision to the state's ten community colleges as well.⁹

The University of New Hampshire awards senior citizen scholarships to any resident of New Hampshire who is 65 years of age or over for any credit or non-credit course which is not intended for professional development.¹⁰

Citizens of the state of Vermont, 65 years and older, upon presentation of proof of residence and age, are permitted to enroll as auditors in classes at the University of Vermont without the payment of tuition fees. According to an estimate by R. V. Phillips, Dean of Continuing Education, roughly a dozen people a year take advantage of this opportunity.¹¹

⁸Howard Y. McClusky, "Educational Alternatives for Senior Citizens," data as listed in keynote address: Education and Aging (University of Michigan, April, 1971), p. 16.

⁹Kauffman, p. 7.

¹⁰Kauffman, p. 9.

¹¹Kauffman, p. 10.

Another institution that accommodates older persons is the University of Rhode Island. The minimum age is 63, and one must be a resident of the state to qualify. The program in existence since the fall semester, 1971, offers scholarships for credit and non-credit courses. Not many older persons are entering the program, although it was announced throughout the state, according to Dr. George J. Dillanese, Dean of the Division of University Extension.¹²

Cantonsville Community College, Maryland, through a Title III grant of the Older Americans Act, in cooperation with the Maryland State Commission on Aging, offers a variety of courses to those senior citizens aged 55 years or older.¹³ Most programs are offered at no cost, while a few require a small registration fee. Programs include health seminars, pre-retirement planning, safety and recreation.

The Community College of Allegheny County, Pennsylvania, in cooperation with the local Foster Grandparent program, offers credit courses in sociology and child development to 58 foster grandparent participants.¹⁴ These courses are designed to provide insight into the institutionalized handicapped child.

¹²Kauffman, p. 10.

¹³McClusky, p. 17.

¹⁴McClusky, p. 17.

A program quite popular with older persons at the University of Oklahoma is the Bachelor of Liberal Studies.

Dr. J. E. Burkett, Assistant Vice President, writes,

. . . of the 2,618 adults that have enrolled in this program, 421 were 51 years of age or older; 52 were 61 years of age or older; and 3 were 70 years of age or older.¹⁵

Under a grant from the Oklahoma State Board of Regents for Higher Education, a program of courses specifically designed to meet the needs and interests of retired and semi-retired people is being offered at Southwestern State College.

These courses may be taken for college credit or non-credit. Persons wanting credit must qualify for admission and pay an enrollment fee of \$13.00 per credit hour.¹⁶

In Utah, the age for entering programs for older persons is 55, but only certain courses are open to people of this age group.¹⁷

A different pattern for providing educational opportunities for older persons exists in the Oregon State System of Higher Education. A special tuition rate of \$5.00 per term credit hour is provided for senior citizens (65

¹⁵Kauffman, p. 10.

¹⁶Ted Guffy and Kerry Hines, "Senior Citizens Desire to Continue Learning" (Southwestern State College, Weatherford Oklahoma Division of Teacher Education and Psychology, 1974), p. 1.

¹⁷Kauffman, p. 11.

years or older) at Oregon State University in Corvallis, the University of Oregon in Eugene, Portland State University in Portland, or at any one of the state colleges located in Monmout, Ashland, or LaGrande.¹⁸ The fee of \$5.00 per credit hour compares to a fee of \$8.40 per credit hour charged to regular undergraduate students.

Current and future educational programs should embrace the long-range goals of education for older people set forth in the Education Report of the White House Conference on Aging:

1. To help older people fulfill their life-time potential, thus assuring them the means of attaining a self respecting level of well being, freedom to develop a partnership role in promoting the welfare of society.
2. To assist older people in developing the abilities uniquely available in the later years (e.g., wisdom and contributive abilities), and to assist society in utilizing the abilities developed.
3. To help older people serve as models of life-long fulfillment for emulation and for the guidance of on-coming generations.
4. To create a climate of acceptance by both older persons and society of the desirability, legitimacy, and feasibility of the preceding goals.
5. To help society understand the need and provide support for quality education for everyone at all ages as a continuing opportunity in life-long learning.
6. To provide pre-retirement education so older people will be better prepared to meet special

¹⁸Kauffman, p. 11.

needs such as their needs for mental and physical health, for adequate income, for adequate housing, for satisfying relationships with the immediate and extended family, and for making wise use of leisure time.

7. To make special provisions for delivering educational programs to "hidden populations" of older people, usually non-participants, and isolated from the mainstream of community services.¹⁹

The College of the Mainland in Texas City has one of the most extensive programs for education of the elderly in Texas. This program was made available through Title III funds of the Older Americans Act in cooperation with the Governor's Committee on Aging. These funds provided for the creation of a Senior Citizens Theatre production, Senior Citizens Counseling Service, Telephone Reassurance System, a newsletter, and a Senior Citizens Resource Center. In addition, the college offers classes to senior citizens free of charge and, with the purchase of a senior citizen identification card (\$2.50/year), senior citizens may take any General Adult non-credit course for one-half the regular tuition fee. Arts and Crafts, Rapid Reading, Physical Fitness, and Nutrition Education are examples of the types of classes offered free.²⁰

¹⁹John F. Helling and Bruce M. Bauer, "Seniors on Campus," Adult Leadership, XXI (December, 1972), 204.

²⁰McClusky, p. 18.

EDUCATIONAL PROGRAMS OFF CAMPUS

Educational programs for older persons are not limited to campuses of colleges and universities.

The Older Americans Act of 1965 provided the first real impetus to rolling back the limits of aging for older people. Through Title III, money was made available to each state that had an acceptable plan (all states do now) to support programs developed in local communities.²¹ State commissions on aging now have staffs that can aid communities in securing Title III programs.

Programs of adult education are sponsored by city or county boards of education. The value of many of these is that they get to all segments of society. The functional illiterates (4 years of school or less), approximately one-fifth of those over 65, also need education for such functions as (1) serving their community, (2) achieving social interaction, (3) self-expression, and (4) enhancement of the joy of living.²² Usually the courses are short-term, and often they are offered in the elementary and secondary schools. There seems to be no limit to the topics and courses covered.

²⁰Kauffman, p. 13.

²¹Kauffman, p. 13.

For six years, the Institute of Lifetime Learning in Washington, D.C., has been at work trying to provide an adult education program especially designed and suited to the retired or older citizens. The Institute, a service of the National Retired Teachers Association and the American Association of Retired Persons, has developed a concept entitled "non-threatening education for older adults." While educators would like to feel that all education is non-threatening, there is much threatening students in the present educational system. Retirees and older adults may have less to be threatened with. They have raised their families and many of their goals have been achieved.²³ Careers, status, and prestige may not be as important. The pace of life is usually slower and more relaxed, particularly if good health is maintained. The late Dr. Ethel Percy Andrus, founder and president of these two associations, emphasized that learning never ceases. People with intellectual curiosity are ageless and so interested in what is going on around them that they are vibrantly alive and a pleasure to others.²⁴

The Institute for Retired Professionals of the New School for Social Research is another pioneering

²³Leroy E. Hixson, "Non-threatening Education for Older Adults," Adult Leadership, XVIII (September, 1969), 84.

²⁴Hixson, p. 84.

organization which provides retired professionals with an opportunity for continued intellectual and cultural growth.²⁵

The aim of the Oliver Wendell Holmes Association is to help men and women retire gracefully after an active business, industrial, or professional life. Its solution is continuing education, combined with involvement in the contemporary world and wider utilization of the retired layman and emeritus professors.²⁶ The Association conducts institutes for periods of from one to four weeks.

The National Retired Teachers Association and its public counterpart, the American Association of Retired Persons, are pioneering in the field of adult education with a variety of innovative programs.²⁷

PHYSICAL EDUCATION AND RECREATION PROGRAMS

"Exercise will arrest physical and mental deterioration due to aging."²⁸ This is a conclusion based upon a small sampling of older persons who participated

²⁵E. Percil Stanford, "Education and Aging: New Task for Education," Adult Leadership, XX (February, 1972), 282.

²⁶Stanford, p. 282.

²⁷Kauffman, p. 15.

²⁸Edward J. Rohmann, "Exercise and the Aging," Journal of Physical Education, LXX (January-February, 1973), 39.

actively three or four days a week for eight months in a program of exercise. Their ages ranged from 65 to 84 years of age.

The program is being conducted as a part of an overall program for older adults called "Helping Older Persons to Have More Useful and Healthy Lives," which is being funded by a government grant under the Older Americans Act.²⁹ Many other social and recreational programs are a part of the program conducted at the "Y," including cards, pool, ping-pong, trips, lectures, adult education classes, recreational swimming, voluntary visitation, homemakers assistance, etc.

Prior to the exercise program, each person completed a medical history sheet and submitted a statement that they had their doctor's permission to participate. They were then given tests to measure flexibility, lung capacity, strength index, and cardiovascular efficiency. There was also a test to determine any improvement in mental outlook (attitude--"The Measurement of Depression"--William W. Lung, M.D.) during the program.³⁰ In addition to testing measurable qualities of physical and mental health, each person was given an opportunity to indicate his or her own subjective evaluation of certain motor performance abilities related to daily living.

²⁹Rohmann, p. 39.

³⁰Rohmann, p. 39.

The results seemed to indicate that, in spite of preliminary misgivings about the hazards of exercise for these older persons, the older people not only need the exercise more than the younger people but they benefit more from it.³¹

The Schneider cardiovascular test showed that 44 percent improved. In the flexibility test, 92 percent improved. Ninety percent improved in lung capacity, and 73 percent scored higher in strength. In the attitude test, 83 percent improved scores.³²

Two days a week for 30 minutes, the group meets in the gym while the "Y" staff leads them in the program set forth in the "Fitness Challenge in Later Years," prepared by the President's Council on Physical Fitness and Sports and the Administration on Aging. On two other days, the group is scheduled for 30 minutes each day in the swimming pool for a program of water exercises.

Certainly the above method is not the only way to provide for a successful program of physical activity. There are others (Cooper's Aerobics,³³ Exercise Stress

³¹Rohmann, p. 39.

³²Rohmann, p. 39.

