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Florida 10 Million: A Scenario of Florida's Future Based on Current Trends

Henry N. Leland

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**FLORIDA
10 MILLION**

WARNING!

DO NOT READ THIS DOCUMENT unless you are prepared to change your mind about the future of Florida.

Depending upon your present perspective, you may be surprised, dismayed, or delighted at what you will learn. But the authors' intent is that you be enlightened about where Florida is heading if present trends continue.

Historically, man has exhibited a fascination with the future. Recognition of an accelerating rate of social and technological changes has made contemporary man even more concerned with what the future holds.

In 1972, the Florida Legislature recognized the need to plan for the accommodation of the rapidly growing population. The Division of State Planning was directed to prepare a State Comprehensive Plan for gubernatorial and legislative consideration and action. The plan is to "provide long-range guidance for the orderly social, economic and physical growth of the state. . ." Florida 10 Million is a preliminary step toward this goal.

In the forecasting field, scenario has come to mean an objective word picture of some probable future, possibly including a description of the conditions leading to the situation described. This "vision" of the future is based on the analysis of economic, social, and physical data, and on trend projections.

A multidisciplinary approach was used to study the transition from the Florida of today to the Florida of tomorrow. A group of knowledgeable specialists was selected to prepare reports on the impact of change and on the major trends in their area of expertise. These reports are listed inside the back cover and reprints are available at cost from the Division of State Planning, Department of Administration, Tallahassee, Florida 32304.

The underlying assumptions which governed all of the projections and analyses undertaken in the preparation of this study were: (1) that current and emerging trends will continue; (2) that the availability of natural resources will not be a limiting factor; and (3) that the population of Florida will continue to grow, reaching 10,000,000 at some time in the future (1982 according to the Bureau of Economic and Business Research, University of Florida).

Florida 10 Million will attempt to portray the "most likely" future of Florida at a population of 10,000,000. In the text, this milestone will be represented by the mathematical abbreviation 10^7 .

The Division of State Planning wishes to acknowledge appreciation for the efforts of the project consultants who prepared the information upon which the scenario is based. The project team accepts full responsibility, however, for the interpretation and synthesis of these data in the final report.

This public document was promulgated at an annual cost of \$7,652, or \$7.65 per copy to provide basic information for the state comprehensive planning process.

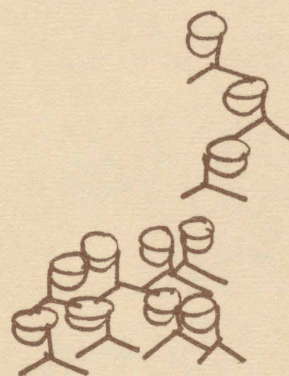
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FLORIDA

A SCENARIO OF FLORIDA'S FUTURE
BASED ON CURRENT TRENDS

10

MILLION



September 1, 1973

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Governor, State of Florida

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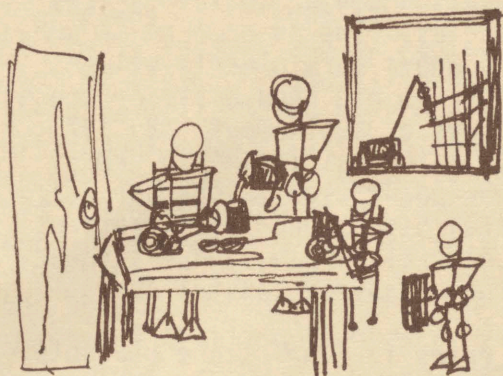
CONTENTS

FLORIDA TODAY: THE PEOPLE	3
FLORIDA TODAY: THE STRUCTURE	7
FLORIDA TODAY: THE ENVIRONMENT	13

ILLUSTRATED TRENDS	17
Urbanization/Land Use: Florida Today . .	18
Demography	19
Social Structure	20
Health	22
Education	24
Leisure	26
Justice/Safety	28
Employment/Income	29
Agriculture	30
Housing	32
Transportation	34
Communications	36
Energy	37
Water	40
Coastal Zone	42
Wetlands	44
Pollution	46
Urbanization/Land Use: Florida 10 ⁷ . .	48

FLORIDA 10 MILLION: THE PEOPLE	49
FLORIDA 10 MILLION: THE STRUCTURE	53
FLORIDA 10 MILLION: THE ENVIRONMENT . . .	58
POSTSCRIPT	61
POPULATION PROJECTIONS	64

FLORIDA TODAY: THE PEOPLE



David Mann awoke and reacted with a start to the sunlight blazing in through the single window. The tiny room was fully alight as he groped for the alarm clock. He sighed with relief that he had not overslept. His wife padded down the hall to awaken the children.

Whirrs, crackles and rumbles came from the kitchen as he dressed for work. Humming softly, he planned his day, ticking off the decisions to be made. Clothes were no problem, for he wore the same coveralls every day for work. The warehouse was a good place to work, he thought, but opportunities for promotions came very seldom and the pay raises hadn't been keeping up with the rising prices.

"Come to breakfast, Honey," his wife called. The children straggled in to take their places at the table. "Not very eager to get off to school," she observed. "What's the trouble?" "Aw, we're having

more old tests today," grumbled Jimmy. "And the bigger kids hit us in the hall," piped little Dave. "Well, try to stay out of trouble, boys, and do your best on the tests," mama counselled. "I never liked school much either at your age, but it gets better as you grow up."

Big Dave glanced at his watch and scooped up his eggs with a piece of toast. "Don't pass up the chance to get all the school you can, boys," he said. "The boss told me yesterday that he thought I should go back to school so I could learn a different trade. Seems there's talk of automating our warehouse, and my job won't be needed. He thinks I could learn to run the machines, but I don't see how I can take the time off work . . ."

"Time to go, boys." A clatter of feet, and the door slammed. "I want you to stop by on your way home tonight and take Mother some material I bought for her," his wife instructed. "Well, then I can't take the bus today, so I'd better get started." A quick kiss, and Dave stepped out into the warm, heavy air. The sun blazed down its unremitting energy.

Growth can be described in many ways, but here the essential measure is people - people moving to Florida and people born in Florida. Since the early 1920's, this southward flow has never ceased, slowing to a trickle only in times of stress, then resurging in response to the lure of the subtropical Eden. Today, Florida is experiencing the greatest of these surges, bringing 6,000 new residents each week. During the decade of the 1960's, Florida's population grew by more than 1.8 million people, but since the 1970 census, the growth rate has increased. By July 1972, there were nearly 7.5 million Floridians, and the most recent projections indicate that the 10 million mark will be reached in 1982, if the 1970-72 trends continue.

Population growth is an indication of a healthy environment, a healthy climate, and a healthy economy. It means that families are growing and that people in other places perceive Florida to be a desirable place to make their home. Natural increase (births minus deaths) accounted for roughly 24% of the new-resident population in the decade of the sixties, but only 13% of the total new-resident population since 1970. The heavy flow of in-migration is traceable, at least in part, to the annual influx of tourists. Of the 25 million visitors who now come to Florida each year, many return to become permanent residents. On any given day, Florida's attractions will entertain between 750,000 and 1.5 million visitors from other states. The economic, social, and environmental impact of this friendly invasion can not be overestimated.

Florida's population profile shows the influence of her long-standing image as a haven for retirees. Compared to national averages, the Floridian population includes older adults, fewer children, more females than males, and a smaller proportion of non-whites than is found in most other eastern states. Almost 15% of the population is 65 years of age or older, as compared with less than 10% nationally. These demographic indices can be accounted for by the heavy in-migration which is predominantly elderly and white.

Florida's new residents exhibit a strong preference for living in urban surroundings and near the coastlines. There are 67 counties in Florida, of which 38 have some portion delineated as "coastal zone."

Three out of four Floridians live in these zones which comprise 26% of the state's land area. Fifteen of the coastal zones have been developed, and only one major population center (Orlando) lies outside their boundaries. The phenomenon of urbanization is perhaps nowhere more clearly evident than in Florida, where it has been a steady trend since the earliest days of settlement. By 1970, over 80% of the population was living in urban areas. In brief, the population is characterized by a high growth rate, high impact of migration, high proportion of elderly people, and a tendency to concentrate in the urbanized coastal zones.

While unemployment rates in Florida are characteristically lower than the average for neighboring states, employment opportunities are most abundant in industries where pay is traditionally low. Not only is employment concentrated in the lowest-paying industries, but these industries also pay lower wages in Florida than in the nation as a whole.

The total personal income of Floridians comes from four major sources: (1) wages, salaries, and other labor income, 65%; (2) proprietor's income, 6%; (3) property income, 17%; and (4) transfer payments (social security, pensions), 12%. Floridians, in 1970, received \$3,642 per capita, as compared to the national average of \$3,921. This continues a long-term trend in which Floridians have lagged the personal income growth of the nation by roughly \$300 per year.

Another way to evaluate the economic status of Floridians is to look at the geographic distribution of family incomes and at regional variations in the cost of living. Purchasing power measured in these terms is distributed very unevenly among the regions of Florida. Only six counties boast median family incomes of \$9,000 or more, while four counties have median family incomes of \$5,000 or less. The high and low extremes are tempered somewhat by the cost of living in the area where they are earned. It is not surprising that high living costs follow high wages and that lower wages prevail where living costs are lowest. Low-income families living in high-cost areas are caught in a dilemma. Since the cost of living can vary as much as 20% within the state, it is a highly significant factor in determining the best location for stretching limited incomes.

Floridians generally enjoy good health, but like other Americans, they tend to neglect preventive actions such as good nutrition, informed use of drugs, and home safety precautions. A factor of growing importance is the number of people sustained through medical maintenance. Powerful drugs and electro-mechanical aids allow tens of thousands of the population to function where previously they could not. This important benefit has become controversial when carried to the extreme of death delay in terminal cases.

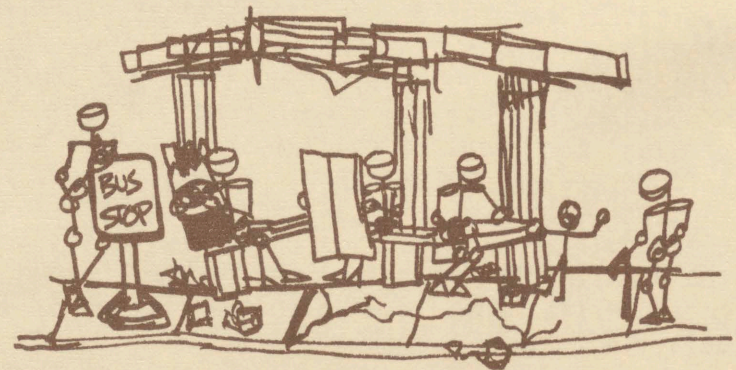
The favorable climate in Florida encourages a casual outdoor life style, and younger people, particularly, are apt to pursue active recreation. Less strenuous activities tend to occupy a greater part of other available leisure time. A recent national survey shows that 97% of all family members watch television an average of 19 hours per week, 90% read newspapers once a day, and 75% listen to radio or recorded music regularly. Only 30% of the total population attend indoor sporting events and even fewer participate in active outdoor sports. The average Floridian family takes two or three vacations each year and spends four or five weekends away from home.

One out of five of these trips involves a camper or motor home, an extension of the cultural phenomenon which is the automobile. Not only has the automobile been the major determinant of Florida's development pattern, it has profoundly influenced the life style of the population. A car has the potential for both transportation and recreation combined in a conspicuous status symbol. Floridians relate to cars and prefer to use them over any other form of transportation for the majority of their travel needs. There is one car for every two people in the state.

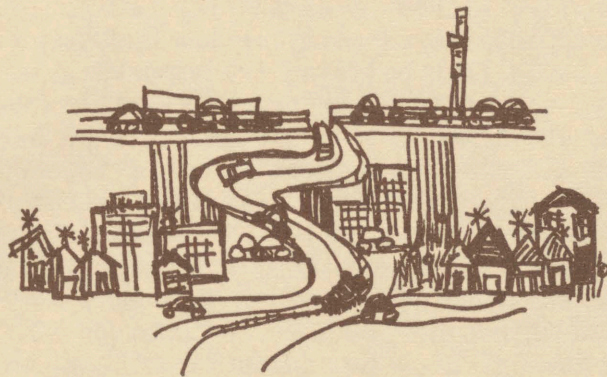
Two groups of people deserving special consideration of their problems are the disadvantaged and the elderly. The disadvantaged suffer disparities in housing, health, transportation, and education. It is beyond the scope of this publication to detail their problems, but lack of income presents a tremendous obstacle to the satisfaction of basic needs and aspirations of many Floridians. They tend to be less healthy, use fewer health services, and are often ignorant of basic health and hygiene practices. They are usually forced to devote a disproportionate share of their income to housing, and their mobility is restricted by lack of public transportation. While a basic education is required of all young people, recent research by Christopher Jencks suggests that "the character of a school's output depends largely on a single input, namely the characteristics of the entering children." Thus, the disadvantaged may suffer perpetual inequities which are little changed through current systems.

The elderly are subject to similar problems, compounded in many instances by physical disability and separation from friends and relatives who could provide for their needs. In 1970, one out of every four of Florida's elderly had an income of less than the poverty level, and nearly half the elderly immigrants are in this circumstance. Retirement incomes are often severely strained by inflation, and health care costs of the elderly are considerably higher than for the younger age groups. The over-65 group also requires a disproportionate level of services from public and private agencies, and in a state where one person in seven is in this age group, the needs are great.

Ecologists warn us that populations which grow too fast eventually exhaust their basic resources. Florida today is synonymous with growth, but the benefits of rapidly increasing growth and economic development must be measured carefully against the even more rapidly rising costs of environmental degradation.



FLORIDA TODAY: THE STRUCTURE



The two-year-old compact car coughed, bucked, then surged ahead as David Mann nosed it out into the freeway traffic. Other cars whizzed by, then braked, and cut in ahead of him. Suffocating fumes came in the open windows and his body perspired in the late afternoon heat. After ten minutes of bumper-to-bumper frustration, he took the off-ramp that led him down into the shabby district where his mother-in-law had her tiny apartment. The narrow streets there were rough, but he felt a sense of relief from the tension of the freeway.

At her door he rang the buzzer and waited while she peered out through her window, then unfastened the chain lock. "Mary wanted me to bring over this material for you," he said. "Is there anything else you need today?" She took the package and thought

for a moment. "No, son, I'm getting along all right," she murmured, "but I would like to go to the grocery store Saturday, if you can take me." "Mom, I've heard they're starting a new bus route out in this section. Have you looked into it?" She winced and turned away. "Well, I think I did hear something about that, but I don't like to go out alone, you know." "OK, Mom, we'll let you know about Saturday. I know you and Mary like to shop together, but I was sort of planning to take the boys fishing. We'll work something out."

On the way home, he mulled over the upcoming weekend. Maybe Mary would let the boys skip Sunday School this time, so they could go Sunday. He knew she wouldn't like that.

By the time he got home, the boys were finishing their supper. Little Dave was chattering about the Midget League football game for this evening, a pastime which was absorbing large amounts of his leisure time these days. Mary worried aloud about the little fellow getting hurt. She reminded her husband of the injuries other boys suffered and the high cost of medical treatment. Even with their hospitalization insurance, she pointed out, they could hardly afford a broken arm right now. The washing machine was acting up again, and the car needed new brakes, and if they ever got any money ahead, they were planning to air condition the living room.