³³Kenneth H. Cooper, The New Aerobics (New York: Bantam Books, 1970), p. 61.

Tests³⁴) that can produce good results as well, if a medical examination and a determination of the individual's present capabilities are first determined.³⁵

A well developed and scientifically researched method which provides a basis for individual exercise prescription is Astrand's bicycle ergometer stress test, with a follow-up program by de Vries.³⁶ Exercises included in this reference are designed to improve the cardiovascular and respiratory systems as well as strengths, body alignment (posture), flexibility (range of motion), and response time. It is readily obvious that the physical educator should consult with the physician before the stress test and while developing an individual's program.

In addition to activity programs, an integral part of the recent retiree's physical education is what has been referred to as preparation for daily living. Those which have particular significance for this age group would be:

1. Mechanics of Living, which would include instruction in economy of effort through proper posture, correct methods of carrying, lifting,

³⁴P. D. Astrand, "A Nomogram for Calculation of Aerobic Capacity (Physical Fitness) from Pulse Rate During Sub-maximal Work," Journal of Applied Physiology, VII (1954), 218.

³⁵Timothy E. Kirby, "Physical Education's Contribution to Meaningful Retirement," The Journal of Physical Education, LXXI (May-June, 1974), 136.

³⁶Kirby, p. 136.

climbing stairs, reaching high objects, and others. It is these small tasks which often result in disabling injuries due to falls, strains and sprains at the later ages.

2. First Aid, so as to provide the retirement age citizen with new facts of emergency care in a field that rapidly changes.
3. The identification of physical problems which this age group is likely to encounter and how to recognize and deal with these problems.
4. The study of physiological functions in order to gain an appreciation of the need for exercise.
5. Nutrition, and the effects of good and poor eating habits.³⁷

Physical education is concerned with the mental and physical health of all individuals, regardless of age; physical education has vital contributions to make to the development of the fully integrated person at any age. It is concerned with how the person learns to understand and express himself. It helps the person to participate successfully in his physical and social environment. Physical educators are concerned with providing leadership which will encourage the maintenance of good health at all age levels.

Adult physical education programs have health knowledge to impart, group and individual experiences to offer, and a host of learning skills which contribute to

³⁷Kirby, p. 136.

the all around development and education of the adult American.³⁸

The future is likely to be characterized by an abundance--to some, a superabundance--of leisure time. In addition to the four-day work week, extended vacations, and earlier retirements, the increase in life span will necessitate additional recreational opportunities for most all of us. A life span of 100 years is a definite possibility for the year 2000.³⁹ With such a largesse of lingering longevity, a person could spend 40 years in retirement.⁴⁰

The new leisure provides time for the self-actualization of individuals. A mind-stretcher for such enrichment, challenging to people in all walks of life, is Leisure and the Quality of Life: A New Ethic for the 70's and Beyond, edited by Edwin J. Staley, executive director of the Recreation and Youth Seminar Planning Council, Los Angeles County.⁴¹ Through emphases on broad citizen

³⁸Ralph C. Dobbs and A. J. Steponovich, Jr., "Understanding Physical Education Programs for Adults," Adult Leadership, XXI (November, 1972), 149.

³⁹Ted Gordon, Carroll L. Lang, John Nixon, Lewis Rockwood, and George Wilson, "The Community Education View of Health, Physical Education, and Recreation," Phi Delta Kappan, LIV (November, 1972), 179.

⁴⁰Gordon, p. 179.

⁴¹Edwin J. Staley, ed., Leisure and the Quality of Life: A New Ethic for the 70's and Beyond (Washington, D.C.: AAHPER, 1972), 42.

involvement and participation in a wide variety of activities, community education, physical education and recreation are in unique positions to make marked contributions to the quality of life. Leisure service, particularly, can be a most valuable resource for helping people become all they are capable of becoming.

Opportunities for recreation and contacts with health and social service agencies will be so numerous that computers will be programmed to give people and institutions ready access to information which will help them meet their wants and needs.⁴²

Public programs for older people sponsored by recreation and park departments include such activities as card-playing, arts and crafts, dancing, social gatherings, tour programs, and informal discussions on a variety of topics. Programs of private agencies most often provide avenues for peer group relationships and socialization through social recreation activities which include art, music, courses in language, discussion groups, volunteer services, counseling, and even nutritionally balanced meals once a day.⁴³

⁴²Gordon, p. 179.

⁴³Peter J. Verhoven, "Recreation and the Aging," Recreation and Special Population, ed. by Thomas A. Stein and H. Douglas Sessoms (Boston: Holbrook Press, Inc., 1973), p. 397.

Churches have rapidly developed older citizen clubs and offer a wide variety of free-time activities.

Federal government programs for the elderly have a twofold objective in that they not only provide a source of income but also an opportunity for meaningful activity for the older person.⁴⁴ The foster grandparent program, VISTA (the domestic version of the Peace Corps), Operation Green Thumb (where older, low-income people are being hired to beautify the highways in rural sections of states), and Head Start are good examples of new and innovative programs provided by the federal government.

The new leisure ethic, through its interrelationship of health, physical education, recreation, and education, will need to use a team approach to improve competencies. Such a team approach, to be successful, will require a coordination of professionals and involvement of others who surpass anything known of late.

There is a compelling need for better coordinated efforts to develop effective, total programs for older adults to live more complete lives.

⁴⁴Verhoven, p. 397.

Chapter 3

METHODS AND PROCEDURES

Admission records were examined to determine the extent to which senior citizens at selected state supported community colleges and universities in Tennessee have taken the opportunity to utilize the benefits of Senior Citizens Education Bill 1445. Permission to examine the admission records was granted by the directors of Admissions and Records at Cleveland State Community College, Columbia State Community College, Volunteer State Community College, Motlow State Community College, Austin Peay State University, Middle Tennessee State University, and Tennessee Technological University (see appendixes).

A questionnaire with a personal information form was used to evaluate the effects of Senior Citizens Education Bill 1445 in relation to its implications for physical education and recreation in selected state supported colleges and universities. The questionnaire was distributed during the month of May, 1976, to the senior citizen center director or club president at Clarksville, Cleveland, Columbia, Cookeville, Gallatin, Murfreesboro, and

Tullahoma. The researcher explained the questionnaire and answered any questions concerning the instrument.

SURVEY SAMPLE

The subjects for this study were composed of 193 active male and female members of senior citizen centers located in Clarksville, Cleveland, Columbia, Cookeville, Gallatin, Murfreesboro, and Tullahoma. These centers were selected for their proximity to the seven selected state supported community colleges and universities in Tennessee. According to the senior citizen centers' directors, the total number of active members range from a low of 39 members in Columbia to a high of 75 members in Gallatin. A stratified random sample was obtained by using 50 percent of each center's active membership. The total number of subjects was 193.

INSTRUMENT OR QUESTIONNAIRE

The instrument or questionnaire in this study was developed after a thorough study of related literature, interviews with Tennessee legislators who sponsored the Senior Citizens Education Bill 1445, and recommendations from Dr. Stanley Hall, Dr. Wallace Maples, and Dr. Guy Penny, dissertation committee. In addition, the researcher consulted senior citizens in surrounding areas.

The instrument is divided into two forms. Section I (Senior Citizen Information Form) is comprised of eight questions or statements concerned with personal information affecting the individual. Section II (Senior Citizen Questionnaire) consists of fourteen questions dealing with the Senior Citizens Educational Bill 1445 and physical education and recreation.

COLLECTING THE DATA

The Senior Citizen Information Form and Questionnaire pertaining to Senior Citizens Educational Bill 1445 was taken by the researcher to the directors of the senior citizen centers in the seven selected areas. Permission was previously granted by the senior citizen center directors and club presidents. The questionnaire was explained to each director, and questions were answered by the researcher. The questionnaires were distributed and collected by the director or club president of each center. A cover letter stating the purposes of the study and instructions for administering the form and questionnaire was attached to each copy of the questionnaire. Included with the questionnaires was a self-addressed, stamped envelope for the director's or club president's use in returning the questionnaires.

There were 193 senior citizens who participated in the study, 50 males and 141 females. Two participants failed to identify their sex on the questionnaires (see Table 5).

ANALYSIS OF DATA

The forms and questionnaires were administered to the senior citizens at each center by the senior citizen center's director or club president in May, 1976. The information obtained from the responses to the forms and questionnaires was organized and analyzed to determine the interest and knowledge of Senior Citizens Educational Bill 1445 and the implications for physical education and recreation.

Frequencies, percentages, and means were calculated on all the areas of responses. Cross-tabulations were used when applicable. If cross-tabulation indicated the possibility of significant difference, such data were then subjected to a chi square analysis.

Chapter 4

ANALYSIS OF DATA

This study was designed (1) to determine the extent to which senior citizens at the selected state supported colleges and universities in Tennessee have taken the opportunity to utilize the benefits of Educational Bill 1445 and (2) to survey the members of senior citizen centers in the vicinity of the selected colleges and universities to determine their needs, interests, and preferences for courses in relation to physical education and recreation.

This chapter was concerned with analysis of data from the examination of admission records and the questionnaires administered to the senior citizens at the seven selected centers. Each senior citizen center's director or club president was asked to survey 50 percent of the active membership. Table 1 shows that there were 193 senior citizens surveyed from the seven centers. The number of questionnaires returned was 193 (100%).

Analysis of data dealt primarily with 8 variables on the personal information form and 60 variables on the Senior Citizen Questionnaire. Frequencies, percentages, and means were calculated on the areas of responses. Cross-tabulations

Table 1
Number Surveyed at Each Senior
Citizen Center

Senior Citizen Center	Number of Active Members	Number Surveyed
Clarksville	50	25
Cleveland	50	25
Columbia	39	20
Cookeville	50	25
Gallatin	75	38
Murfreesboro	60	30
Tullahoma	60	30
Total	384	193

were used when applicable. If cross-tabulation indicated the possibility of significant difference, then chi square was computed to determine the significance of apparent differences.¹ The level of significance for any relationship which occurred other than what would be expected by chance is reported in this study. The significance of any

¹Biomedical Computer Programs (Health Sciences Computing Facility, Department of Biomathematics, School of Medicine, University of California, Los Angeles, University of California Press, January 1, 1973), pp. 133-143.

relationship which occurred was found by consulting a table of values for X^2 for different levels of significance.² The .05 level of confidence or greater was the arbitrary level.³ The formula for these procedures is shown in Appendix E.

ANALYSIS OF ADMISSION RECORDS

Admission records were examined at Cleveland State Community College, Columbia State Community College, Motlow State Community College, Volunteer State Community College, Austin Peay State University, Middle Tennessee State University and Tennessee Technological University. Table 2 contains information which indicates the enrollment of senior citizens utilizing Education Bill 1445 at the seven selected state supported community colleges and universities in Tennessee. The enrollments ranged from one senior citizen at Motlow State Community College to a high of thirty-eight senior citizen students enrolled at Tennessee Technological University. A total of eighty-two senior citizen students enrolled for 124 courses at the seven institutions.

²Henry E. Garrett, Statistics in Psychology and Education (New York: David McKay Company, Inc., 1966), p. 462.

³G. Milton Smith, A Simplified Guide to Statistics for Psychology and Education (New York: Holt, Rinehart and Winston, Inc., 1962), p. 123.

Table 2
Distribution of Senior Citizens
at Selected Institutions

Institution	Participants	Enrollment*
Cleveland Community College	2	2
Columbia State Community College	9	17
Motlow State Community College	1	4
Volunteer State Community College	14	21
Austin Peay State University	6	12
Middle Tennessee State University	12	14
Tennessee Technological University	38	54
Total	82	124

*Some senior citizens have enrolled for more than one course.

Table 3 shows the class selections by senior citizens at the state community colleges. Physical conditioning was selected by more senior citizens than any other course at the state supported community colleges.

Table 4 shows the class selection by senior citizens at the state universities. More senior citizens

Table 3

Distribution of Classes According to Senior Citizen Enrollment
at Selected Community Colleges

Cleveland State Community College (Quarter System)		Columbia State Community College (Quarter System)		Motlow State Community College (Quarter System)		Volunteer State Community College (Quarter System)	
2 Participants		9 Participants		1 Participant		14 Participants	
Courses Taken	Number Enrolled	Courses Taken	Number Enrolled	Courses Taken	Number Enrolled	Courses Taken	Number Enrolled
English Comp.	2	Cybernetics I	2	French 101	1	Physical	
American History	1	Cybernetics II	2	French 102	1	Conditioning	9
		Cybernetics III	2	French 103	1	Applied Art	
		Cybernetics IV	1	French 201	1	Studio	2
		College Reading	1			Intro. to Business	1
		Auto Mechanics	1			Beginning Spanish	1
		Prin. of Real Estate	1			World Geography	1
		Real Estate Law	1			Gen. Psychology	1
		Real Estate Appraisal	1			Intro. to Foods	1
		Data Processing	1			Personnel Mgmt.	1
		Basic Acting	1			Intro. to Real Estate	1
		Literature Fiction	1			Tenn. History	1
		Literature Drama	1			Gen. Edu. Dev.	1
						Human Anatomy: Phy.	1

Table 4

Distribution of Classes According to Senior Citizen Enrollment
at Selected State Universities

Austin Peay State University (Quarter System) 6 Participants		Middle Tennessee State University (Semester System) 12 Participants		Tennessee Technological University (Quarter System) 38 Participants	
Courses Taken	Number Enrolled	Courses Taken	Number Enrolled	Courses Taken	Number Enrolled
Found. of Art	4	Bible	2	Intro. to Painting	31
Art History	2	Office Management	1	Drawing & Design	7
Industrial Arts	1	Folk & Square Dance	1	Ballroom Dance	2
Art Metals	1	Jesus of Nazareth	1	Beginning Golf	2
Found. of Woodworking	1	Classical Piano	1	Fund. of Public Speaking	2
Ref. & Air Condit.	1	Prin. of Accounting	1	Dressmaking	2
Basic Math	1	Product Typewriting	1	Art History	2
Eastern Religion	1	Greece	1	Child Psychology	1
		Drawing I	1	Elem. German	1
		Drawing II	1	Creative Writing	1
		Ceramics	1	Intro. to Journalism	1
		Painting I	1	English Composition	1
		Prin. of Real Estate	1	Woodworking	1

have enrolled in Introduction to Painting and Foundations of Art at the state supported universities.

ANALYSIS OF QUESTIONNAIRES

The subjects for this study were composed of 193 active male and female members of senior citizen centers located in Clarksville, Cleveland, Columbia, Cookeville, Gallatin, Murfreesboro, and Tullahoma. These centers were selected for their proximity to the seven selected state supported community colleges and universities in Tennessee.

The instrument was divided into two forms. Section I (Senior Citizen Information Form) is comprised of eight questions or statements concerned with personal information affecting the individual. Section II (Senior Citizen Questionnaire) consists of fourteen questions dealing with the Senior Citizens Educational Bill 1445 and physical education and recreation.

Table 5 reveals that there were 50 (26.18%) males and 141 (73.82%) females in the sample, almost three women for every one man.

The Ohio State University study on education of the aged sample contained three women for every two men.⁴

⁴Andrew Hendrickson and Robert F. Barnes, "Educational Needs of Older People," Adult Leadership, XVI (May, 1967), 2.

Table 5
Frequency Distribution of Subjects by Sex

Sex	Frequencies	Percent
Male	50	26.18
Female	141	73.82
Total	191*	100.00

*Two senior citizens failed to mark their sex.

According to a new Census Bureau report, women continue to outlive men by an average of almost eight years and, today, there are 69 males for every 100 females 65 years of age and older.⁵ The report shows that, as of 1974, women could expect to live an average of 75.9 years and men an average of 68.2 years.⁶

Table 6 indicates that 87.25 percent of the senior citizens of this sample are retired from full-time employment, while 12.65 percent of them are still working. This corresponds to the Ohio State University study with 40 percent of their interviewees retiring voluntarily, 25 percent retiring for health reasons, 23 percent being

⁵"Elderly Population Increasing Annually," The Tennessean, Tuesday, June 1, 1976, p. 2.

⁶"Elderly Population Increasing Annually," p. 2.

Table 6
Frequency Distribution of Subjects
by Retirement

Retirement	Frequencies	Percent
Retired	145	87.35
Non-retired	21	12.65
Total	166*	100.00

*Some senior citizens did not mark retirement.

forced to retire, and 12 percent of them were still working.⁷ More than a million Americans retire each year.⁸ There are said to be more than 18 million retired persons in the nation today, and the projected number probably will exceed a third of the population by the year 2000.⁹

According to Table 7, the mean for the age of this sample of senior citizens is 67.5 years.

Table 8 contains information which indicates that slightly over half of the senior citizens are in good health, with 42.53 percent in fair health and only one

⁷Hendrickson and Barnes, p. 2.

⁸Jackie Sunderland, "Include the Elderly In," Parks and Recreation (June, 1974), 42.

⁹"Nashville Retirees Eye Recreational Vehicles," The Tennessean, May, 1976, p. 1.

Table 7
Frequency Distribution of Subjects by Age

Age	Frequencies	Percent	Mean
60-64	35	18.62	
65-69	66	35.11	67.5
70-74	52	27.66	
75-79	19	10.11	
80-over	16	8.50	
Total	188*	100.00	

*Some senior citizens did not mark age.

Table 8
Frequency Distribution of Subjects by Health

Health	Frequencies	Percent
Good	99	56.90
Fair	74	42.53
Poor	1	0.57
Total	174*	100.00

*Some senior citizens did not mark level of health.

person in poor health. The sample used in this study shows that the senior citizens are active members of senior citizen centers, which may account for this rather high level of health. A recent Gallup Poll reveals 60 percent of the 27 million Americans over 60 years of age are physically in good enough shape to do almost anything they want.¹⁰

According to Table 9, 22.7 percent of the survey sample have an income between \$100 and \$199 per month, another 20.54 percent have an income between \$300 and \$399 per month, and 28.11 percent have an income of \$400 and over per month. The average (mean) income per month for this sample was \$242. In the Ohio State University study (2,307 persons over 65 were interviewed), half the sample indicated an income of \$150 per month or less.¹¹

In 1974, the median income for families with heads 65 and older was \$7,298, less than three-fifths the median of \$12,836 for all families.¹²

Table 10 indicates that 39.06 percent of the subjects were married and living with their spouses. Approximately 45 percent were living alone, while 12.51 percent lived with relatives. This corresponds to the

¹⁰Max Kaplan, "Leisure and the Elderly," Handbook to the Modern World (London: Anthony Bland, Inc., 1970), p. 7.

¹¹Hendrickson and Barnes, p. 3.

¹²"Elderly Population Increasing Annually," p. 2.

Table 9
Frequency Distribution of Subjects by Income

Income Distribution	Frequencies	Percent	Mean
Less than \$100 per month	11	5.95	
\$100 to \$199 per month	42	22.70	
\$200 to \$299 per month	42	22.70	\$242.00
\$300 to \$399 per month	38	20.54	
\$400 per month and over	52	28.11	
Total	185*	100.00	

*Some senior citizens did not mark income.

Table 10
Frequency Distribution of Subjects by
Living Situation

Living Situation	Frequencies	Percent
With your husband or wife	75	39.06
With relatives	24	12.51
Alone	86	44.79
With an unrelated person	4	2.08
Other	3	1.56
Total	192*	100.00

*One senior citizen did not mark living situation.

reported 80 percent of all older Americans living in households of their own, but not to the reported 18 percent living alone.¹³

Table 11
Frequency Distribution of Subjects by
Transportation Method

Transportation Method	Frequencies	Percent
Walk if it is not too far away	17	9.29
Drive the car	132	72.13
Call friends or relatives	23	12.57
Ride the bus	11	6.01
Total	183*	100.00

*Some senior citizens did not mark transportation.

In the Ohio State study, only 25 percent of their subjects drove a car, while the majority, 72.13 percent, of the subjects in this study drove the car, so for mobility these subjects are largely not dependent on public transportation or friends.