Big Dave shook his head and signaled his wife to change the subject. "How would you boys like to go fishing this weekend?" Shouts of excitement were heard amid the scramble for the football gear. Mary and David smiled at each other and sat down to enjoy a quiet cup of coffee.

Man is continually building and renewing his physical and social structures. Cities, highways, governments, businesses and families are man's creations. All of these are made possible by extensive use of naturally occurring energies. Of the total energy consumed in Florida, 11% is in the form of non-recurring fossil fuels and 89% is from solar energy. This "energy budget" is distributed among the entire range of activities in the state.

The economic structure is based on exports which bring resources into the state, and provide the stimulus for development. Two of Florida's basic industries are tourism and agriculture. Government expenditures also make a large contribution to the state's economy. Major agricultural exports include citrus and vegetable products, both fresh and processed; pulp and paper; and livestock and seafood. Tourism is identified with a large part of Florida's wholesale and retail trade, transportation and warehousing, hotels and lodging, construction, and many forms of services. Both tourism and agriculture have the advantage of a year-round abundance of solar energy, an asset which is rare in the continental United States, but are heavily dependent on the availability of petroleum to run the man-made systems.



Rapid growth of the population and the continual expansion of tourism have created a major industry in land development and housing construction. While new housing is being constructed in record volumes nationally, Florida's demand for new homes is outstripping the capacity of the industry. Growth is so rapid that building tradesmen are in short supply, and critical shortages exist in lumber, brick, and cement. Increasing costs of both land and construction are creating a shortage of lower cost housing, resulting in a wider acceptance of mobile homes. In 1971, 10% of Florida's nearly 2.5 million homes were mobile homes. Three-fourths of the existing homes are single-family dwellings but two-thirds of the new construction starts are multi-family. Over two dozen large land development projects are now underway in the state. Some are of a scale and complexity to warrant being described as "new towns."

According to the 1970 census, there were 2,285,416 households in the state, of which over 350,000 were single-person households. Of the total housing units for families, 157,000 were classified as substandard, and 3% are crowded by occupancy of over 1.5 persons per room. These households consume, on the average, 11,275 kilowatt hours of electrical energy and 140,000 gallons of water, and produce 2.4 tons of solid waste and 3.3 tons of air pollution each year. Households consume 45% of all electrical energy produced in the state, and Florida households exceed the national average for electrical energy consumption by 20 to 30%. Sewage treatment is now available to 24% of the state's housing units.

Increasing urban water demand is approaching or exceeding municipal water supply limits in some areas of the state. Local governments are forced to use stop-gap engineering solutions to resolve this shortage. The cumulative effect is often diversion of regional water flows to accommodate growing urban populations. In turn, surrounding natural water systems are severely stressed.

Florida's transportation systems are a major asset and, at the same time, a source of anxiety for the responsible authorities. The highway network is the most highly developed mode of transportation in the state. By any standard of comparison, it ranks among the most advanced in the world, and yet it has major deficiencies. Despite a dedicated source of revenue which yields half a billion dollars annually, only 20% of the system is considered adequate for present and anticipated traffic volumes. Urban areas are especially hard-pressed to maintain serviceability and to expand their arterial networks to keep pace with growth. In many areas, environmental concerns are curtailing efforts to add needed capacity, and congestion adds to the frustrations of commuters. The heavy cost of accidents and fatalities, while perhaps no higher than national norms, is a penalty we must all pay for our love affair with cars. Unfortunately, the alternatives available today are not competitive in most localities, and there is no choice for most Floridians but to depend on their automobiles. It is widely understood that cars are one of the most energy-demanding forms of transportation, and that the cost of operation is closely related to the availability of fuel.

The most obvious alternative to automobiles is public systems of mass transit. Investor-owned bus systems have been practically eliminated in the urban areas of Florida. Caught in the squeeze between rising costs and declining ridership, they have been gradually taken over for continued operation by the municipal and county governments of the areas they serve. Transportation is coming to be regarded as a basic right of all the people, but technology has not yet provided the kind of system which is economical to build and operate, and can compete with the automobile in convenience.

Air travel is an attractive mode for trips of 200 miles or longer, especially for the more affluent traveler. The major drawbacks are infrequent service and untimely schedules. Smaller cities are poorly served or disregarded as uneconomical. Large airlines skim the cream off the market, and the feeder lines struggle to survive on the remainder. At least five of Florida's major airports are operating at levels where demand exceeds capacity, resulting in delayed arrivals and departures. Construction of new airfields to relieve overcrowding and meet the growing demand is not only costly but is also regarded as environmentally hazardous.

Waterborne commerce is an economical and efficient mode of transportation, and Florida is amply endowed with ports. The inland and intracoastal waterways systems enjoy high levels of utilization and are a major asset to the state. There are several missing links in the waterways, however, which are being delayed due to environmental considerations. The full potential of these protected waterways for barge traffic may never be realized unless new methods of construction can be developed which minimize environmental danger. Similarly, environmental concerns have slowed down further development of Florida's harbors. No major ports have channel depths adequate to accommodate the larger oil tankers now coming into use. Since petroleum products are Florida's largest import, the question of further harbor development remains controversial.

Contrary to popular belief, railroads are not an obsolete technology. In 1971, Florida's extensive rail network hauled 92 million tons of revenue freight, and carried 215,000 passengers. The passenger trade has been declining for many years, and only vigorous effort can insure its survival for the future, but for economy in hauling heavy freight, the railroads are unsurpassed.

Communication has many similarities with transportation, and in some applications can serve as a substitute for personal trips. Not only do people have a need for communicating with each other, but so do the organizations and institutions of our society. Point-to-point media include telephone and the mails. Telephone companies are experiencing difficulty in meeting consumer demands for service.

This is especially true in the fast growing urban areas. Business and government are the chief users of the mail system. Only 14% is household-to-household, and it is characterized by high transmission rates, slow delivery, and rather routinized content. The volume of mail transmitted in Florida has increased from 1.7 billion pieces in 1965, to 2.2 billion in 1970.

Mass communication is a mark of an urbanized society. Florida now has 78 AM radio stations, 48 FM stations and 35 TV stations. At least ten TV stations and six radio stations are public. Broadcasting has reached its peak, both as a source of profit and as a social innovation. The radio spectrum is glutted and the few remaining unused television channels are in sparsely populated, poor market areas. Cable TV, on the other hand, is only beginning to realize its potential. At present, it is only a means to pipe television programs to remote markets, while the major urban centers are saturated by the 3 national broadcast networks. There are seven major (10,000+ subscribers) cable systems in the state, and nearly 100 smaller systems. The question of local and state regulation is unsettled.

Newspapers in Florida are flourishing. They can deliver detailed and varied coverage of topics in a depth impossible with broadcasting. Out of a total of 247 newspapers printed in Florida, 51 are dailies with a circulation totaling about 2,123,000. Most of Florida's newspapers are chain owned, and derive 75 to 80% of their revenue from advertising. Daily papers, like television stations, are usually located in the larger cities; thus sparsely populated areas of the state tend to be information-poor, in regard to local affairs.

The essential functions of health education and safety have been a societal responsibility since man began his settlement in villages, but as civilization advanced, these duties have increasingly been surrendered by families to the larger community. As societies became more complex, so did the problems associated with these subjects, until the highest levels of government became involved in the details of community problems. Now there is increasing evidence that the focus of problem-solving efforts is again regarded as a community responsibility. This trend is evident in many areas, but is particularly clear in health, education, and rehabilitation.

The obvious disparity between poverty and affluence may be responsible for an increase in both the motivation and opportunities for crime. At the same time, there is a trend toward redefining and decriminalizing the "victimless crimes," either through legislation or selective enforcement. The correctional system is still largely a "removal" system, but many more offenders are now retained in community centers where selective participation in employment and family life are possible.

A similar shift to community-based service is evident in the treatment of serious mental health problems. Outpatient service for less serious problems has lost most of its stigma, and even though monetary costs may be greater, the treatment of mentally ill persons in their own community is preferred over commitment to a distant institution.

Nearly 8% of the Gross National Product (and presumably Florida's) goes to health care. For those with adequate incomes living in the larger cities these services are easily available. For many others, the nearest general practitioner may be 25 miles away or booked solid for two months. Hospital charges averaged \$77 per day in 1970, and people have increased their use of hospitals greatly over the past decade. Based on vacancy rates, a recent survey reveals a surplus of 4,000 beds in the state, but fast growing areas may experience shortages. In 1972, hospital construction costs were estimated to be \$33,000 per bed.

Reduction of hospital use is possible through better prevention and primary care. Most techniques of preventive health depend on the knowledge and initiative of the individual and the family. For example, children must be taken for immunizations before the mandatory school age. In addition, public agencies continuously monitor food, water, and air.

Parents tend to take schools for granted and to be concerned only with costs and specific conflicts. They seem content with the hierarchy of decision making that concentrates most of the funding rules at the state level, so long as decisions on content and delivery methods remain at the county level. In 1971, 68.3% of the state budget went for education (universities included) and was supplemented by varying levels of local support through property taxes.

The primary and secondary school systems generally consist of self-contained units with required and packaged units of study in arbitrary time frames, taught by certified college graduates. Unfortunately, teacher certification guarantees neither competence nor aptitude for teaching. Even the vast majority of teachers who are competent are generally not permitted to function as professionals and have very little opportunity to exercise choice.

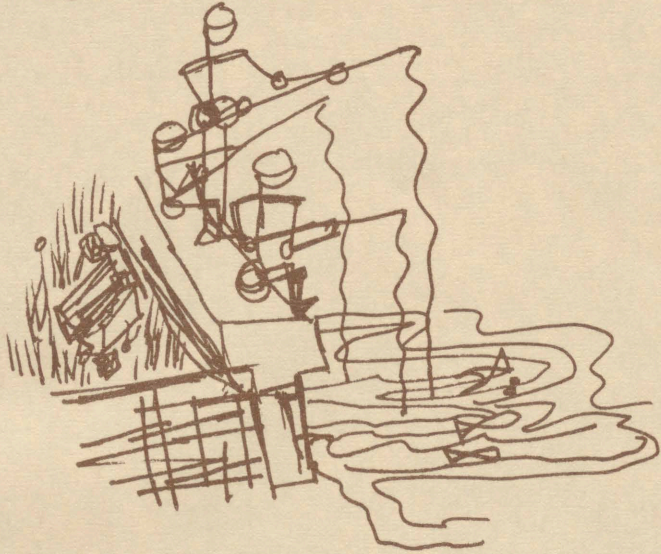
Adults in Florida average twelve years of formal education, and one out of three Floridians is either enrolled in or employed by the educational system. Over 300,000 adults participate in some form of adult education.

Recreation is the dominant form of leisure activity and accounts for at least 15% of national personal expenditures. The most popular forms of outdoor recreation in Florida are water and beach activities, but the fastest growing activities are camping and bicycling, both of which require development of suitable structures. Recent legislation recognizes the demand for bicycle trails and campsites, and provides both direction and funds for further development of these facilities.

The U.S. leisure industry as a whole is a 100 billion dollar business. Research indicates that as family income grows, a larger proportion is devoted to leisure activities. The continued development of physical structures in response to the growth of population and their rising expectations places ever increasing demands on those natural features which make Florida attractive - its beaches, lakes, rivers, estuaries, and abundant wetlands.



FLORIDA TODAY: THE ENVIRONMENT



The car rolled smoothly over the freshly-paved asphalt. At the end of the pavement it stopped and a man and two boys got out, carrying fishing tackle. The man scouted the perimeter of a concrete bulkhead that surrounded the finger of land, and picked a likely spot. "Let's try our luck here, boys," the man called.

Soon, the stringer began to fill with grunts, croakers, and sheepshead. Gentle waves slapped the seawall as an occasional boat pushed up a wake. The sun climbed higher and a breeze ruffled the bay. The boys were too busy baiting hooks to talk much, but the man couldn't resist the opportunity to teach the boys some of his fishing lore.

"See those islands out there?" He pointed his finger out toward some green mounds. "Those are mangrove trees," he stated. "All this land where we're sitting used to be like that until they filled it in. Now they're going to build houses here. See those foundations back there?" The boys swiveled their heads around, then went back to watching their lines.

"I'm glad it's Sunday, Dad," said little Dave, "cause I don't like the noise when they're building. Remember when they built those apartments behind our house? I couldn't sleep in the mornings with all that noise." "Yes, Son, I remember, but I think they're through building in our neighborhood. People want to live down here nearer the water, now."

Jimmy turned to his father and hesitantly inquired, "Could we move to one of these houses, Dad? We could fish any time if we lived here." A pained expression crossed the father's face but he quickly replaced it with a smile. "You wouldn't want to move away from your own neighborhood and all your friends, would you son?" Jimmy and little Dave exchanged glances before they looked back at their father. "Naw, I guess we better stay where we live now." A flight of pelicans sailed by in search of food fish. David Mann watched their perfect formation until it was out of sight.

The development of a natural landscape requires a very long period of time. Far from being an accidental "happening," ecological patterns which evolve represent a kind of equilibrium between the forces of nature. Energies in many forms, including wind, waves, rainfall, and tidal forces, interact to form soils, patterns of water drainage, vegetation and wildlife habitats. Natural landscapes represent a large investment of natural energies in developing a stable pattern well adapted to seasonal and year-to-year variations.

In Florida, the natural fitting process has produced 11,876 miles of meandering rivers and streams, innumerable tidal channels, and over 7 million acres of freshwater wetlands. Florida's swamps fill during the wet season and hold waters by the friction of vegetation and meandering channels, guiding some into ground water recharge and cleansing it by filtration through vegetation and soils. Swamp-adapted plant life uses more water during wet periods, but conserves it as water levels subside. A prime example is the cypress, which sheds its leaves as water becomes scarce in winter.

On the east coast and along the western panhandle, high-energy ocean waves have built over 1,160 miles of broad, sandy beaches. A wider coastal shelf on the west coast buffers wave action, resulting in a lower energy landscape characterized by tidal creeks, salt and mud flats, and over 2 million acres of mangroves and coastal marshes.

Scrub forests cover the dry sandy soils of Florida's central and coastal ridges. Well-drained soils of moderate elevation are typically dominated by pine and turkey oak forest, and hardwood hammocks of high diversity prevail on the moister soils of intermediate elevation. The microclimate is measurably cooler under the canopy shading of the hammock vegetation.

Rain falling on dry sandy soils penetrates rapidly into porous limestone reservoirs which underlie most of Florida. The largest of these, known as the Floridan Aquifer, is estimated to contain over 800 cubic miles of water, or about 100 times the amount contained in Lake Mead, the nation's largest man-made lake. Despite their tremendous capacities, however, aquifers are ultimately dependent upon recharge from surface sources.

Over thousands of years then, natural energies have interacted with Florida's land mass to produce ecological systems of wide diversity which are adapted to normal environmental extremes. Natural communities make maximum use of all available energies to maintain themselves and the regional system of which they are a part. The work done by natural communities can be measured by converting energy flows to calories or BTU's and by comparing these units with man's activities. When this is done, and calories are expressed in dollars by the use of appropriate conversion ratios, the annual productivity of Florida's remaining natural areas is over \$110 billion per year.