Table 12 shows that 35.79 percent of this group of senior citizens completed the tenth-twelfth grade or some

¹³Peter J. Verhoven, "Recreation for the Aging," Recreation for Special Populations, eds. Thomas A. Stein and H. Douglas Sessoms (Boston: Holbrook Press, Inc., 1973), p. 382.

part of it and 24.74 percent had achieved a college education or some part of one. This indicates the educational level of older adults is increasing since earlier studies reported half of the senior citizens not going beyond elementary school.¹⁴

Table 12
Frequency Distribution of Subjects by Grade

Highest Grade Completed in School	Frequencies	Percent	Mean
1-3 grade	2	1.06	
4-6 grade	7	3.68	
7-9 grade	56	29.47	
10-12 grade	68	35.79	Grade 10
Some college	33	17.37	
College graduate	14	7.37	
Graduate education	10	5.26	
Total	190*	100.00	

*Three senior citizens did not mark education level.

¹⁴Verhoven, p. 383.

Table 13

Frequency Distribution on Questions
Concerning Education Bill 1445

Questions*	Frequencies	Percent
Being Aware of Bill 1445		
Yes	71	40.34
No	105	59.66
Learned About Bill 1445 by		
News Media	14	10.14
A Friend	19	13.77
Direct Mail	3	2.17
Announcement in a Church	9	6.52
Announcement in a Senior Citizen Center	81	58.70
Other	12	8.70
Enrollment in College or University Under Bill 1445		
Yes	8	4.52
No	169	95.48
Would You Like to Enroll in College or University Under this Provision		
Yes	79	49.07
No	82	50.93
Have You Participated in Educational Classes Without Benefits of Bill 1445		
Yes	17	9.71
No	158	90.29
Should Classes be Offered for		
Credit Only	17	11.56
Non-credit Only	42	28.57
Student Choice	88	59.86
Should Senior Citizens be Allowed to Reserve Minimal Spaces Regardless of Space Available		
Yes	75	46.01
No	88	53.99
Class Meeting Preference		
Once Per Week	84	69.42
Twice Per Week	26	21.49
Three Times Per Week	11	9.09

Table 13 (Continued)

Questions*	Frequencies	Percent
Course Payment vs. Participation		
Yes	52	38.24
No	84	61.76
Benefits of Academic Education		
Yes	77	52.38
No	70	47.62
Benefits from Selected Courses		
Earn College Credit	14	7.25
Weekly Entertainment	34	17.62
New Friends	69	35.75
Exchanging Ideas	49	25.39
Preparing for Community Service	37	19.17
Broader Outlook on Life	55	28.50
Gain in Skill or Knowledge	70	36.27
Training to Earn an Income	29	15.03
Other	29	15.03
Hours Per Week of Physical Activity		
None	31	19.75
1-2 Hours	36	22.93
3-5 Hours	48	30.57
More than 5 Hours	42	26.75
Interest in Taking Physical Education and Recreation Courses		
Yes	73	55.73
No	58	44.27

*The survey forms may be consulted for complete questions.

A summary of Table 13 appears as a portion of the conclusions which are presented in Chapter 5.

Table 14

Frequency Distribution of Areas of Most Interest
in Physical Education and Recreation

Areas*	Frequencies	Percent
Archery	3	1.55
Badminton	0	0
Baitcasting	6	3.11
Basketball	4	2.07
Bowling	30	15.54
Community Recreation	34	17.62
Camping	14	7.25
Diving	0	0
Firearm Safety and Hunting	1	0.52
Folk Dancing	22	11.40
Golf	10	5.18
Handball	0	0
Horsemanship	1	0.52
Karate	0	0
Leisure Time Activities	60	31.09
Introduction to Recreation	9	4.66
Modern Dance	12	6.22
Modified Seasonal Sports	0	0
Motorcycle Skill and Safety	0	0
Paddle Ball	0	0
Physical Conditioning	54	27.98
Recreation for the Handicapped	25	12.95
Rhythms and Movement	19	9.84
Riflery	4	2.07
Racquetball	1	0.52
Scuba Diving	0	0
Skeet and Trap Shooting	3	1.55
Slimnastics	13	6.74
Soccer	1	0.52
Social Dance	38	19.69
Social Recreation	44	22.80
Softball	1	0.52
Square Dancing	21	10.88
Swimming	34	17.62
Volleyball	2	1.04
Weight Lifting	0	0
Weight Training	1	0.52
White Water Canoeing	0	0
Wrestling	0	0

*Physical education and recreation courses listed in the 1975-76 state supported college and university catalogs were used in this study.

According to Percil Stanford (HEW, The Administration on Aging), a broadly conceived educational program for older people has at least four purposes:

1. To give the older person an understanding of the changes that are taking place and an awareness that he is confronting problems common to all older people. Aging must be seen as natural and normal rather than as peculiar or unique.
2. To impart knowledge and skills that will maintain health, retain or increase mental capacity, and enable the person to use his own resources more effectively and, thus, make the most of the facilities available in the environment.
3. To recognize the fact that learning in and of itself can be interesting and stimulating. If through an educational program the older person comes to realize that actual doing and the resulting improvement brings direct satisfaction, much will be gained. This is learning mainly for the satisfaction that comes from mastering new knowledge or skills.
4. To provide a richer social experience and better understanding of the world that a longer life gives.¹⁵

Those who address themselves to problems of the aging agree that an effective program for older persons involves educational efforts directed at the older person, members of his family, employers, fellow workers, and all who are associated with older people. A broad program of adult education, with a variety of offerings, is one of the most urgent of all educational needs.

¹⁵E. Percil Stanford, "Education and Aging: New Task for Education," Adult Leadership, XX (February, 1972), 281-294.

Riflery was found to be significantly related to sex at the .05 level. Four variables, community recreation, golf, square dancing, and volleyball, are related at the .02 level. Table 15 shows two variables to be significant to sex at the .01 level for senior citizens--baitcasting and bowling.

Table 15
Calculation of X^2 in Tests of Independence
Between Sex of Subjects and on the
Other Variables Measured

Variable	X^2	df	Significance
Baitcasting (M)	10.47138	1	.01
Bowling (M)	7.73096	1	.01
Community Recreation (F)	6.02092	1	.02
Golf (M)	6.24641	1	.02
Riflery (M)	5.03919	1	.05
Square Dancing (F)	5.59967	1	.02
Volleyball (M)	5.69968	1	.02

From Table 16 it may be seen that courses offered for senior citizens for credit, non-credit or optional, and riflery are significant to retirement at the .05 level. For the grup, enrollment under the provisions of Education Bill 1445 and leisure time activities were related at the

.02 level. At the .01 level of confidence, the participation in education classes without the benefits of Education Bill 1445 and courses offered for credit, non-credit, choice were shown to have a positive relationship to retirement.

Table 16
Calculation of X^2 in Tests of Independence
Between Retirement of Subjects and on
the Other Variables Measured*

Variable	X^2	df	Significance
Enrolled Under Provisions of Bill 1445	5.72717	1	.02
Participation in Education Classes Without Benefits of Bill 1445	9.24524	1	.01
Courses Offered for Credit, Non-credit, Choice	4.94763	1	.05
Baitcasting	7.85842	1	.01
Leisure Time Activities	6.04832	1	.02
Riflery	5.17427	1	.05

*All are retired

Table 17 shows three variables, preference of class meetings, physical conditioning, and soccer, are related to the age of the subjects at the .05 level of confidence. Interest in taking physical education and recreation courses

and a desire to enroll in classes under the provisions of Educational Bill 1445 were significant for the senior citizens at the .01 level.

Table 17
Calculation of X^2 in Tests of Independence
Between Age of Subjects and on the
Other Variables Measured*

Variable	X^2	df	Significance
Like to Enroll in Classes Under Provisions of Bill 1445	17.60666	4	.01
Preference of Class Meetings	17.89932	8	.05
Interest in Taking Physical Education and Recreation Courses	16.35817	4	.01
Physical Conditioning	10.08521	4	.05
Soccer	10.80749	4	.05
*All are younger			

Table 18 for the senior citizens shows three variables to be significant to health at the .01 level of confidence--participation in education classes without benefits of Bill 1445, courses offered for credit, non-credit, choice, and thinking education classes would change their lives.

Table 18
 Calculation of X^2 in Tests of Independence
 Between Health of Subjects and on
 the Other Variables Measured

Variable	X^2	df	Significance
Participation in Education Classes Without Benefits of Bill 1445	9.35788	1	.01
Courses Offered for Credit, Non- credit, Choice	15.23425	1	.01
Change in Life Style	7.43061	1	.01

Table 19 for the senior citizens reveals the .01 level of confidence for two variables, being aware of Education Bill 1445 and payment of any fees to income distribution. There was no significant correlation by any variable in regard to the living situation of the senior citizen.

Table 19
 Calculation of X^2 in Tests of Independence
 Between Income of Subjects and on the
 Other Variables Measured

Variable	X^2	df	Significance
Awareness of Bill 1445	15.50010	4	.01
Payment of Fees	18.93260	4	.01

Table 20 for the senior citizens shows the variables, awareness of Education Bill 1445, reserve class space, and making new friends, significant at the .05 level of confidence. One variable, should classes be offered for credit, non-credit, or optional credit, was significant at the .01 level with method of transportation.

Table 20
Calculation of X^2 in Tests of Independence
Between Transportation and on the
Other Variables Measured

Variable	X^2	df	Significance
Awareness of Bill 1445	7.85494	3	.05
Courses Offered for Credit, Non-credit, Choice	13.09459	3	.01
Reserve Class Space	9.58091	3	.05
Enrollment for New Friends	8.02485	3	.05

Table 21 shows two variables to be significant to the highest grade completed in school at the .01 level of confidence--awareness of Education Bill 1445 and participation in college or university classes without the benefits of Education Bill 1445. One variable, enrollment in college or university classes under the provisions of Education Bill 1445, is related at the .02 level to the highest grade completed by the senior citizens. Four variables are

significant to the highest grade completed at the .05 level of confidence--how did you learn about Education Bill 1445, have you been enrolled in college or university classes under the provisions of Education bill 1445, would payment of a minimum fee to cover costs be a barrier to participation in educational activities, and number of hours per week of participation in recreation and physical activities.