Work performed by natural ecological systems benefitted early Floridians in many ways. Florida vegetation and soils served as natural filters which purified drinking water and absorbed man's wastes. Ecological systems of high diversity assisted in disease control through natural selection which tended to prevent any single species (including pathogenic organisms or insect carriers) from multiplying rapidly for long periods of time.

Nineteenth century and earlier housing was generally designed to take advantage of prevailing winds, angle of the sun, and forest canopy shading which moderated temperatures and otherwise improved living and working conditions. Primitive agriculture placed greater dependence on natural mineral cycles, rainfall, and normal floodplain fluctuations to provide nutrients and soil moisture necessary for crop development. Florida's abundant coastlines, lakes, rivers, wetlands, and dry forests provided recreational opportunities and a major source of food supplements. In pre-industrial Florida, the essentially closed, steady-state systems of man and nature required only minimal imports of fuels and foreign materials. In 1850, Florida's population was almost entirely rural, and by 1900, only 20% lived in urban areas. Man's activities on a state-wide scale were still very small when compared with nature's work, and all of Florida's major ecological systems remained intact.

As urbanization increased, Floridians initially received only the benefits of economies of scale such as improved health care, increased cultural activities, more opportunities for social interaction, and accumulation of material goods purchased from income provided by urban employment. Natural systems continued to provide much of the waste treatment, water supply, and recreational functions now delivered to a greater extent through city services. New home designs still took advantage of natural energy flows, and balances of man and nature prevented environmental degradation on a state-wide basis. Some maintain that as late as the early 1950's only localized areas, such as Miami and a few seaport towns, felt the effects of extensive pollution or environmental alteration.

During the later 1950's and 1960's, attractive combinations of urban and natural values continued to lure ever-growing numbers of increasingly affluent visitors and retirees to Florida. Urbanization, particularly in coastal areas with beaches, intensified until concentrations of people, resources, and wastes reached levels beyond which remaining natural systems could not adequately absorb or buffer the effects of man's activities. Today, approximately 40% of Florida's estuarine areas are polluted, and only about 50% of available shellfish waters are still safe for harvesting. Over 262 square miles of estuarine habitat were lost to dredge and fill from 1950 to 1969, and canal systems in many areas of the coastal zone are heavily polluted.

Along the Florida east coast, over 80,000 acres of wetland areas have been impounded for mosquito control. Channelization for rapid removal of surface water and land reclamation in the Kissimmee River basin has destroyed 37,000 acres of wetland habitat which in turn has contributed to gradual eutrophication of Lake Okeechobee, the largest natural body of fresh water south of the Great Lakes. Diversion of water flows to accommodate Southeast Florida's growing population has amplified normal conditions of flood and drought in the Everglades National Park. Only a year after floods threatened wildlife populations in water conservation zones just north of the park, severe peat fires occurred in much of the same area.

Diking of sloughs, construction of drainage canals, and diversion of water flows by various highways and roads have lowered water tables in Big Cypress Swamp and surrounding areas. During the summer of 1973, 40,000 acres of cypress were lost to fires and an exotic tree (*Melaleuca*) which is adapted to a monsoon climate (severe flood and drought) threatens to displace large portions of the cypress population.

Even though man's use amounts to only 3.4% of Florida's water budget, most major urban areas are either threatened by or have actually experienced water shortages. Urban developments in coastal areas simultaneously decrease aquifer recharge areas and increase municipal demands. Extensive flood control and agricultural land reclamation projects (particularly in southeast Florida) rapidly discharge large amounts of fresh water to sea during periods of high rainfall. Adapted natural wetland communities would have the opposite effect, retaining and conserving this surplus for future release. At least one study indicates that, should a repetition of the 1971 drought occur, Miami water demands would exceed supply. In the Tampa/St. Petersburg area water tables are currently so low that local wetlands are severely stressed and even some lakes are dry.

Today in Florida, emphasis has almost entirely changed from adaptation to prevailing environmental conditions to extensive alteration of natural systems for the short-term benefit of urban areas. Using concentrated fuel energies, man is now able

to compete successfully with nature for land in areas previously left to natural management such as floodplains, coastal wetlands, cypress swamps, and inland marshes. Development in such areas both displaces large investments by nature (developing a stable pattern, cutting channels, and growing trees with seasonal and year-to-year variations) and requires additional large investments by man (dredge and fill, channelization and drainage structures, and expanded municipal well fields and waste treatment systems).

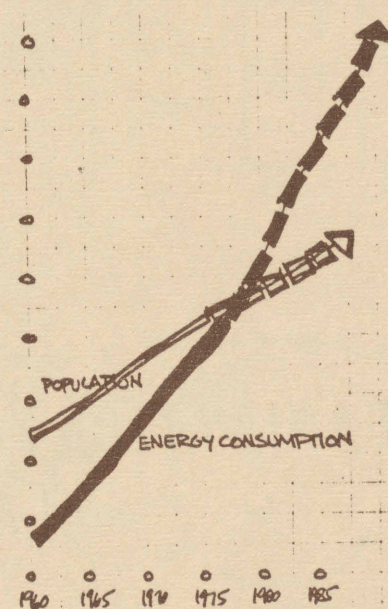
In addition to large initial costs of various environmental modifications, it is increasingly clear that the recurring environmental costs of development have been underestimated. Canals which were clean and clear when first constructed fill with weeds, debris, and sediment as erosion and urban runoff continue to concentrate nutrients. Tidal flushing of coastal waters is less effective after harbor deepening, making previously acceptable nutrient loads unacceptable because of decreased water movement. Waste treatment facilities which were adequate when coupled to natural areas such as cypress swamps, mangroves, and coastal marshes, are underdesigned when adjacent to deeper bulkheaded canals, finger fills, and artificial lakes (which have only a fraction of the nutrient-removal capacities of natural systems). Flood control designs for 25, 50, and 100 year storms encourage floodplain development to the point that property values rise rapidly and such designs no longer offer economical protection. Severe property losses result when a storm finally exceeds design limits, requiring governmental subsidies in the form of disaster relief, low-cost home loans, and flood insurance.

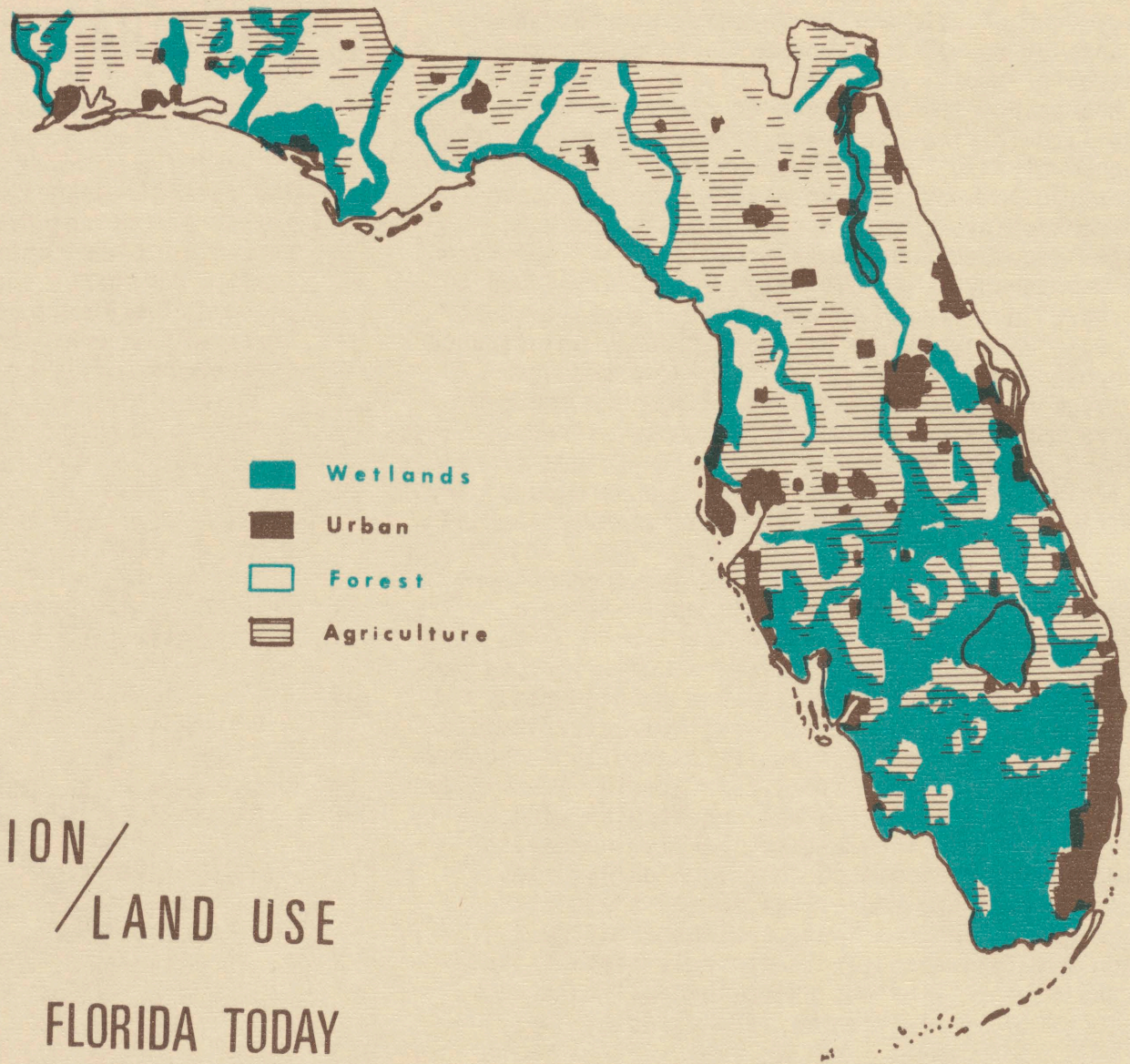
Today in Florida, man has invested concentrated amounts of fossil fuel energy in an effort to control or modify nature's activity. In doing so, he has gained the advantage of greater urban system stability (air conditioning, flood control) at the expense of stability in surrounding life support areas (pollution, altered water regimes). Each additional investment that changes the natural system requires subsequent expense (often unforeseen) for maintenance. As Florida's growth continues to increase in a linear manner, energy costs tend to increase exponentially as unanticipated maintenance and pollution costs accrue. Superimposed upon environmental concerns is the emerging awareness of modern man's absolute dependence upon extremely large flows of fossil fuels for survival. Future supplies of fuels which only a short time ago were considered limitless are now very much in question.

Even if new fuel sources develop as hoped and present growth projections can be realized, this is no guarantee of a prosperous Florida. Unlike the work of natural systems, environmental services performed by fossil fuel flows are a part of man's economic systems and must be collectively financed by society. These costs are reflected in increased local, state, and municipal taxes or in direct consumer service charges. Floridians, particularly those relying on fixed incomes, may become increasingly reluctant to accept such costs. Florida's tourist economy faces the additional threat that intense urbanization and continued environmental degradation may lead directly to economic instability as those natural values which initially attracted visitors to Florida become less visible.

ILLUSTRATED TRENDS

The following pages contain statements and illustrations which summarize the reports of the specialists who contributed to this scenario. While limited by space, these excerpts attempt to highlight the major impacts and trends in seventeen areas of concern. The selection and mode of interpretation is solely that of the editors.



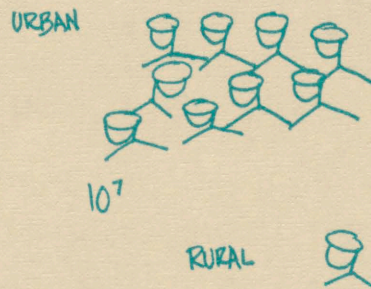
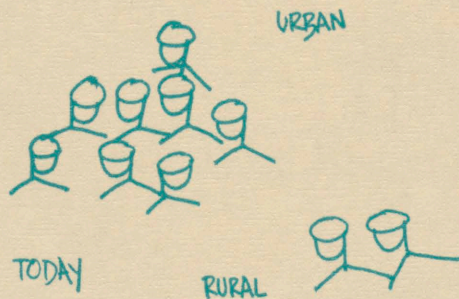
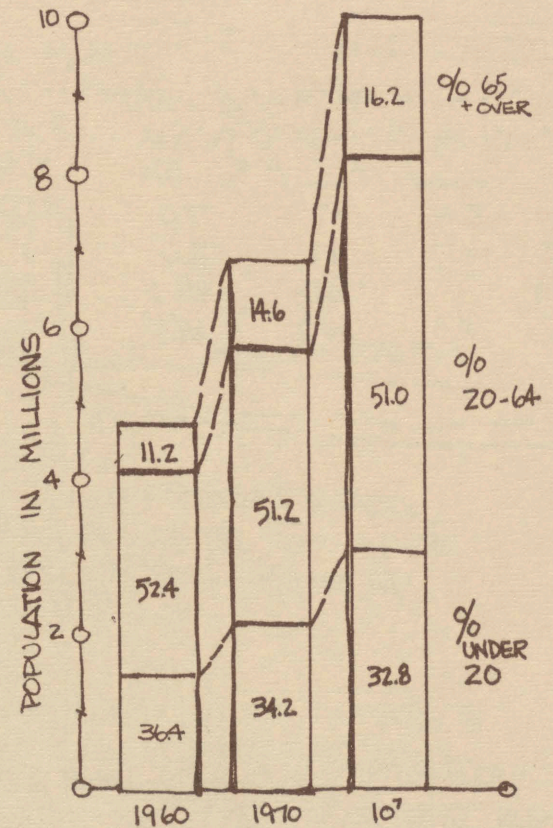


URBANIZATION /
LAND USE
FLORIDA TODAY

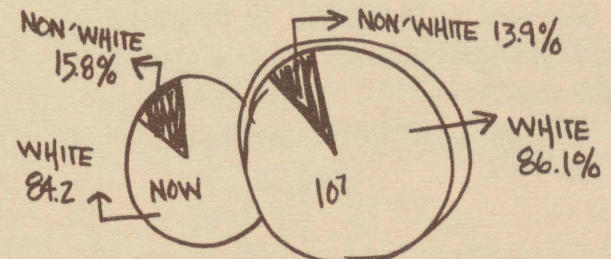
DEMOGRAPHY

SEX: THE MALE/FEMALE RATIO OF 48:52 WILL REMAIN RELATIVELY STABLE.

AGE: THE OVER 65 POPULATION GROUP WILL INCREASE 64% WHILE TOTAL GROWTH IS 47%. THE MEDIAN AGE WILL INCREASE FROM 32 TO 36.



LOCATION: THE URBAN POPULATION WILL INCREASE 66% AND COMPRISE 91% OF THE TOTAL. THE RURAL SECTOR WILL DECLINE BY 400,000.



RACE: NON-WHITE POPULATION WILL INCREASE BY 300,000 BUT DECLINE IN RELATION TO THE TOTAL.

STANDARD OF LIVING

FLORIDA AND THE US. ARE UNDERGOING A VERY EXTENSIVE PERIOD OF QUALITY INFLATION - IN WHICH THE COST OF A GOOD IS INCREASING WHILE THE QUALITY IS DECREASING

QUALITY INFLATION SUGGESTS THAT IT WILL BE INCREASINGLY DIFFICULT TO MAINTAIN ONE'S LIFE STYLE, SINCE EVER LARGER PARTS OF DISPOSABLE INCOME NOW MUST BE ALLOCATED TO REPAIR AND REPLACEMENT OF CONSTANTLY DECREASING QUALITY GOODS.

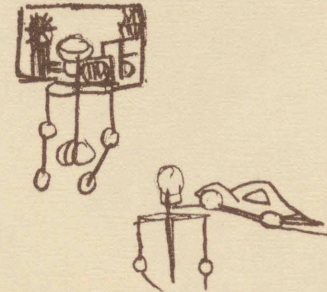
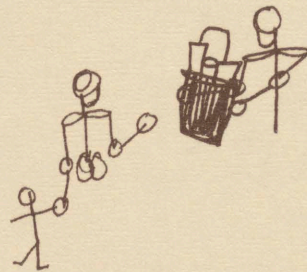
INDICATION OF STATE GOVERNMENT ACTIVITY BY % OF STATE BUDGET

	WELFARE	HEALTH	EDUCATION
1969	5.4	7.7	72.0
1970	6.0	7.7	72.0
1971	7.7	8.0	68.3
10 ¹	11.4	10.5	65.5

MUCH CHURCH ACTIVITY IN FLORIDA SINCE 1970 HAS BEEN CENTERED AROUND DIRECT SERVICES TO PEOPLE OTHER THAN WORSHIP SERVICES.

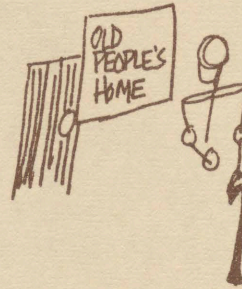
FLORIDA CHURCHES ARE ALSO AND WILL CONTINUE TO BE HEAVILY INVOLVED IN PRIMARY AND SECONDARY EDUCATION. BY 10¹ OVER 1/4 OF THE LARGE CONGREGATIONS IN MOST COMMUNITIES WILL OPERATE AN EDUCATIONAL FACILITY.

CHURCH MEMBERSHIP IS GROWING, ESPECIALLY AMONG THE YOUNG, BUT MANY DO NOT PARTICIPATE IN CHURCH ACTIVITIES.



SOCIAL STRUCTURE

THE SOCIAL IMAGE OF THE ELDERLY IS NOW POOR. THIS DIFFICULTY IN WINNING ACCEPTANCE AND RESPECT CONTRIBUTES TO A MORE RAPID DECLINE OF HEALTH AND QUALITY OF LIFE.



FIXED INCOME + INFLATION = POVERTY

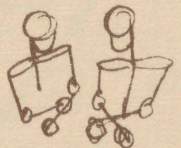
23.7% OF FLORIDA'S ELDERLY WERE BELOW THE POVERTY LINE IN 1970 → 25% WILL BE AT POPULATION 107.

NEARLY ONE-HALF OF FLORIDA'S IMMIGRATING ELDERLY ARE AT OR NEAR THE POVERTY LEVEL

FROM 1960 - 1970, THERE WAS A 133% INCREASE NATIONALLY IN THE NUMBER OF PERSONS UNDER 25 LIVING ALONE, AND A 51% INCREASE AMONG THOSE OVER 65 LIVING ALONE.

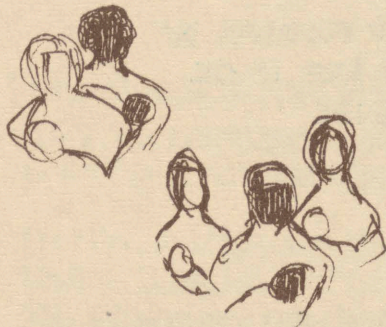
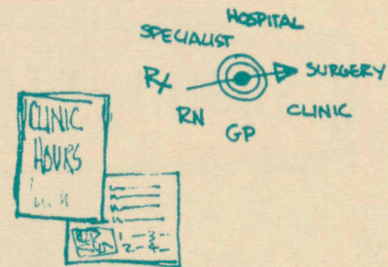
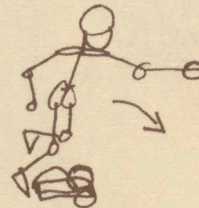
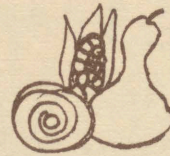
IF WOMEN AND TEENAGERS CONTINUE TO ENTER THE JOB MARKET AT THE PRESENT RATE, THEY WILL COMPRISE OVER 1/2 OF FLORIDA'S LABOR FORCE BY POPULATION 107. MOST WILL BE EMPLOYED IN THE LOWER PAYING RETAIL TRADE AND SERVICE INDUSTRIES.

PROBLEMS OF THE ELDERLY INCLUDE MOBILITY, HEALTH, RECREATION, AND SOCIAL ISOLATION



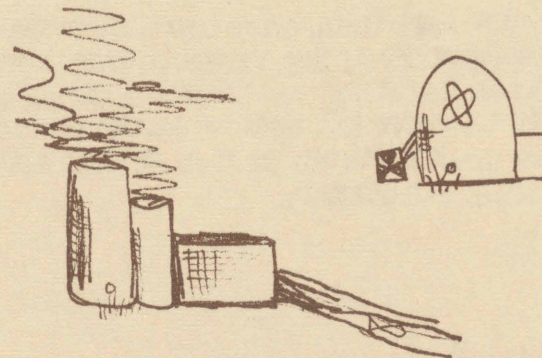
TECHNOLOGY HAS NEUTRALIZED MOST MAJOR HEALTH HAZARDS. THE CONSUMER HIMSELF NOW HAS THE THE PRIMARY RESPONSIBILITY FOR THE QUALITY OF HIS OWN HEALTH. WAYS HE CAN EXERCISE THIS RESPONSIBILITY INCLUDE

- GOOD NUTRITION
- AVOIDANCE OF DRUG ABUSE
- PERSONAL SAFETY
- INFORMED USE OF THE HEALTH CARE SYSTEM



HAZARDS TO BIRTH AND INFANCY HAVE BEEN REDUCED → BUT BLACK' WHITE RACIAL DIF' FERENCES IN INFANT MORTALITY PERSIST AND SHOW LITTLE TENDENCY TO DECREASE.

NEW THREATS TO HEALTH ARISE BECAUSE OF INCREASING WASTE DISPOSAL INTO THE ENVIRONMENT, EXCEEDING OUR CAPACITY TO NEUTRALIZE IT

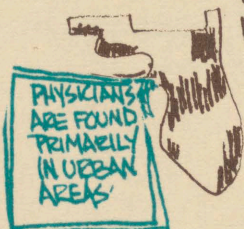




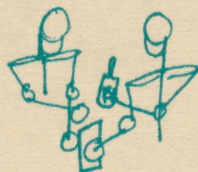
GROWING NUMBERS OF PEOPLE ARE FUNCTIONALLY DEPENDENT ON HEALTH SERVICES FOR LONG TERM MEDICATION AND MAINTENANCE DEVICES... INCLUDING DRUG-RELATED MENTAL HEALTHCARE.



PHYSICIAN/POPULATION RATIO IS EXPECTED TO ACHIEVE AN ACCEPTABLE VALUE BY 1980... MALDISTRIBUTION, HOWEVER, WILL REMAIN A SERIOUS PROBLEM BOTH IN PHYSICIAN LOCATION AND IN DISTRIBUTION OF HOSPITAL BEDS.



OUTPATIENT VISITS TO CLINICS AND HOSPITALS ARE INCREASING

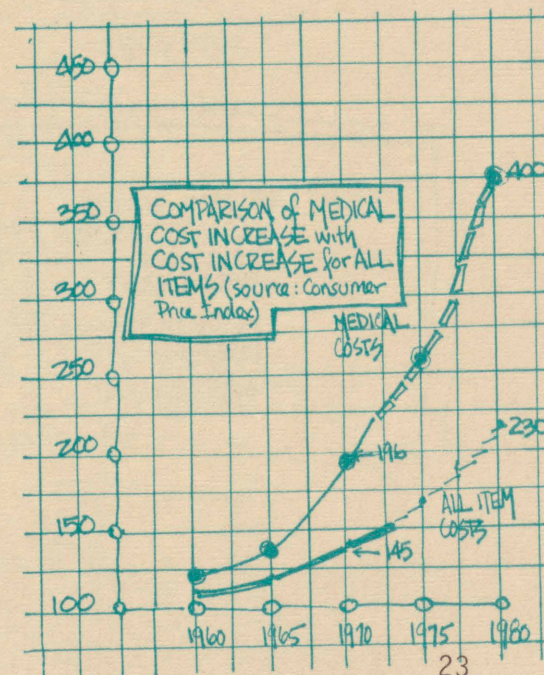


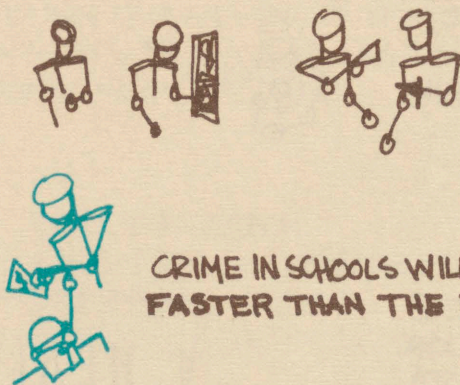
IN CONTRAST TO HOSPITAL STAYS, WHICH ARE STABILIZED.



ALTHOUGH MENTAL HEALTH HOSPITAL CARE APPEARS TO BE LEVELING OFF AND ACHIEVING SHORTER PATIENT STAYS, COMMUNITY IN-PATIENT CARE SHOULD DOUBLE BY POPULATION 10⁷.

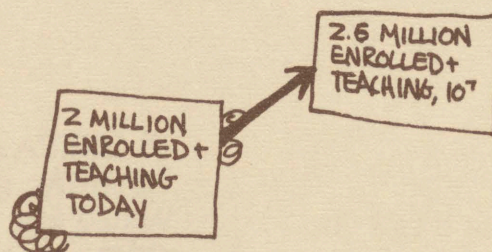
HEALTH





CRIME IN SCHOOLS WILL INCREASE
FASTER THAN THE POPULATION.

TODAY	LIFE LONG LEARNING	10 ⁷
ADULT EDUCATION		
51,375 FTE	→	73,000
CONTINUING EDUCATION		
4897 FTE	→	7,000
COMMUNITY SCHOOLS		
160 SERVING		
687,000	→	1,550,000
COMMUNITY COLLEGES		
42 SERVING		
127,626	→	54 SERVING 188,000
ALL COMMUNITY COLLEGES AND UNIVERSITIES OFFER AT LEAST ONE METHOD OF SHORTENING THE TIME RE' QUIRED FOR DEGREES.		



TODAY	PRIVATE SECTOR ACCOUNTS FOR 9% OF ALL K-12 ENROLLMENT	↔	UNCHANGED, POPULATION 10 ⁷
	PRIVATE SECTOR 19% POST-12 ENROLLMENT	↘	DROPS TO 16%, 10 ⁷



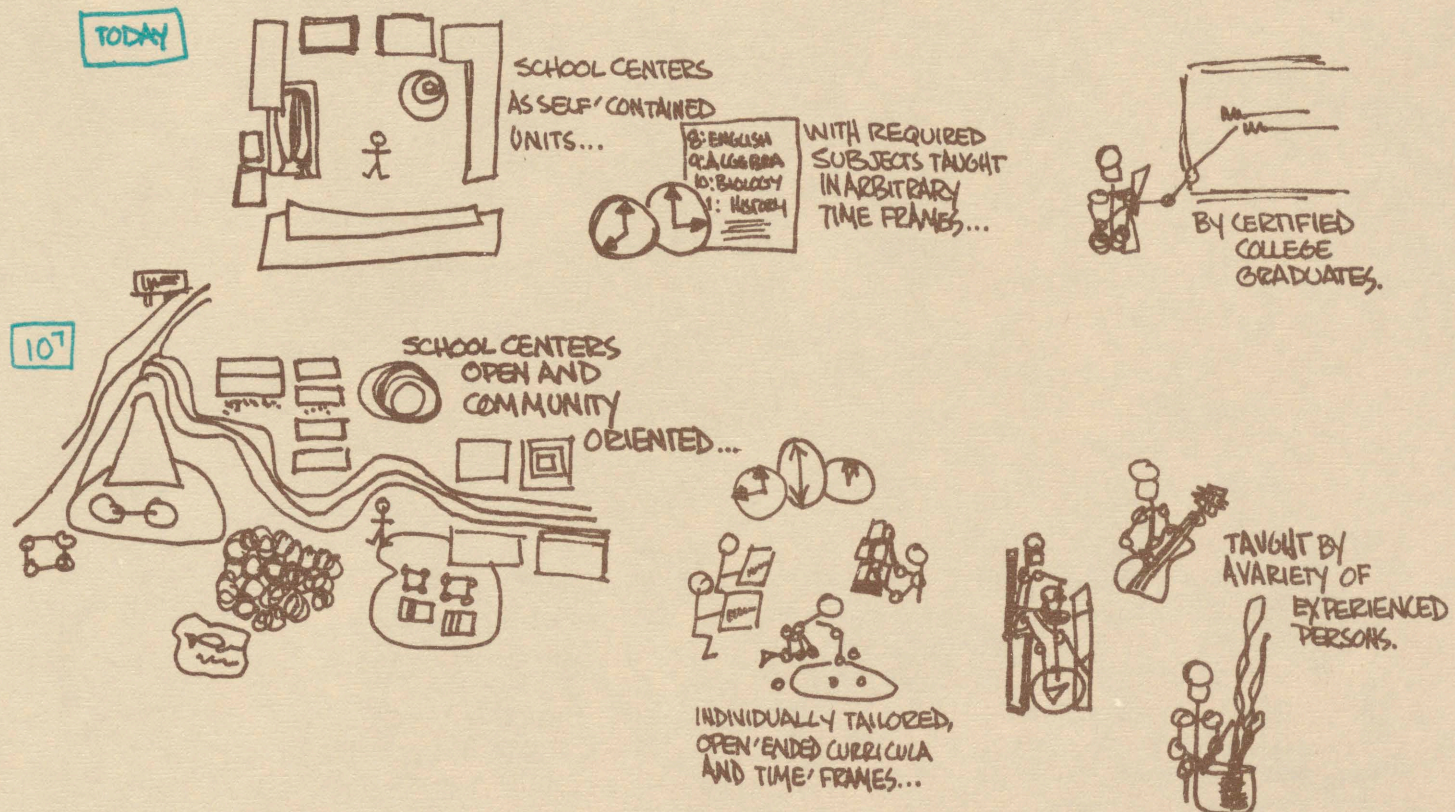
TODAY 119 AREA VO-TECH CENTERS
COMMUNITY COLLEGE CAMPUSES
UNIVERSITY LOCATIONS



AT 10⁷ 148 AREA VO-TECH CENTERS
COMMUNITY COLLEGE CAMPUSES
UNIVERSITY LOCATIONS

EDUCATION

TODAY, LEARNERS GENERALLY RESTRICT FORMAL EDUCATION TO THE YEARS BETWEEN 7 AND 21. AT POPULATION 107, THE LEARNER'S AGE WILL EXTEND FROM 3 TO 70+. A 42.1% INCREASE IN ADULT EDUCATION PROGRAM ENROLLMENT ALONE IS FORESEEN, WHILE THERE WILL BE A 66% INCREASE IN PERSONS TEACHING OCCUPATIONAL SUBJECTS AND A 50% INCREASE IN THE NUMBER OF TEACHERS EMPLOYED BY COMMUNITY COLLEGES. THE NUMBER OF PERSONS SERVED BY COMMUNITY SCHOOLS (SCHOOL UNITS OPEN DAY AND YEAR ROUND AS CENTERS FOR ADULT EDUCATION, RECREATION, AND OTHER COMMUNITY ACTIVITIES) WILL MORE THAN DOUBLE.