Table 21
Calculation of X^2 in Tests of Independence
Between Education and the Other
Variables Measured

Variable	X^2	df	Significance
Awareness of Bill 1445	27.50549	6	.01
Learn About Bill 1445	44.48827	30	.05
Enrollment in Class Under Bill 1445	14.27888	6	.05
Like to Enroll Under Bill 1445	16.56579	6	.02
Participation Without Benefits of Bill 1445	41.73590	6	.01
Payment of Fees	14.75903	6	.05
Hours of Activity Per Week	30.32077	18	.05

Chapter 5

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

SUMMARY

The purpose of this study was to investigate the effects of Education Bill 1445 in relation to senior citizens and its implications for education, physical education, and recreation in selected state supported colleges and universities in Tennessee.

Seven state supported colleges and universities and 193 members of seven senior citizen centers in the vicinity of the selected colleges and universities agreed to participate in the investigation.

The visitation-interview technique, along with a questionnaire and personal information form, were used to obtain the data. The visitation interviews were conducted with the two state legislators responsible for introducing Education Bill 1445, the Deans of Records and Admissions at the seven selected state supported colleges and universities in Tennessee, and the selected senior citizen center's club president or director (see Appendix D). The questionnaire used in this study was developed by the

investigator after a thorough study of related literature, the visitation interviews, and recommendations from the dissertation committee.

Analyses of data resulted in a number of frequency distribution and chi square tables which describe the enrollment of senior citizens at the state supported colleges and universities, the senior citizens in the seven related centers, knowledge concerning Education Bill 1445, and existing relationships between personal information and knowledge of Education Bill 1445.

CONCLUSIONS

Based upon the findings of this study, the following conclusions appeared warranted:

1. Women senior citizens outnumber male senior citizens almost three to one.
2. Most (87.25%) senior citizens are retired from full-time employment, leaving ample time for desired educational or recreational pursuits.
3. Slightly over half (56.9%) of the senior citizens in this sample indicated that they were in good health, with 42.52 percent in fair health. Most senior citizens are able-bodied with no limitation of activity. Health is not a deterring factor for senior citizens.

4. From an income perspective, the senior citizens must be considered deprived with average income of \$242.00 per month. Since most older persons are living on reduced income, it would be important to keep the cost of programs low.

5. Nearly 84 percent of all senior citizens in this survey live in households of their own, while 12.51 percent live with relatives.

6. Most senior citizens (72.13% in this study) drive a car, eliminating method of transportation as a problem area for this group.

7. The educational level of senior citizens is increasing, but it is still far below that of the population as a whole. The educational background should be taken into consideration in program planning for senior citizens.

In regard to the questions concerning Education Bill 1445, the following conclusions appeared warranted:

1. Additional information concerning Education Bill 1445 should be made available to the senior citizens in the state of Tennessee. Almost 60 percent (59.66%) were unaware of this Bill.

2. Only 4.52 percent of the senior citizens in this study had availed themselves of the educational opportunities extended by Education Bill 1445, with almost half (49.07%) indicating a desire for these benefits.

3. Consideration should be given in regard to letting the senior citizens have an option of auditing a class or taking a class for credit.

4. Most senior citizens (69.42%) prefer class meetings once a week.

5. Payment of small fees for educational pursuits would be a barrier to 38.24 percent of the senior citizens.

6. Slightly over half (52.38%) of the senior citizens believe enrolling in college or university classes would change their lives. A gain in skill or knowledge and making new friends are the two benefits sought by most of the senior citizens.

7. The senior citizens in this study are physically active, with 30.57 percent having three to five hours of activity per week and 26.75 percent having more than five hours of physical activity per week.

8. Almost 60 percent (55.73%) of the senior citizens in this study are interested in taking physical education and recreation courses.

9. The areas in physical education and recreation of most interest to the senior citizens were leisure time activities, physical conditioning, social recreation, swimming, social dance, community recreation, and bowling.

RECOMMENDATIONS

Colleges and universities should take seriously their responsibilities to serve the educational needs of senior citizens, along with those in other age groups. The senior citizens should be better informed of opportunities made available to them through existing news media as well as through organizations specifically involved with senior citizens.

Based on the data obtained from this study and in the interest of improving educational programs for senior citizens, the following recommendations are made:

1. The colleges and universities should designate a person who would serve as full-time director and coordinator of all programs directed toward the senior citizens.
2. The colleges and universities should help establish a local council on education for the senior citizens.
3. The colleges and universities should collect and study data of this group to determine needs and interests.
4. The colleges and universities should eliminate any remaining educational barriers regarding admission requirements, fees, time scheduling, optional credit, transportation, and locations for activities.

5. The colleges and universities should provide opportunities for informal as well as formal educational activities for these senior citizens.

6. The colleges and universities should provide pre-retirement education, library privileges, and opportunities for skill development.

7. The colleges and universities should encourage and promote the use of resource persons existing within this group and provide opportunities for the senior citizens to use their own talents.

8. The colleges and universities should assure linkage with other community programs and services for the older persons by establishing cooperative relationships with other agencies and organizations.

9. The colleges and universities or community groups should make scholarships available to senior citizens.

10. The colleges, universities, and community groups should help the older adults to maintain a level of well-being sufficient for full participation in society.

There should be a reimbursement plan to support senior citizen educational programs. No one is more deserving of extended educational benefits than the senior citizen who has borne the burden of the cost of education

the longest. The cost of these proposed activities may be funded by state and/or federal funds.

These recommendations will help to provide senior citizens with opportunities for training, learning new experiences, achievement of personal goals, and provide alternative roles for the retired. Senior citizens will be afforded the opportunity to meet and express new ideas, exchange viewpoints, communicate with other persons, and be more active members of the community.

APPENDIXES

APPENDIX A

PERMISSION LETTER

Department of Health, Physical
Education and Recreation
Middle Tennessee State University
Box 329
Murfreesboro, Tennessee 37130
February, 1976

Mr. _____
Director of Admissions and Records

Dear

I am writing in regard to our telephone conversation on January 26, 1976, in which I explained that I am in the process of doing research in regard to a dissertation, and that hopefully your institution may be included in the study.

The dissertation topic is concerned with the Educational Bill 1445 passed by state legislature in February, 1974. This bill states that any person sixty years of age or older may audit classes at state supported institutions without paying any fees, provided there is available classroom space.

I am requesting permission to check institutional admissions records in order to determine the extent to which senior citizens have taken advantage of this opportunity. Names will remain anonymous and there will be no personal reference to any individual in this study. The selected institutions to be included in this study are: Cleveland State Community College, Columbia State Community College, Motlow State Community College, Volunteer State Community College, Austin Peay State University, Middle Tennessee State University, and Tennessee Tech University.

A permission form with a stamped, self-addressed envelope is enclosed for your convenience in replying. After the study is finalized, I shall be happy to inform you of the results if you so desire.

Your assistance will be greatly appreciated.

Sincerely yours,

Gary Whaley

Stanley Hall, Professor of Health,
Physical Education and Recreation

APPENDIX B

PERMISSION REQUEST FORM

I hereby grant permission to Gary Whaley
to examine Admission Records in regard to
obtaining data concerning senior citizens
who have taken advantage of Education Bill
1445.

NAME

POSITION

INSTITUTION

DATE

APPENDIX C
THE QUESTIONNAIRE

Dear Senior Citizen:

I am presently completing work toward a Doctor of Arts degree in physical education at Middle Tennessee State University. My project is "A Study of the Effects of Educational Bill 1445 in Relation to Senior Citizens and Its Implications for Education, Physical Education and Recreation in Selected State Supported Colleges and Universities in Tennessee."

The study is designed: (1) to determine the extent to which senior citizens at selected state supported colleges and universities in Tennessee have taken the opportunity to utilize the benefits of Bill 1445, special legislative enactment allowing persons sixty years of age and older to audit classes at any state supported college or university, (2) to survey senior citizen centers in the vicinities of the selected colleges and universities to determine their needs, interests, and preferences of courses in relation to physical education and recreation, and (3) to make more senior citizens in the vicinities of the selected colleges and universities aware of this educational opportunity provided by Bill 1445.

The purpose of this letter is to request your assistance by completing the attached form and questionnaire. Your participation is very important. This study will include members of senior citizen centers from Clarksville, Cleveland, Columbia, Cookeville, Gallatin, Murfreesboro, and Tullahoma.

The results of the study will be available to all participants through the senior citizen centers' directors or club presidents. Thank you for your time and efforts in behalf of this study.

Sincerely yours,

Gary Whaley

cc: Dr. Stanley Hall
Major Professor
Middle Tennessee State University
Murfreesboro, Tennessee

SENIOR CITIZEN INFORMATION FORM

This information form and questionnaire are being sent to selected senior citizens in the state of Tennessee in an effort to evaluate senior citizen participation, interest and needs in education programs under Bill 1445. THIS SURVEY IS CONCERNED ONLY WITH CLASSES THAT ARE SCHEDULED DURING THE ACADEMIC SCHOOL YEAR. DISREGARD CLASSES THAT ARE CLASSIFIED AS ADULT, CAREER, OR CONTINUING EDUCATION. All information received will remain confidential. Please do not sign your name. Directions: Use a check mark (✓) to record your response.