INCREASE IN TIME AVAILABLE FOR LEISURE ACTIVITIES

INCREASED PRODUCTIVITY: NATIONAL OUTPUT PER MAN HOUR WILL RISE 3.50% PER YEAR, AND THIS GAIN MIGHT ALLOW FLORIDIANS OPTIONS SUCH AS

\$ 1200 INCOME INCREASE

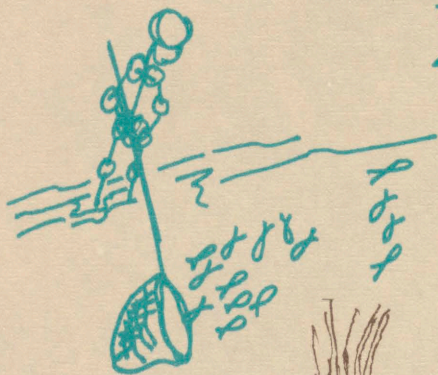
RETIREMENT AT AGE 38

22 HOUR WORK WEEK

25 WEEKS VACATION

45% OF LABOR FORCE RETRAINED

LEISURE

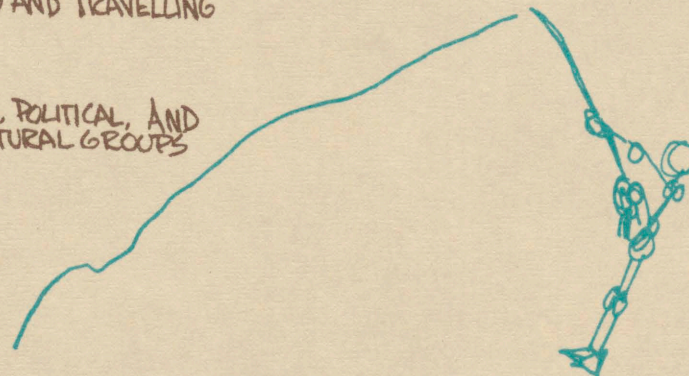


MUCH OF THE NEWLY AVAILABLE FREE TIME WILL BE SPENT IN ALREADY POPULAR ACTIVITIES SUCH AS SIGHT SEEING, PICNICKING, SWIMMING - PARTICULAR GROWTH IS SEEN IN AREAS SUCH AS

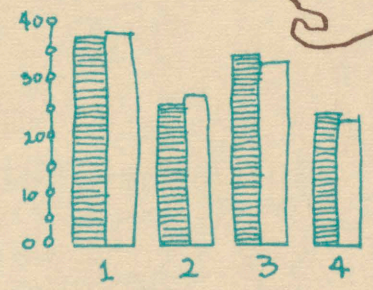
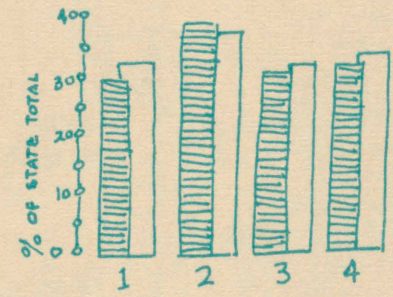
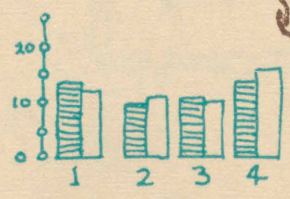
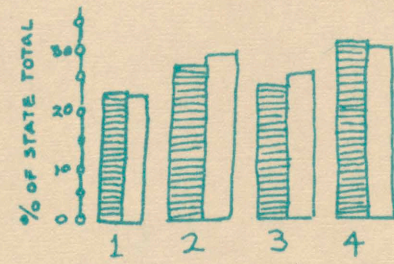
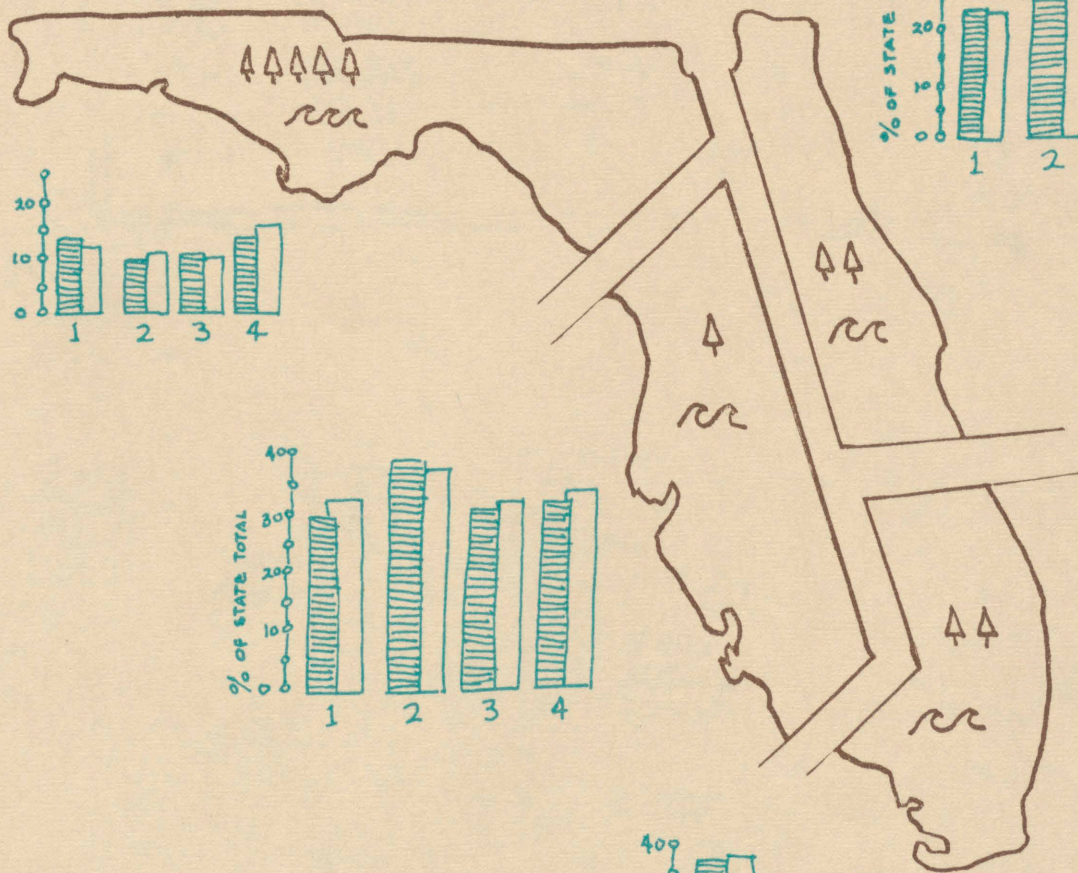
RECREATIONAL VEHICLE CAMPING AND TRAVELLING

ADULT EDUCATION

VOLUNTEER WORK FOR SOCIAL, POLITICAL, AND CULTURAL GROUPS



ABOUT ONE PERSON IN THREE WHO CAN READ VOLUNTARILY USES THE PUBLIC LIBRARY SYSTEM, AND READING IS SECOND ONLY TO TV VIEWING AS THE FAVORITE INDOOR RECREATION (90% TO 97%). A SURVEY BY THE US OFFICE OF EDUCATION CONCLUDES, HOWEVER, THAT LIBRARY SERVICES IN PUBLIC SCHOOL, ACADEMIC AND PUBLIC LIBRARIES ARE DEFICIENT AND MANY LIBRARIES ARE UNDERSTAFFED. AT POPULATION 10⁷ USERS WILL DEMAND FROM LIBRARIES NOT JUST REFERENCES TO ASSIST ACADEMIC STUDIES, BUT RESOURCES TO HELP THEM GROW INTELLECTUALLY AND ENRICH THEIR PERSONAL LIVES.



- ↑ RECREATION ACREAGE
- ↗ PUBLIC BEACH MILEAGE
- 1 RESIDENT POPULATION
DESIGN DEMAND for:
- 2 BEACH ACTIVITIES
- 3 DESIGNATED SITE CAMPING
- 4 NATURAL SCENERY APPRECIATION

Now 10⁷

RESOURCE BASED OUTDOOR RECREATION

DESIGN DEMAND = THAT PORTION OF PEAK DAY DEMAND THAT CAN BE ECONOMICALLY MET.

THE PERCENT OF DISPOSABLE INCOME SPENT ON THE PERFORMING ARTS IS REMAINING CONSTANT, AND THE AUDIENCE RANGE IN FLORIDA HAS REMAINED NARROW. UNLESS THERE ARE DRAMATIC INCREASES IN GIVING, THE GAP BETWEEN PRODUCTION COSTS AND BOXOFFICE RECEIPTS WILL CONTINUE TO GROW.

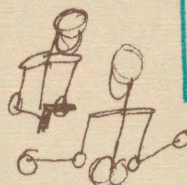


PLEASURE DRIVING, PICNICKING, AND SWIMMING ARE TOP OUTDOOR RECREATIONS → BUT, THERE WILL BE INCREASING OVERUTILIZATION IN OUTDOOR RECREATION DUE TO RESOURCE CONSTRAINTS (LEADING, PERHAPS TO RATIONING?)

MORE AND EASIER ENTRY POINTS INTO CRIMINAL ACTIVITY ALLOW MORE PERSONS TO DEVELOP A PATTERN OF CRIMINAL BEHAVIOR. MORE CRIME = STILL MORE CRIME.

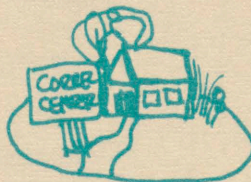
WITH RAPID URBANIZATION, LAW ENFORCEMENT SERVICES LAG BEHIND ACTUAL GROWTH, LEAVING THESE AREAS MORE VULNERABLE.

TOTAL	INDEX CRIME	PROPERTY CRIME	VIOLENT CRIME
1971	284,396	244,581	39,815
10 ⁷	379,448	325,513	53,935
INCREASE	34%	33%	40%



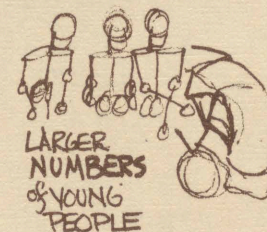
TRENDS IN LAW ENFORCEMENT AND CORRECTION INCLUDE

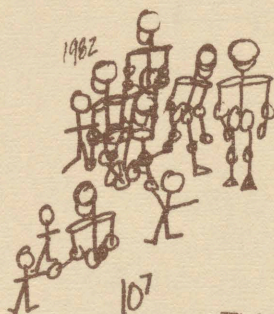
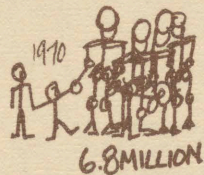
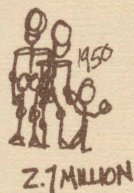
- GREATER USE OF COMMUNITY CORRECTION CENTERS, RATHER THAN REMOTE INSTITUTIONS
- EARLIER PAROLE WITH BETTER COUNSELLING BEFORE AND AFTER RELEASE
- REHABILITATIVE SERVICES EMPLOYED BEFORE THE TRIAL TO TRY TO DIVERST THE OFFENDER FROM A CRIMINAL PATTERN



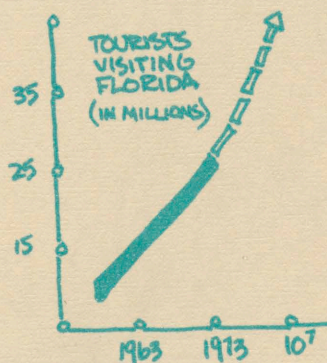
JUSTICE / SAFETY

INCREASE IN VIOLENT CRIME IS DUE TO SEVERAL FACTORS

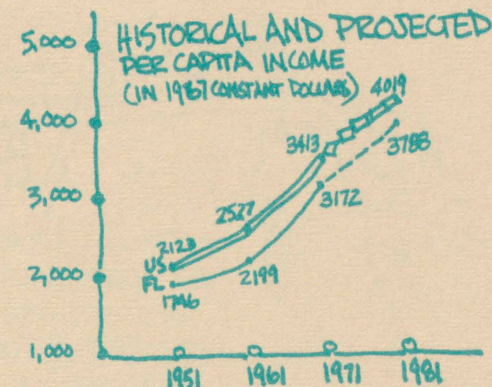




EMPLOYMENT / INCOME

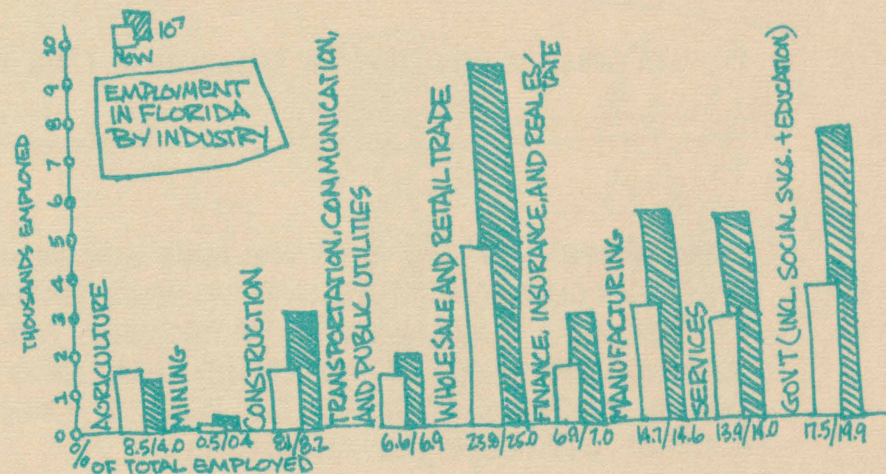


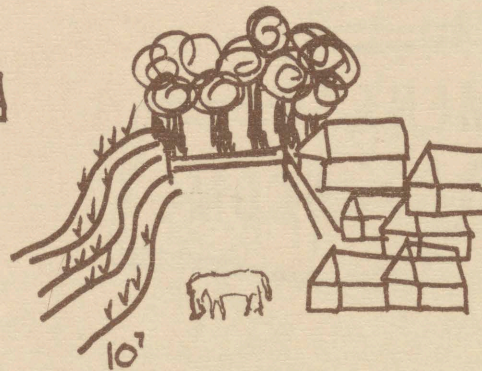
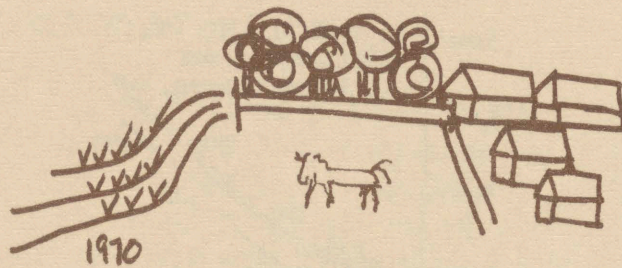
FLORIDA'S GROWTH HAS BEEN ALMOST TOTALLY INTERNS OF POPULATION, FROM THE 27th RANKED STATE IN 1940 TO 9th RANK IN 1970. IN TERMS OF PER CAPITA PERSONAL INCOME, THE STATE MOVED FROM 30th TO 24th IN THE SAME PERIOD. PRESENT TRENDS INDICATE THAT FLORIDANS WILL CLOSE THE INCOME GAP VERY SLOWLY.



THE ONLY INDUSTRY EXHIBITING A NET DECREASE IN EMPLOYMENT IS THE AGRICULTURAL SECTOR, WHICH IS LOSING ABOUT 1500 WORKERS PER YEAR.

A HIGH PROPORTION OF FLORIDA'S EMPLOYMENT IS CONCENTRATED IN THE LOWEST PAYING INDUSTRIES, I.E. SERVICES AND TRADE. THIS SITUATION WILL NOT CHANGE APPRECIABLY SO LONG AS TOURISM REMAINS A MAJOR PART OF THE STATE'S ECONOMIC STRUCTURE.





URBAN DEVELOPMENT ASSOCIATED WITH POPULATION GROWTH CONSUMES APPROXIMATELY 57,000 ACRES OF LAND EACH YEAR IN FLORIDA. IN ORDER TO ACCOMMODATE A POPULATION OF 10^7 (AT PRESENT DENSITIES) ALMOST HALF A MILLION ACRES WILL BE DEVELOPED.



AGRICULTURAL LAND REQUIREMENTS (IN ACRES)

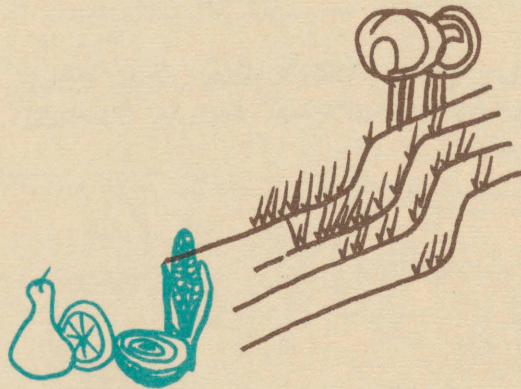
	1973	10^7
PASTURE + RANGELAND	12,500,000	11,800,000
CITRUS GROVES	900,000	1,200,000
VEGETABLE + FIELD CROPS	1,450,000	1,900,000
FOREST	18,000,000	18,000,000
TOTALS	32,850,00	32,900,000

FLORIDA WILL NOT RUN SHORT OF AGRICULTURAL LAND IN THE FORESEEABLE FUTURE

ALTHOUGH URBAN DEVELOPMENT WILL MAKE SIGNIFICANT INROADS ON LANDS PRESENTLY CLASSED AS RANGELAND OR UNDER CULTIVATION, ONLY 22% OF THE AVAILABLE ACREAGE WILL BE REQUIRED FOR CROPPING AT POPULATION 10^7 . UPGRADING OF PASTURE AND RANGELAND WILL ALLOW SUBSTANTIAL INCREASES IN PRODUCTIVITY DESPITE A DECREASE IN THE ACREAGE DEVOTED TO ANIMAL GRAZING.

AGRICULTURE

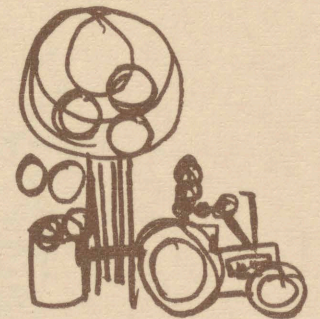
WATER REQUIREMENTS FOR INDUSTRIAL USE WILL INCREASE 66% (FROM 796 BILLION GALLONS PER YEAR TO 1,325 BILLION GALLONS) FOR THE PROJECTED OUTPUT OF THE STATE AT POPULATION 10⁷. OVER HALF THIS TOTAL WATER DEMAND WILL BE FOR AGRICULTURE AND AGRICULTURAL PROCESSING.



AGRICULTURAL YIELDS PER ACRE ARE EXPECTED TO INCREASE SUBSTANTIALLY BY POPULATION 10⁷, WITH THE RESULT THAT THE 30% GREATER DEMAND FOR PRIMARY AGRICULTURAL PRODUCTS CAN BE SATISFIED WITHOUT ANY INCREASE IN LAND REQUIREMENT.



THE CULTIVATION OF MOST FRUIT AND VEGETABLES GROWN ON A COMMERCIAL SCALE IN FLORIDA WILL BE FULLY OR AT LEAST PARTIALLY MECHANIZED BY POPULATION 10⁷.

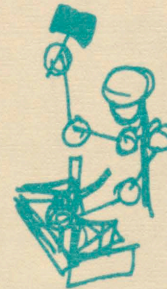




IN 1970, 101,582 NEW HOUSING UNITS WERE PRODUCED;
→ BUT, BY POPULATION 10⁷ 120,000 NEW UNITS WILL BE NEEDED EACH YEAR

CARPENTERS, PLUMBERS, AND ELECTRICIANS ARE ALREADY
IN EXTREMELY SHORT SUPPLY

THERE ARE CRITICAL SHORTAGES IN BRICK, LUMBER, AND CEMENT



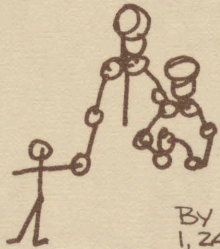
IN THE FIRST SIX MONTHS OF 1972, FLORIDA ACCOUNTED FOR NEARLY ONE-THIRD OF THE NATIONAL INCREASE IN HOUSING PERMITS, AND FOUR OF ITS URBAN AREAS RANKED IN THE TOP FIVE NATIONALLY IN HOUSING STARTS.

10% OF TODAY'S
2,490,838 HOUSING
UNITS ARE MOBILE
HOMES



THERE ARE CURRENTLY
156,625 SUBSTANDARD
HOUSING UNITS. 3% OF
ALL UNITS HAVE MORE
THAN 1.5 PERSONS PER
ROOM. MANY
OF THESE UNITS
WILL HAVE TO BE
REHABILITATED
TO MEET
THE NEEDS
OF
FLORIDA AT 10⁷

HOUSING



BY POPULATION 10⁷
1,244,200 NEW
HOUSEHOLDS
WILL BE FORMED.

IN 1970 ALMOST HALF
OF ALL HOUSEHOLDS (47%)
PAID IN EXCESS OF
25% OF THEIR IN-
COME TO SECURE
HOUSING; OVER 1/3
PAID OVER 35%



CONVENTIONALLY
BUILT HOMES \$25,000



FACTORY BUILT
\$16,000 HOMES

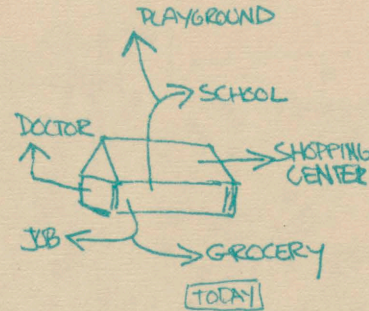


MOBILE
HOMES
\$6,640

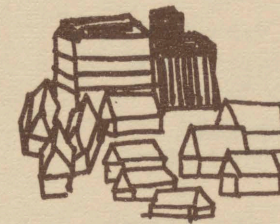
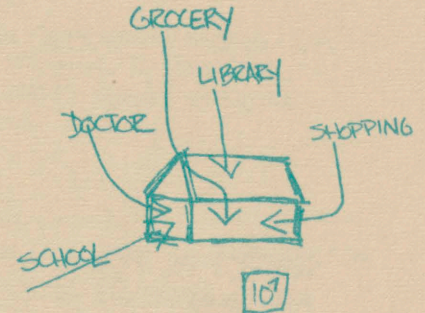
+

LAND COST - 31% OF
TOTAL HOUSING COST

BY 10⁷, 80%
RISE IN
HOUSING COSTS



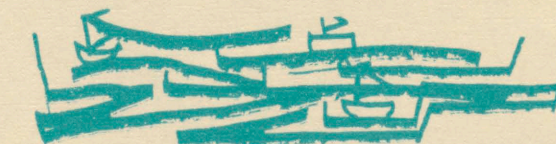
THE "LOCATIONAL VALUE" OF HOUSING
IN THE COMMUNITY WEB MUST BE
REALIZED. AT POPULATION 10⁷, NEW
WAYS OF ACCESS TO RESOURCES, SUCH
AS SHOPPING BY CATV, WILL CHANGE
THE PERCEPTION OF LOCATIONAL VALUE
AND THE FACTORS BY WHICH DESIR-
ABLE LOCATIONS ARE IDENTIFIED.



TODAY, 75% OF ALL HOUSING UNITS ARE
SINGLE FAMILY DWELLINGS, BUT 60% OF
THE YEARLY HOUSING STARTS ARE
MULTIPLE OCCUPANCY UNITS.

AT POPULATION 10⁷ ONLY 54% OF
ALL HOUSING UNITS WILL BE SINGLE
FAMILY DWELLINGS.

TRANSPORTATION



AIRPORTS, PORTS, AND WATERWAYS 1970

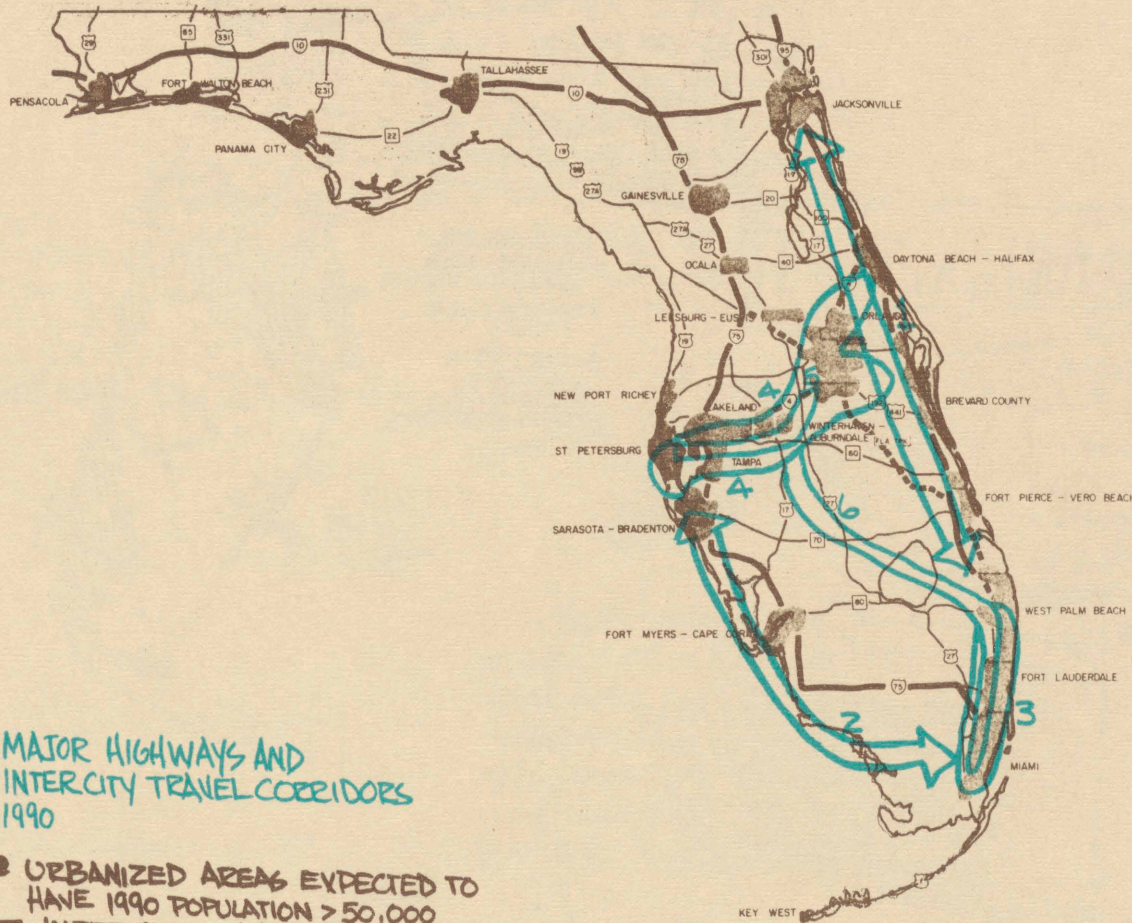
- ▲ COMMERCIAL 1st + 2nd LEVEL AIRPORTS
 ▣ JOINT CIVIL MILITARY AIRPORTS
 ○ COMMERCIAL 3rd LEVEL AIRPORTS
 ● GENERAL AVIATION AIRPORTS

- ★ PRINCIPAL DEEP WATER PORTS
- ★ OTHER DEEP WATER PORTS
- SHALLOW WATER PORTS
- EXISTING WATERWAYS
- == APPROVED WATERWAYS

- 1 PORT CANAVERAL, LOCK + CANAL
- 2 GULF ICW, ST. MARK'S - TAMPA
- 3 ST. JOHN'S RIVER
- 4 ATLANTIC ICW, FERNANDINA - MIAMI
- 5 ATLANTIC ICW, MIAMI - KEY WEST, OPEN BAY
- 6 OKEECHOBEE WATERWAY
- 7 GULF ICW, AN CLOTE - FT. MYERS
- 8 CARRABELLE TO AN CLOTE, OPEN BAY
- 9 GULF ICW, CARRABELLE TO PENSACOLA
- 10 APPALACHICOLA, CHATTAHOOCHEE + FLINT RIVERS

UNLESS ENVIRONMENTALLY
HARMLESS CONSTRUCTION
TECHNIQUES ARE DEVELOPED,
ADDITIONS AND IMPROVE-
MENTS TO THE WATERWAYS
SYSTEM WILL BE FEW
AND LIMITED IN SCOPE.

DESPITE THE APPARENT
ABUNDANCE OF AIR
PORTS FLORIDA WILL
NEED 31 NEW FACILITIES
BY POPULATION 107.



HIGHWAY PROGRAMS WILL BE CONCERNED PREDOMINATELY WITH IMPROVEMENTS ALONG EXISTING ROUTES.