Sex:	<u>50</u> Male	<u>141</u> Female	Age:		Health:
	<u>145</u> Retired		<u>35</u> 60-64	<u>99</u> Good	
	<u>21</u> Non-retired		<u>66</u> 65-69	<u>74</u> Fair	
			<u>52</u> 70-74	<u>1</u> Poor	
			<u>19</u> 75-79		
			<u>16</u> 80-over		

Income Distribution

<u>11</u>	Less than \$100 per month
<u>42</u>	\$100 to \$199 per month
<u>42</u>	\$200 to \$299 per month
<u>38</u>	\$300 to \$399 per month
<u>52</u>	\$400 per month and over

Living Situation

<u>75</u>	With your husband or wife
<u>24</u>	With relatives
<u>86</u>	Alone
<u>4</u>	With an unrelated person
<u>3</u>	Other

Transportation Method

<u>17</u>	Walk if it is not too far away
<u>132</u>	Drive the car
<u>23</u>	Call friends or relatives
<u>11</u>	Ride the bus

Highest Grade Completed in School

<u>2</u>	1-3 grade	<u>33</u>	Some college
<u>7</u>	4-6 grade	<u>14</u>	College graduate
<u>56</u>	7-9 grade	<u>10</u>	Graduate education

SENIOR CITIZEN QUESTIONNAIRE

BE IT ENACTED BY THE GENERAL ASSEMBLY OF THE STATE OF TENNESSEE:

"Persons sixty (60) years of age or older, who are domiciled in Tennessee, may audit courses at any state supported college or university without paying tuition charges, maintenance fees, student activity fees, or registration fees; however, this privilege may be limited or denied by the college or university on an individual classroom basis according to space availability. Provided further, that the provisions of this act shall not apply at Medical Schools." Bill No. 1445.

WERE YOU AWARE OF THE OPPORTUNITY AFFORDED SENIOR CITIZENS BY THE ABOVE BILL NO. 1445?

71 YES 105 NO

HOW DID YOU LEARN ABOUT THE ABOVE BILL NO. 1445?

14 NEWS MEDIA
19 A FRIEND
3 DIRECT MAIL
9 ANNOUNCEMENT IN A COMMUNITY GATHERING (CHURCH)
81 ANNOUNCEMENT IN A SENIOR CITIZEN CENTER
12 OTHER

HAVE YOU BEEN ENROLLED IN A COLLEGE OR UNIVERSITY CLASS UNDER THE PROVISIONS OF THIS BILL?

8 YES 169 NO

WOULD YOU LIKE TO ENROLL IN COLLEGE OR UNIVERSITY CLASSES UNDER THE PROVISIONS OF BILL NO. 1445?

79 YES 82 NO

HAVE YOU PARTICIPATED IN EDUCATIONAL CLASSES IN THE LAST 3 YEARS WITHOUT BENEFITS OF BILL NO. 1445?

17 YES 158 NO

SHOULD COURSES FOR SENIOR CITIZENS BE OFFERED FOR CREDIT ONLY, NON-CREDIT ONLY, OR IN A MANNER THAT LEAVES THE CREDIT OPTION OPEN TO EACH STUDENT?

17 CREDIT ONLY 42 NON-CREDIT ONLY 88 STUDENT'S CHOICE

SHOULD SENIOR CITIZENS BE ALLOWED TO RESERVE A MINIMUM NUMBER OF SPACES IN CLASSES REGARDLESS OF SPACE AVAILABLE?

75 YES 88 NO

DO YOU PREFER EDUCATIONAL CLASSES MEET:

84 ONCE PER WEEK 26 TWICE PER WEEK 11 THREE TIMES PER WEEK

WOULD PAYMENT OF A MINIMUM FEE TO COVER THE COST OF KEEPING RECORDS IN ORDER TO ALLOW CREDIT FOR COURSE WORK BE A BARRIER TO YOUR PARTICIPATION IN EDUCATIONAL ACTIVITIES?

52 YES 84 NO

DO YOU THINK TAKING COLLEGE OR UNIVERSITY CLASSES WOULD CHANGE YOUR LIFE IN ANY WAY?

77 YES 70 NO

SELECTED THE STATEMENT(S) WHICH MOST CLOSELY REPRESENTS THE MAJOR BENEFIT(S) YOU WOULD LIKE TO GAIN BY TAKING SELECTED COURSES:

14 EARN COLLEGE CREDIT
34 WEEKLY ENTERTAINMENT
69 NEW FRIENDS
49 EXCHANGING IDEAS
37 PREPARING FOR COMMUNITY SERVICE
55 BROADER OUTLOOK ON LIFE
70 GAIN IN SKILL OR KNOWLEDGE
29 TRAINING TO EARN AN INCOME
29 _____ OTHER

HOW MANY HOURS PER WEEK DO YOU PARTICIPATE IN RECREATIONAL AND PHYSICAL ACTIVITIES?

31 NONE 36 1-2 HOURS 48 3-5 HOURS 42 MORE THAN 5 HOURS

WOULD YOU BE INTERESTED IN TAKING A COURSE(S) IN PHYSICAL EDUCATION AND/OR RECREATION UNDER BILL 1445?

73 YES 58 NO

WHICH AREAS WOULD BE OF MOST INTEREST TO YOU IN PHYSICAL EDUCATION AND RECREATION?

3 ARCHERY
0 BADMINTON

<u>6</u>	BAITCASTING
<u>4</u>	BASKETBALL
<u>30</u>	BOWLING
<u>34</u>	COMMUNITY RECREATION
<u>14</u>	CAMPING
<u>0</u>	DIVING
<u>1</u>	FIREARM SAFETY & HUNTING
<u>22</u>	FOLK DANCING
<u>10</u>	GOLF
<u>0</u>	HANDBALL
<u>1</u>	HORSEMANSHIP
<u>0</u>	KARATE
<u>60</u>	LEISURE TIME ACTIVITIES
<u>9</u>	INTRODUCTION TO RECREATION AND PARKS
<u>12</u>	MODERN DANCE
<u>0</u>	MODIFIED SEASONAL SPORTS
<u>0</u>	MOTORCYCLE SKILL & SAFETY
<u>0</u>	PADDLE BALL
<u>54</u>	PHYSICAL CONDITIONING
<u>25</u>	RECREATION FOR THE HANDICAPPED
<u>19</u>	RHYTHMS AND MOVEMENT
<u>4</u>	RIFLERY
<u>1</u>	RACQUETBALL
<u>0</u>	SCUBA DIVING
<u>3</u>	SKEET & TRAP SHOOTING
<u>13</u>	SLIMNASTICS
<u>1</u>	SOCCER
<u>38</u>	SOCIAL DANCE
<u>44</u>	SOCIAL RECREATION
<u>1</u>	SOFTBALL
<u>21</u>	SQUARE DANCING
<u>34</u>	SWIMMING
<u>2</u>	VOLLEYBALL
<u>0</u>	WEIGHTLIFTING
<u>1</u>	WEIGHT TRAINING
<u>0</u>	WHITE WATER CANOEING
<u>0</u>	WRESTLING

APPENDIX D

INTERVIEWS

INTERVIEWS WITH DIRECTORS OF ADMISSIONS
AND RECORDS

Dr. William L. Campbell, Director of Admissions, Tennessee Technological University, personal interview, Cookeville, Tennessee, March 8, 1976.

Dr. James M. Cigliano, Director of Admissions and Records, Cleveland State Community College, personal interview, Cleveland, Tennessee, April 15, 1976.

Mr. Glenn S. Gentry, Vice President for Admissions and Records, Austin Peay State University, personal interview, Clarksville, Tennessee, March 11, 1976.

Mr. W. O. Johnson, Director of Admissions and Records, Columbia State Community College, personal interview, Columbia, Tennessee, March 9, 1976.

Mr. Wade Powers, Director of Admissions and Records, Volunteer State Community College, personal interview, Gallatin, Tennessee, March 16, 1976.

Mr. Edward Kilgour, Assistant Director of Admissions and Records, Middle Tennessee State University, personal interview, Murfreesboro, Tennessee, February 19, 1976.

Dr. Charlie Reeder, Director of Admissions and Records, Motlow State Community College, personal interview, Tullahoma, Tennessee, March 9, 1976.

INTERVIEWS WITH SENIOR CITIZEN CLUB
PRESIDENTS AND/OR DIRECTORS

Mrs. Nellie Davis, president of senior citizen club, personal interview, Cleveland, Tennessee, April 26, 1976.

Mrs. Betty Domlen, director of senior citizen club, personal interview, Clarksville, Tennessee, May 8, 1976.

Mr. Ben Felts, president of senior citizen club, personal interview, Murfreesboro, Tennessee, May 3, 1976.

Mr. Arlie Hoffner, president of senior citizen club, personal interview, Tullahoma, Tennessee, April 30, 1976.

Mrs. Ruby Hooper, president of senior citizen club, personal interview, Gallatin, Tennessee, May 8, 1976.

Mrs. Clarecy Spivey, director of senior citizen club, personal interview, Cookeville, Tennessee, May 1, 1976.

Mr. Kenneth Sisk, president of senior citizen club, personal interview, Columbia, Tennessee, May 7, 1976.

INTERVIEWS WITH TENNESSEE STATE SENATE
AND HOUSE REPRESENTATIVES

Ms. Lois DeBury, House Representative, Tennessee
General Assembly, personal interview, Memphis, Tennessee,
February 3, 1976.

Mr. Halbert Harvill, Senate Representative,
Tennessee General Assembly, personal interview, Clarksville,
Tennessee, February 3, 1976.

QUESTIONS USED DURING INTERVIEWS
WITH STATE LEGISLATORS
CONCERNING BILL 1445

1. How did you become interested in helping the senior citizens in regard to education?
2. Have any other states passed similar legislature? If so, which states, and year?
3. Did you confer with the legislators of these states before presentation of the Bill 1445?
4. Were there any groups lobbying for this Bill?
5. What were the main points you stressed when sponsoring this Bill?
6. Were there any objections to the Bill? If so, what were they?
7. Did you present any literature concerning senior citizens when sponsoring this Bill?
8. Have you received any correspondence in relation to the passage of the Bill from senior citizens or from educators?
9. Have the state supported institutions voiced any opposition in regard to admitting the senior citizens without assessing fees?
10. Are the state institutions reimbursed for providing these educational services?
11. Is this Bill viewed favorably or unfavorably by the state institutions?
12. May anyone 60 years of age or older take advantage of this educational opportunity? If not, what are the exceptions?
13. Senior citizens are allowed to audit classes, but they receive no credit. Explain.
14. Do you foresee any additional educational legislature that might affect senior citizens?

15. When presenting the Bill, did you foresee any particular area of education that might be more attractive or better suited for senior citizens such as industrial arts, physical education, or the sciences?
16. If you were presenting Educational Bill 1445 tomorrow, would you revise or alter the Bill in any way?

APPENDIX E

CROSS-TABULATION FORMULA

Telephone conversation with Dr. Paul Hutcheson, Director of the Computer Center, Middle Tennessee State University, Murfreesboro, Tennessee, on June 14, 1976, disclosed this program to be a community service package with expectation of use in formal papers.

Therefore, no written permission is required.

BMD08D
CROSS-TABULATION WITH VARIABLE STACKING

1. GENERAL DESCRIPTION

- a. This program computes two-way frequency tables of data input. Frequency tables are computed from specified ranges of the original variables, variables after transgeneration, stacked variables, or combinations of these. Data input may be positive or negative integers only. The program will not accept data input card fields which have a punched decimal point.
- b. Output from this program includes:
- (1) Frequency tables of all combinations of the variables or only those specified by the user
 - (2) Chi-square values and degrees of freedom for each table
 - (3) Means, standard deviations, and correlation coefficients for each pair of variables
- c. Limitations per problem:
- (1) p , number of original variables ($2 \leq p \leq 100$)
 - (2) N , number of cases ($2 \leq N \leq 1500$)
 - (3) q , number of variables added to the original set after transgeneration or stacking ($-98 \leq q \leq 98$), ($p+q \leq 100$)
 - (4) $(p+q)N$, total data input ($4 \leq (p+q)N \leq 19000$)
 - (5) m , number of Transgeneration Cards ($0 \leq m \leq 99$)
 - (6) k , number of Variable Format Cards ($1 \leq k \leq 10$)
 - (7) s , number of Selection Cards ($0 \leq s \leq 99$)
 - (8) The range of each variable to be cross-tabulated is specified with the following restrictions:

$$1 \leq \text{Max. X} - \text{Min. X} \leq 34$$

$$1 \leq \text{Max. Y} - \text{Min. Y} \leq 99$$

where X and Y are the abscissa and ordinate respectively. The program generates a continuous range for each variable from which a frequency matrix is computed on any two variables. Designation of abscissa or ordinate is arbitrary within the above restrictions.

- (9) Only those rows and columns which have non-zero entries are printed unless the user indicates on the Problem Card that rows and columns which have zero entries are to be printed.
- (10) All values outside the specified range for each variable are listed in the output under the heading, VALUES NOT ENTERED, if the number of such values is less than 50. Otherwise, only the number is printed.
- (11) The maximum frequency of each point when cross-tabulated is 999. If any frequency should be greater than 999, it will be set equal to 999.

d. Estimation of running time and output pages per problem:

Number of seconds = $30 + 5s$ (for IBM 7094)
 Number of pages = $3 + 1$ page per frequency table

e. This program allows transgeneration. Codes 08...13, 15, 16, 40, and 41 of the transgeneration list may be used.

f. A special feature of this program is the Variable Stacker. In addition to the above codes, four stacker codes are available. Codes 82, 83, 84 and 85 stack a nested classification of several variables into a single variable. Suppose, for example, the user wishes a frequency table of males who had treatment 1, 2, 3 or 4 and females who had treatment 1, 2, 3 or 4 cross-tabulated with age. Let X_1 be the treatment variable having values (1, 2, 3, 4), X_2 be the sex variable having values (0, 1) and X_3 be the age variable having values (1, 2, 3, ..., 99). Code 82 stacks X_1 into X_2 generating X_4 which has values (1, 2, 3, 4, 5, 6, 7, 8) as illustrated in the table below.

	Variable								
Sex	0				1				X_2
Treatment	1	2	3	4	1	2	3	4	X_1
Output Code	1	2	3	4	5	6	7	8	X_4

The user may then add the usual type of heading material, such as:

Female					Male			
T_1	T_2	T_3	T_4	T_1	T_2	T_3	T_4	

The frequency table when X_4 is cross-tabulated with X_3 :

	.									
	.									
X_3 (age)	4		2							
	3									
	2									
	1									
		1	2	3	4	5	6	7	8	
		X_4 (stacked)								

[This cell indicates the number of females at age 4 who had treatment 2.]

[This cell indicates the number of males at age 1 who had treatment 3.]

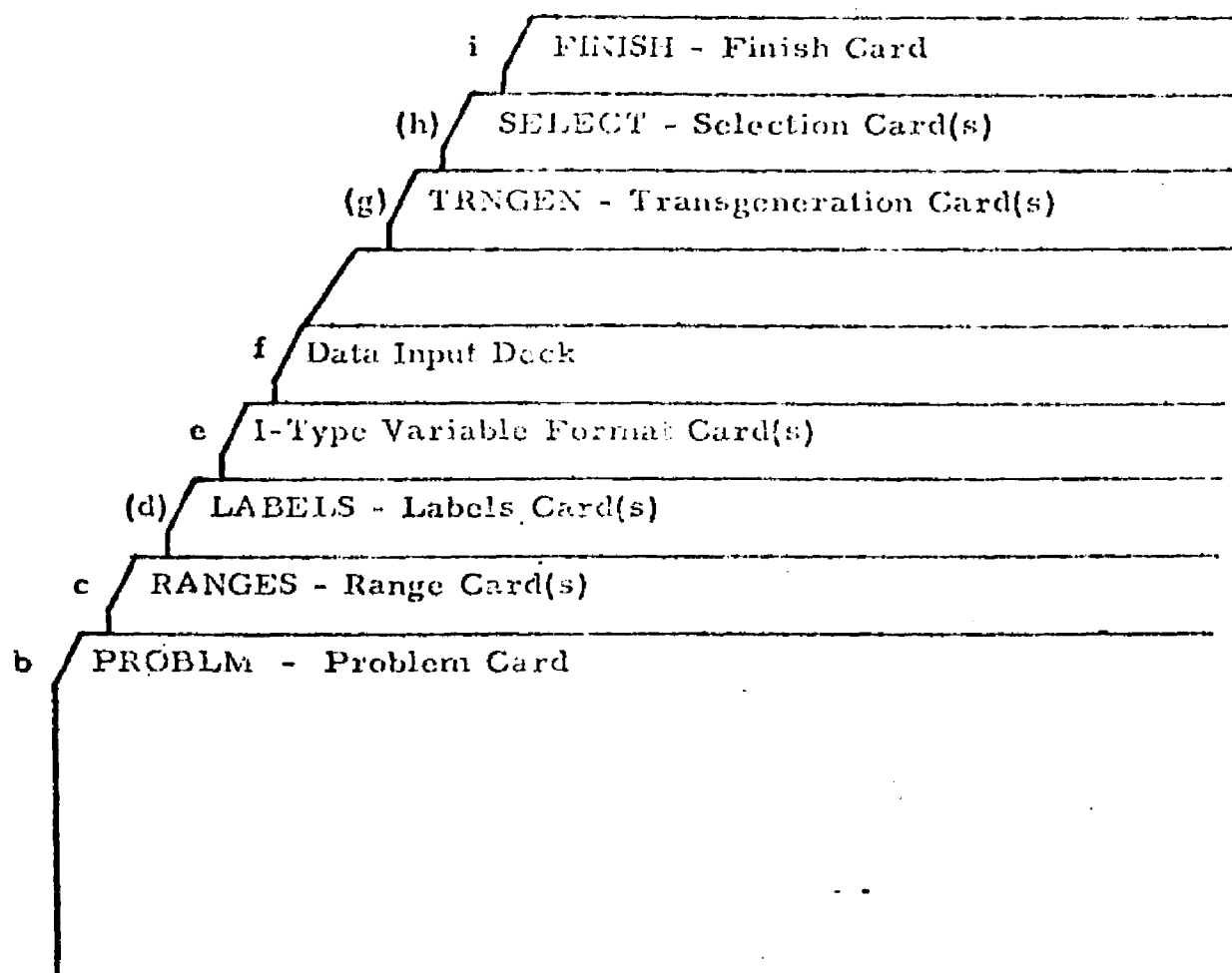
Five levels of stacking are permissible. See preparation of Transgeneration Cards in this description for computational formulas.

2. ORDER OF CARDS IN JOB DECK

Cards indicated by letters enclosed in parentheses are optional. All other cards must be included in the order shown.

- a. System Cards [Introduction, IV]
- b. Problem Card
- c. Range Card(s)
- (d.) Labels Card(s) [Introduction, III-A]
- e. I-type Variable Format Card(s) [Introduction, III-C]
- f. DATA INPUT Cards [Introduction, II]
(Place data input deck here
if data input is from cards.)
- (g.) Standard Transgeneration Card(s)* [Introduction, III-B]
- (h.) Selection Card(s)
...
Repeat b. through (h.) as desired
...
- i. Finish Card [Introduction, III]

*See also card preparation in this description for stacker codes.

Deck Set-up:

3. CARD PREPARATION (SPECIFIC FOR THIS PROGRAM)

Preparation of the cards listed below is specific for this program. All other cards listed in the preceding section are prepared according to instructions in the Introduction.

b. Problem Card (One Problem Card for each problem)

Col. 1-6 PRØBLM (Mandatory)

Col. 7-12 Alphanumeric problem code

Col. 13-15 Number of variables ($2 \leq p \leq 100$)

Col. 16-19		Number of cases ($2 \leq N \leq 1500$)
Col. 20-22		Number of Selection Cards ($0 \leq s \leq 99$)
Col. 23-25	000	No variables added to original set after transgeneration.
	+q	q variables added to original set after transgeneration.
	-q	q variables subtracted from original set after transgeneration.
	Note:	$N(p+q) \leq 19,000$, $(p+q) \leq 100$ The maxima and minima for ptq variables must be specified on the Range Card(s).
Col. 26, 27	01	To enter columns and rows of zero frequency into cross-tabulation table; otherwise, leave blank.
Col. 28-30	s	Number of variables to be labeled ($0 \leq s \leq 100$). If no variables are labeled, leave blank.
Col. 31, 32	01	To instruct the program to compute and print the $(p+q)(p+q-1)/2$ possible combinations of frequency tables.* (Each variable is cross-tabulated with all other variables.) Otherwise, leave blank.
	Note:	If 01 is keypunched in Columns 31, 32, leave Columns 20-22 blank. Frequency tables are computed in the following order: (1, 2), (1, 3), ..., (1, p+q), (2, 3), (2, 4), ..., (2, p+q), ..., (p+q-1, p+q), where the first number of the pair is the index of the base variable. When the range of this base variable is greater than 34, the second number of the pair is considered the base variable. If the ranges of both variables are greater than 34, the pair is skipped.