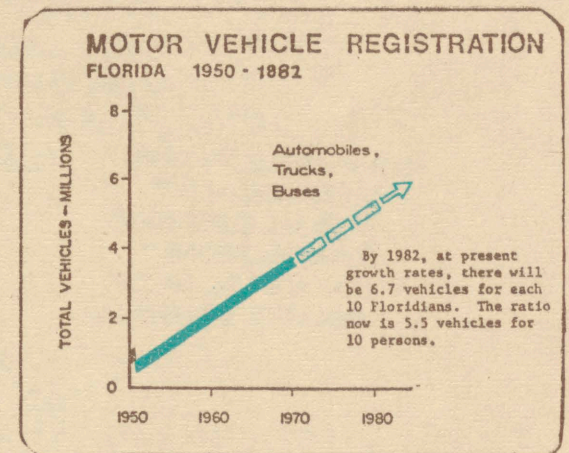
URBANIZATION OCCURRING ALONG LINEAR CORRIDORS FORMS A NATURAL CHANNEL FOR HIGH-SPEED HIGH VOLUME MASS TRANSIT.

MAJOR HIGHWAYS AND INTERCITY TRAVEL CORRIDORS 1990

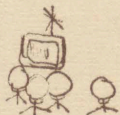
- URBANIZED AREAS EXPECTED TO HAVE 1990 POPULATION > 50,000
- INTERSTATE HIGHWAYS
- TURNPIKE
- PRINCIPAL ARTERIAL HIGHWAYS

- 1 JACKSONVILLE - MIAMI TRAVEL CORRIDOR
- 2 TAMPA - ST. PETE - MIAMI TRAVEL CORRIDOR
- 3 LOWER EAST COAST / FLORIDA EAST COAST RAILROAD STUDY CORRIDOR
- 4 CENTRAL FLORIDA EAST - WEST TRAVEL CORRIDOR
- 5 TAMPA - ORLANDO HIGH SPEED RAIL SERVICE STUDY ROUTE
- 6 MIAMI - DISNEY WORLD RAIL SERVICE STUDY ROUTE

TO MEET FLORIDA'S TRANSPORTATION NEEDS AT 10⁷ WILL COST OVER \$10 BILLION. AT PRESENT LEVELS OF FUNDING, ONLY \$4.5 BILLION WILL BE AVAILABLE.



THE LARGE AUDIENCES NEEDED BY THE BROADCAST MEDIA ARE ADEQUATELY SERVED BY EXISTING STATIONS. AREAS WHICH ARE SIGNAL STARVED TODAY (PARTICULARLY THE SECTION BETWEEN DENSAOLA AND JACKSONVILLE) WILL PROBABLY REMAIN SO AT POPULATION 10?



→ BUT CABLE TV CAN DRAMATICALLY EXPAND ALL ELECTRONIC COMMUNICATIONS - EDUCATIONAL, ENTERTAINMENT + BUSINESS.

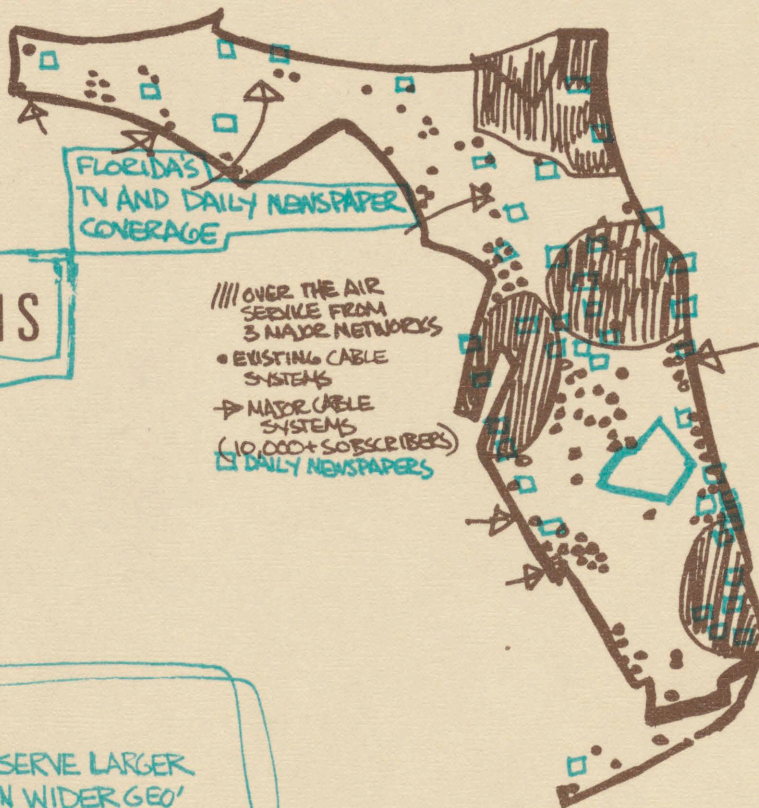


RADIO OPERATES TODAY AS A MUSICAL JUKEBOX WITH COMMERCIALS, DIVIDING LISTENERS ON THE BASIS OF THEIR MUSICAL TASTES.

COMMUNICATIONS

FLORIDA'S TV AND DAILY NEWSPAPER COVERAGE

- /// OVER THE AIR SERVICE FROM 3 MAJOR NETWORKS
- EXISTING CABLE SYSTEMS
- MAJOR CABLE SYSTEMS (10,000+ SUBSCRIBERS)
- DAILY NEWSPAPERS



AS THE MEDIA SERVE LARGER POPULATIONS IN WIDER GEOGRAPHIC AREAS, EMPHASIS ON LOCAL NEWS REPORTING AND THUS KNOWLEDGE OF COMMUNITY AFFAIRS, WILL DECLINE.

IN 1970, FLORIDA WAS SERVED BY 19 DIFFERENT TELEPHONE SERVICE COMPANIES.

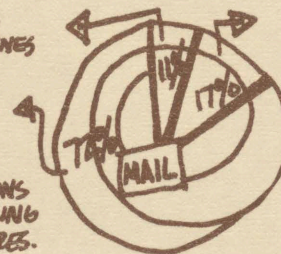


INCREASED POPULATION IS EXPECTED TO BE REFLECTED IN INCREASED NEWSPAPER CIRCULATION, ESPECIALLY IN THE AREA FROM ORLANDO TO ST. PETERSBURG.

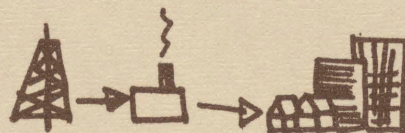
NEWSPAPERS AND MAGAZINES

PERSONAL CORRESPONDENCE

BUSINESS
40% TRANSACTIONS
26% ADVERTISING
5% BUS. CORRES.
1% MERCHANDISE



ENERGY IS REQUIRED TO BUILD AND MAINTAIN ALL STRUCTURES, BOTH URBAN AND NATURAL...



ENERGY

MOST OF FLORIDA'S ENERGY IS RECEIVED FROM NATURAL SOURCES - RENEWABLE NATURAL ENERGIES WHICH MAINTAIN ITS BEACHES, RIVERS, SWAMPS, FORESTS; ABSORB MAN'S WASTES; DRIVE THE HYDROLOGIC CYCLE WHICH PROVIDES MAN WITH WATER; AND PROVIDE MOST OF THE AGRICULTURAL ENERGY TO MAKE MAN'S FOOD.

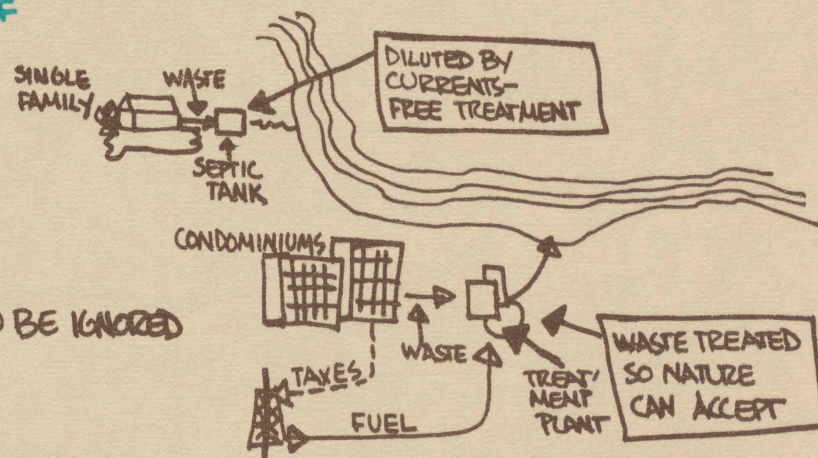


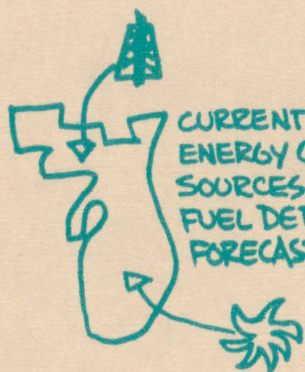
IF MORE FUELS ARE USED TO SUPPLEMENT/REPLACE NATURE'S WORK, MORE FOOD CAN BE OBTAINED FROM A SMALLER LAND AREA. HOWEVER IF THE COST OF FUEL INCREASES, THE COST OF FOOD MUST ALSO INCREASE.

NATURE'S WORK AND SERVICES TO SOCIETY TEND TO BE IGNORED UNTIL THEY HAVE TO BE REPLACED.

- AN EXAMPLE OF THIS OCCURS WHEN CONCENTRATIONS OF WASTE BECOME TOO HEAVY FOR NATURE TO TREAT SATISFACTORILY. → MAN MUST THEN PAY FOR FUELS WHICH REPLACE NATURE'S WORK IN THE ECONOMY

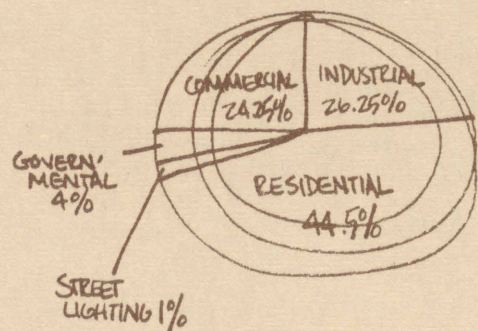
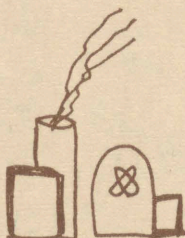
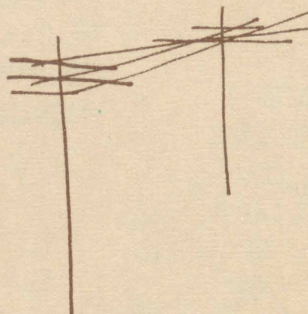
AN INCREASING AMOUNT OF FLORIDA'S ENERGY WILL COME FROM FOSSIL FUELS AS URBANIZATION CONTINUES... CONCENTRATED FUELS LIGHT + HEAT BUILDINGS, PROCESS + DELIVER GOODS, TRANSPORT PEOPLE + MATERIALS, AND RUN THE INSTITUTIONS WHICH KEEP FLORIDIANS HEALTHY, SAFE, + EDUCATED.



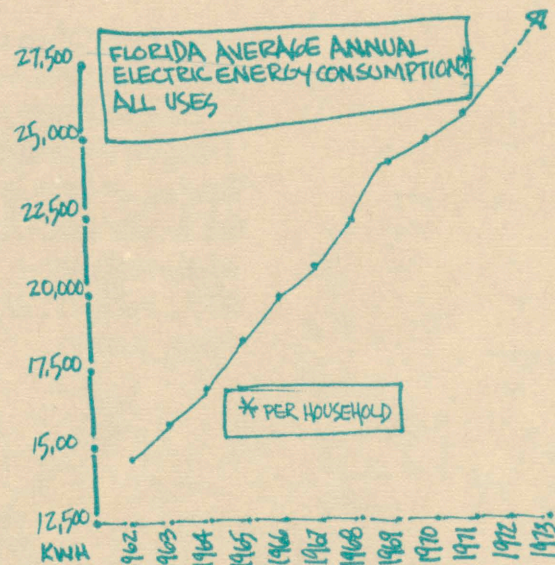


CURRENTLY 11% OF FLORIDA'S ENERGY COMES FROM NON-RENEWABLE SOURCES. A GREATER PERCENTAGE OF FUEL DEPENDENCY IS FORECAST FOR POPULATION 10^7 .

ELECTRICAL GENERATING CAPACITY IN FLORIDA IS PLANNED TO INCREASE BY 152% BY THE TIME THE POPULATION REACHES 10^7 . OF THE INCREASE, 17% WILL BE NEW NUCLEAR POWERED PLANTS, 83% WILL BE FOSSIL FUELED, ACCORDING TO THE SOUTHEASTERN ELECTRIC RELIABILITY COUNCIL.

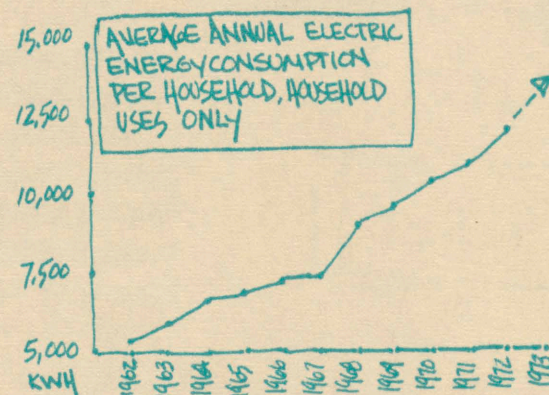


ELECTRICAL ENERGY SALES BY METERING CLASSIFICATION, 1972



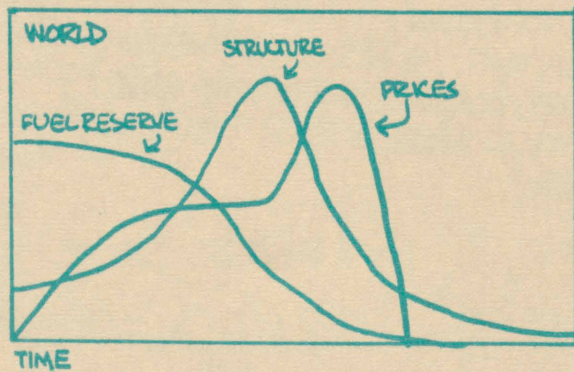
FLORIDA AVERAGE ANNUAL ELECTRIC ENERGY CONSUMPTION ALL USES

* PER HOUSEHOLD

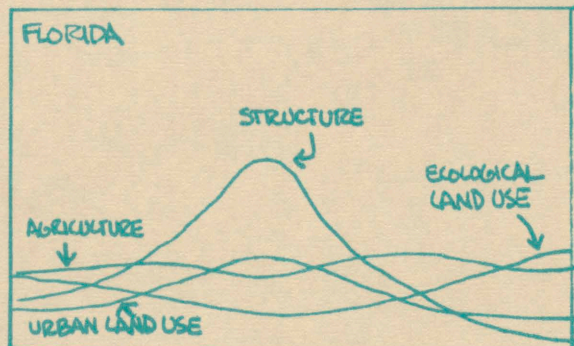


AVERAGE ANNUAL ELECTRIC ENERGY CONSUMPTION PER HOUSEHOLD, HOUSEHOLD USES ONLY

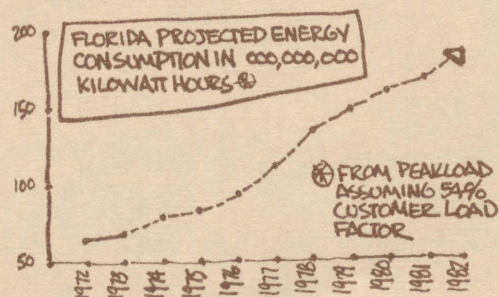
DISTRIBUTION OF ELECTRICAL ENERGY IN FLORIDA IS THROUGH 6 INVESTOR OWNED ELECTRIC UTILITIES, 34 MUNICIPALLY OPERATED ELECTRIC UTILITIES AND 17 RURAL ELECTRIC COOPERATIVES.