*This option is not recommended when ptq is large. For example, if $ptq=100$, the number of output pages required would be 4,950 since $(ptq)(ptq-1)/2 = 4,950$.

Col. 33-66	Blank	
Col. 67, 68	00	No transgeneration
	m	m Transgeneration Card(s) ($0 \leq m$)
Col. 69, 70	00	Data input from cards
	T	Data input from logical tape T ($T \leq$)
Col. 71, 72	k	k Variable Format Cards ($1 \leq k \leq$)
c. Range Card(s)		

Col. 1-6	RANGES	(Mandatory)
Col. 7-12	Maximum value of variable with index 1	
Col. 13-18	Minimum value of variable with index 1	
Col. 19-24	Maximum value of variable with index 2	
Col. 25-30	Minimum value of variable with index 2	
...		
Col. 55-60	Maximum value of variable with index 5	
Col. 61-66	Minimum value of variable with index 5	

If there are more than five variables, continue keypunching a second card, a third card, etc. in the same manner.

Col. 1-6	RANGES	(Mandatory)
Col. 7-12	Maximum value of variable with index 6	
Col. 13-18	Minimum value of variable with index 6	
...		

If variables are generated, their maxima and minima must also be specified on the Range Card(s).

(g.) Standard Transgeneration Cards

Col. 1-6	TRNGEN	(Mandatory)
Col. 7-9	Variable index k	
Col. 10, 11	Code from transgeneration list	
Col. 12-14	Variable index i	
Col. 15-20	Variable index j or constant c	
Col. 21-26	Variable index l or number of a_1 's for transformation 40	
Col. 27-32	Variable index m or a_1 value	
Col. 33-38	Variable index n or a_2 value	
...		
Col. 63-68	a_7 value	

The following four codes are used for variable stacking. Each successive variable i, j, l, m, n is nested within the preceding variable. Let B_j be the maximum value of the j^{th} variable and S_j be the minimum value of the j^{th} variable, with similar definitions for the other variables.

<u>Code</u>	<u>Transformation</u>
82	$1 + (B_j - S_j + 1) (X_i - S_i) + X_j - S_j \longrightarrow X_k$
83	$1 + (B_l - S_l + 1) (B_j - S_j + 1) (X_i - S_i)$ $+ (B_l - S_l + 1) (X_j - S_j) + X_l - S_l \longrightarrow X_k$
84	$1 + (B_m - S_m + 1) (B_l - S_l + 1) (B_j - S_j + 1) (X_i - S_i)$ $+ (B_m - S_m + 1) (B_l - S_l + 1) (X_j - S_j)$ $+ (B_m - S_m + 1) (X_l - S_l) + X_m - S_m \longrightarrow X_k$

$$\begin{aligned}
85 \quad & 1 + (B_n - S_n + 1) (B_m - S_m + 1) (B_l - S_l + 1) (B_j - S_j + 1) (X_i - S_i) \\
& + (B_n - S_n + 1) (B_m - S_m + 1) (B_l - S_l + 1) (X_j - S_j) \\
& + (B_n - S_n + 1) (B_m - S_m + 1) (X_l - S_l) \\
& + (B_n - S_n + 1) (X_m - S_m) + X_n - S_n \longrightarrow X_k
\end{aligned}$$

(h.) Selection Card(s)

This card has a double purpose:

- (1) It indicates the base variable for cross-tabulations, namely the abscissa or the X coordinate.
- (2) It indicates the variables to be jointly cross-tabulated, namely the ordinate or the Y coordinate.

The preparation of the Selection Card is as follows:

- | | | |
|-------------|--|-------------|
| Col. 1-6 | SELECT | (Mandatory) |
| Col. 7-9 | Index of the base variable | |
| Col. 10, 11 | Number of variables to be cross-tabulated with this base variable and whose indices are designated on this card. | |
| Col. 12-14 | Index of the 1st variable to be cross-tabulated | |
| Col. 15-17 | Index of the 2nd variable to be cross-tabulated | |
| ... | | |
| Col. 69-71 | Index of the 20th variable to be cross-tabulated | |

Each Selection Card is independent; therefore, if more than 20 variables are to be cross-tabulated, a new Selection Card must be prepared specifying the same base variable, the number of additional variables to be cross-tabulated, and variable indices in the same manner.

4. COMPUTATIONAL PROCEDURE

After transgeneration (or stacking, if any) a frequency table is computed as illustrated below.

Let n_{ij} be the frequency of the i^{th} row and j^{th} column, ($i = 1, 2, \dots, r$ rows), ($j = 1, 2, \dots, c$ columns), and

$$n_{.j} = \sum_{i=1}^r n_{ij}; \quad n_{i.} = \sum_{j=1}^c n_{ij}; \quad N = \sum_{i=1}^r \sum_{j=1}^c n_{ij}$$

Max. Y			$n_{1.}$
.			.
.		n_{ij}	.
.			.
Min. Y			$n_{r.}$
Min. X Max. X			N
	$n_{.1}$ $n_{.c}$	

$$\text{Chi-Square} = \sum_{i=1}^r \sum_{j=1}^c \frac{\left[\frac{n_{ij} - \frac{(n_{.j})(n_{i.})}{N}}{\frac{(n_{.j})(n_{i.})}{N}} \right]^2}{\frac{(n_{.j})(n_{i.})}{N}}$$

The mean, standard deviation, and correlation coefficient are computed from all values of the variables independent of the ranges specified by the user.

```

PROBLMTEST A004004C 01+02 6
RANGES 70 05 55 05 50 01 50 01 +08 -12
RANGFS 75 10
LABELS 1SCORE1 2SCORE2 3BEFORE 4 AFTER 5CHANGE 6 TOTAL
(3X,4I3)
01 45 30 13 16
02 20 45 18 21
03 10 35 10 08
04 05 04 08 04
05 15 15 20 16
06 10 45 14 17
07 30 10 18 01
08 65 10 21 24
09 30 30 09 09
10 15 30 34 30
11 15 30 07 05
12 20 45 31 34
13 25 25 29 30
14 20 45 04 07
15 45 20 27 29
16 35 40 14 13
17 35 10 44 42
18 05 25 36 30
19 10 55 45 46
20 40 10 44 43
21 05 35 24 19
22 40 15 32 36
23 40 05 12 10
24 15 20 11 04
25 20 25 03 01
26 10 55 07 10
27 25 25 08 09
28 40 20 05 04
29 45 20 27 22
30 20 15 26 28
31 30 20 31 30
32 15 50 16 19
33 10 30 15 07
34 35 15 21 16
35 55 10 09 12
36 40 25 11 06
37 25 25 14 13
38 25 30 19 27
39 35 30 25 27
40 30 35 18 20
TRNGENC00512003 GC4
TRNGENC7611001 C02
SELFCY 5 1 6
FINISH

```

Problem Card

Test A
 4 variables, p
 40 cases,
 1 Selection Card
 2 variables, q, added by transgeneration
Option: Do not enter columns and rows with
 zero frequency.
Print labels.
 2 Transgeneration Cards
 Data input from cards
 1 Variable Format Card

Range Cards

Variable 1 maximum 70 minimum 5
 Variable 2 maximum 55 minimum 5
 Variable 3 maximum 50 minimum 1
 Variable 4 maximum 50 minimum 1
 Variable 5 maximum +08 minimum -12
 Variable 6 maximum 75 minimum 10

Labels Cards

Variable 1 is Score 1
 Variable 2 is Score 2
 Variable 3 is Before
 Variable 4 is After
 Variable 5 is Change (Before-After)
 Variable 6 is Total (Score 1 + Score 2)

Transgeneration Cards

Variable 3 - variable 4 = variable 5
 Variable 1 + variable 2 = variable 6

Selection Card

Cross-tabulate variables 5 and 6

007707 - CROSS TABULATION WITH MARGINAL STACKING - REVISED FEBRUARY 26, 1970
 -FAMU SCIENCES COMPUTING FACILITY, UCCLA
 -MARGINAL CROSS BEST A
 NO. OF VARIABLES 4
 NO. OF CASES 40
 NO. OF TRUNCATED CASES 2
 NO. OF VARIABLE PRIORITY CASES 1

VARIABLE FORMAT CASE(S)
 (50, 615)

CASE	1	TRANS	ORIG	CRIM	VAR(I)	CONSTANT	VAR(I)	VAR(I)	VAR(I)	VAR(I)
1	5	12	3	0	0	0	0	0	0	0
2	6	11	1	2	0	0	0	0	0	0

TOTAL IS CROSS TABULATED WITH CHANGE ON:
 VARIABLE 6 IS CROSS TABULATED WITH VARIABLE 5

NUMBER OF REPLICATIONS 40

VARIABLE HAS MINIMUM HAS SPECIFIED:

6	75	10
5	6	-12

(6) (EXTREME RIGHT VALUE IS NEW TOTAL)

TOTAL	1	2	3	4	5	6	7	8
75 0	2	1	1	2	12			
61 0	6	1	1	1	2			
40 0	1	2	3	1	6			
55 0	2	3	1	1	2			
40 0	1	1	1	1	2			
35 0	1	1	1	1	2			
30 0	1	1	1	1	2			

1 51	-6	-2	0	2	3	4	6	7	8
CHANGE	1	4	1	5	4	1	1	1	1
TOTAL	10	3	5	2	1	1	1	1	1

GROUP TOTAL= 30

CROSS-TABULATION (OF TABLE) 165, 1400A

VARIABLES NOT ENTERED 2

CASE NO.	VARIABLE 6	VARIABLE 5
7	40	17

THE FOLLOWING COMPUTATIONS ARE BASED ON ALL DATA AS ENTERED EVEN IF SOME ARE EXCLUDED FROM THE ABOVE TABLE.

CORRELATION COEFFICIENT = 0.5495

MEAN	510	10,0000	501	510	4,32947
STDEV	610	55,0000	501	610	14,2117

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