SINCE MOST OF MAN'S URBAN ECONOMY IS DRIVEN BY FOSSIL FUELS, INCREASING COST OF FUELS CAN LEAD DIRECTLY TO INFLATION. THAT IS: → FUEL DOES WORK → SAME AMOUNT OF MONEY BUYS SMALLER AMOUNT OF FUEL → SAME AMOUNT OF MONEY BUYS SMALLER AMOUNT OF WORK (GOODS, SERVICES).



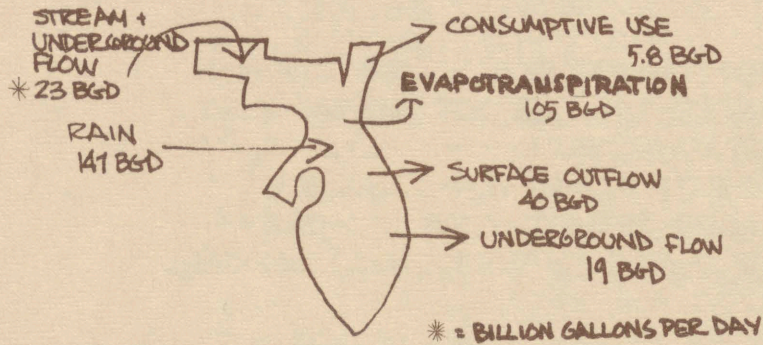
IF WORLD-WIDE INFLATION CONTINUES AS FUEL RESERVES DECLINE, FLORIDA'S LUXURY-BASED ECONOMY COULD BE DRASTICALLY AFFECTED. A COMPUTER SIMULATION OF A MODEL INCLUDING IMPORTANT COMPONENTS OF FLORIDA'S ECONOMY SHOWS URBAN STRUCTURE AND POPULATION DECLINING AS WORLD FUEL RESERVES BECOME INCREASINGLY SCARCE.



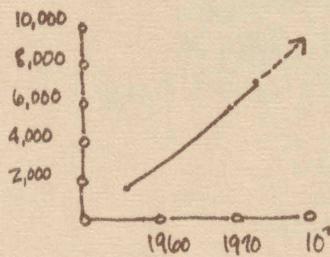
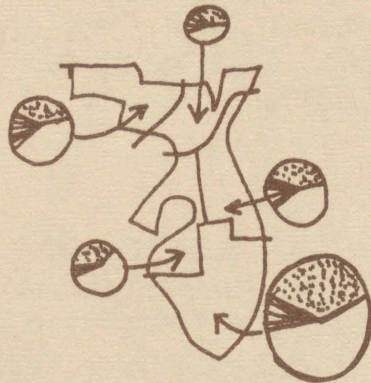
UNCERTAINTIES IN WORLD FUEL RESERVE DATA DO NOT ALLOW PRECISE DETERMINATION OF WHEN AN URBAN DECLINE IN FLORIDA MIGHT OCCUR. IN FACT, IF NUCLEAR BREEDER POWER OR FUSION DEVELOPS AS HOPED, SUCH A DECLINE MAY BE INDEFINITELY DELAYED.

WATER FLOWING INTO FLORIDA
COMES FROM 3 MAJOR SOURCES

WATER LEAVES FLORIDA
IN 4 PRINCIPLE WAYS



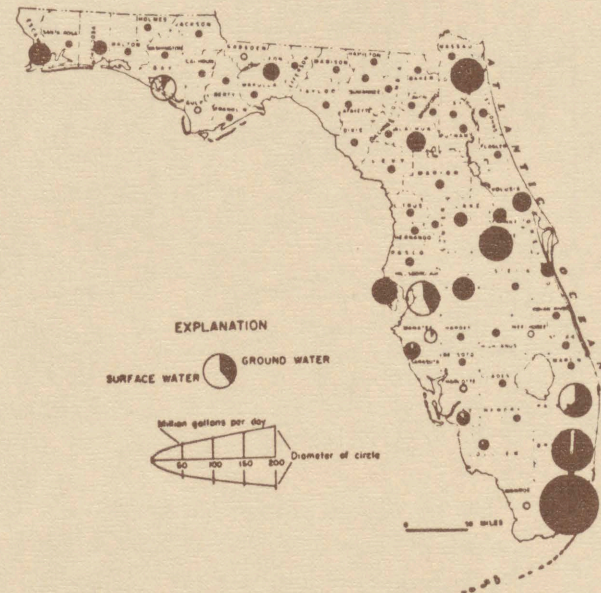
FRESH WATER
NEEDS OF FLORIDA
BY DISTRICT
1956 1972 10⁷



OVERALL CONSUMPTIVE
USE IS STEADILY INCREASING
TO A PROJECTED 8.5 BGD
BY POPULATION 10⁷

ALTHOUGH MAN CONSUMES ONLY 3.4% OF
FLORIDA'S WATER, MOST FLORIDIANS
WILL EXPERIENCE WATER SHORTAGES
BY POPULATION 10⁷. MIAMI/FT. LAUDER-
DALE, TAMPA/ST. PETERSBURG, AND NUM-
EROUS COASTAL COMMUNITIES HAVE
CRITICAL WATER SUPPLY PROBLEMS
TODAY.

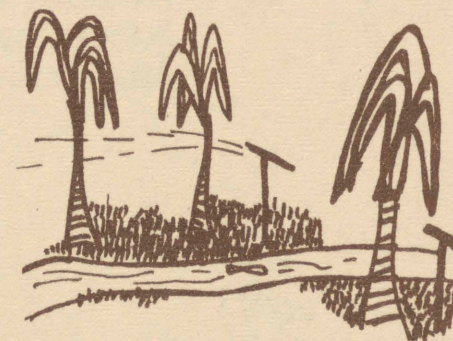
THIS IS BECAUSE



- WATER NEEDS ARE NOT EVENLY
DISTRIBUTED. MOST OF FLORIDA'S
PEOPLE LIVE IN CONGESTED COASTAL
CITIES AND TOWNS, PARTICULARLY
IN SOUTH FLORIDA.

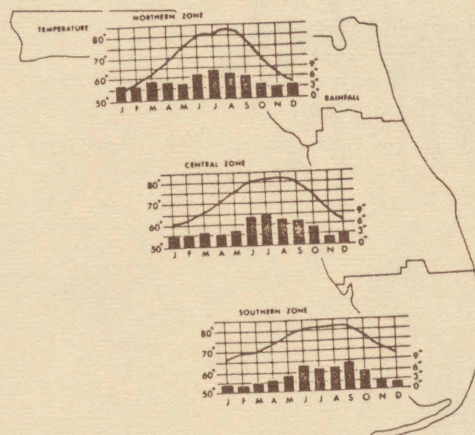
- FLORIDA TYPICALLY EXPERIENCES WET SUMMERS FOLLOWED BY LONG DRY WINTERS. MOST TOURISTS HOW' EVER VISIT SOUTH FLORIDA IN WINTER WHEN WATER IS IN SHORTEST SUPPLY.

WATER



ORNAMENTAL VEGETATION

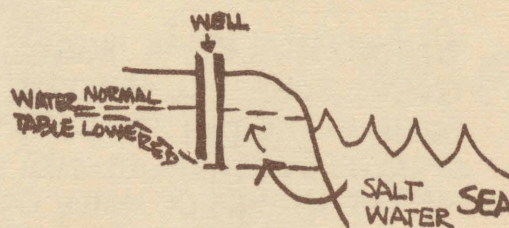
AVERAGE MONTHLY TEMPERATURE AND PRECIPITATION—BY ZONE



NATURAL VEGETATION

- MAN REPLACES NATURAL VEGETATION, WHICH CONSERVES WATER THROUGH SPECIAL ADAPTATIONS, WITH ORNAMENTAL VEGETATION, SUCH AS GRASSES AND PLANTED PALMS, WHICH REQUIRES EXTENSIVE SPRAY IRRIGATION, ESPECIALLY DURING DRY SEASONS
- URBAN DEVELOPMENT COVERS AQUIFER RECHARGE AREAS AND LOWERS WATER TABLES BY DRAINING WETLANDS AND DISCHARGING EXCESS WATER INTO THE SEA.

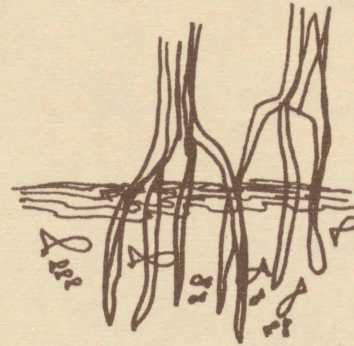
- CONCENTRATIONS OF URBAN DEVELOPMENT IN COASTAL COUNTIES OFTEN RESULT IN SEVERE LOCALIZED AQUIFER DRAWDOWNS, POSING THE THREAT OF SALT WATER INTRUSION AND CONTAMINATION OF MUNICIPAL WELL FIELDS



- CONFLICTS IN USE LEAD TO PATCH WORK SOLUTIONS, CREATED BY NUMEROUS AGENCIES AND INTEREST GROUPS.

FLORIDA'S ESTUARIES, COASTAL MARSHES, AND MANGROVE FORESTS ARE EXTREMELY VALUABLE AS FISH NURSERY AREAS. COASTAL WETLANDS ALSO

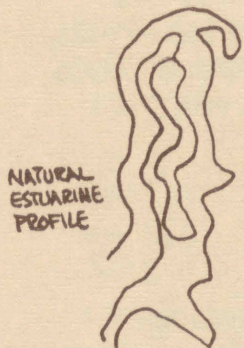
- BUFFER HURRICANE STORM SURGES
- FILTER NUTRIENTS RECEIVED FROM URBAN RUNOFF
- FORM AN ESSENTIAL PART OF THE MARINE FOOD CHAIN
- MAINTAIN A HIGH WATER TABLE WHICH PREVENTS SALT-WATER INTRUSION



- OVER 40% OF FLORIDA'S ESTUARINE AREAS ARE POLLUTED
- ONLY 53% OF SHELLFISH HARVESTING AREAS ARE STILL OPEN
- CANAL SYSTEMS IN MANY COASTAL ZONE AREAS ARE GROSSLY POLLUTED

SINCE 1950, OVER 150% OF FLORIDA ESTUARINE HABITAT HAS BEEN LOST TO DREDGE AND FILL.

FORTUNATELY, STATE REGULATION OF DREDGE AND FILL ACTIVITIES HAS TIGHTENED AND LOSSES HAVE SLOWED. DEVELOPMENT PRESSURE, HOWEVER, CONTINUES TO BE INTENSE.



NATURAL
ESTUARINE
PROFILE



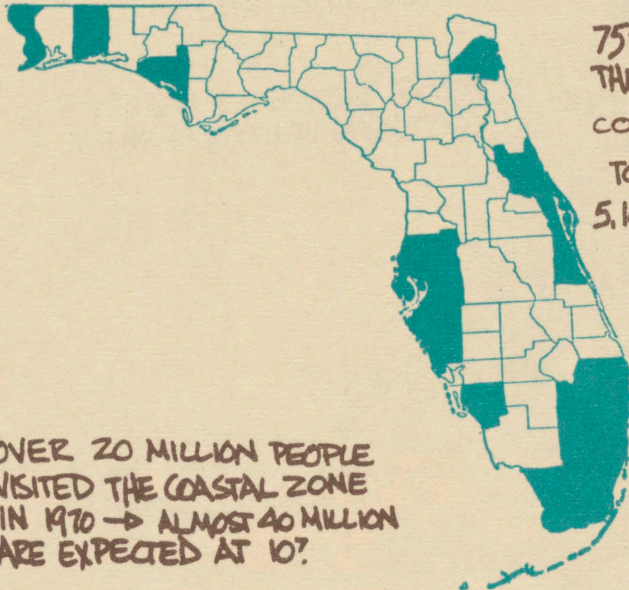
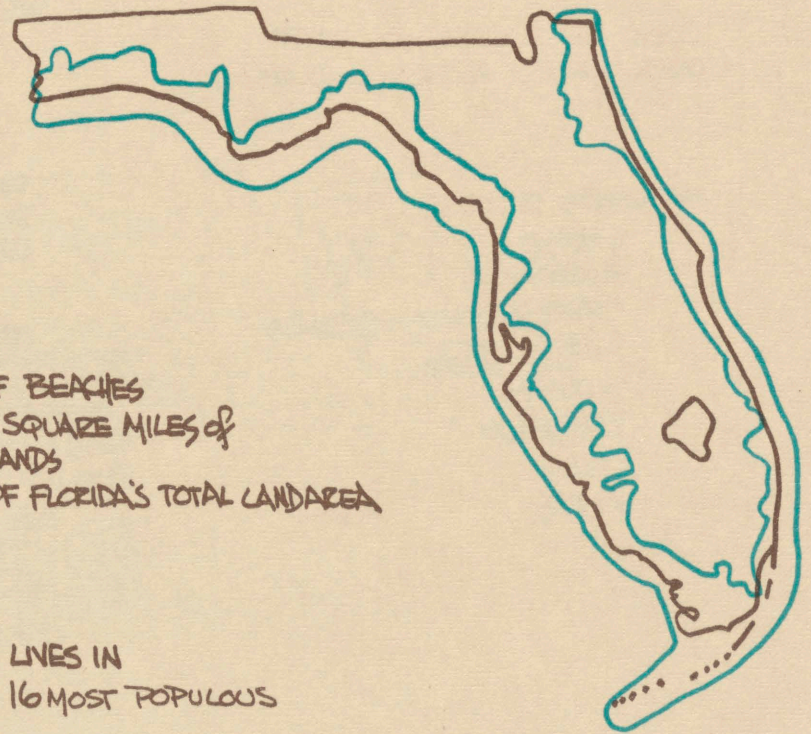
DREDGE
AND FILL
PROFILE

BY POPULATION 10⁷, AN INCREASE OF 24 MILLION PEOPLE IN THE COASTAL ZONE WILL GENERATE 313 MILLION GALLONS OF SEWAGE PER DAY. TOURISTS WILL PLACE ADDITIONAL STRESS ON ALREADY OVERBURDENED SEWAGE SYSTEMS. UNLESS MASSIVE AMOUNTS OF MONEY CAN BE OBTAINED TO BUILD SEWAGE TREATMENT FACILITIES, ESTUARINE POLLUTION WILL INCREASE DRASTICALLY.

COASTAL ZONE

FLORIDA'S COASTAL ZONE IS EASILY THE STATE'S MOST VALUABLE ASSET.

- 1160 MILES OF BEACHES
- OVER 3000 SQUARE MILES OF COASTAL WETLANDS
- OVER 26% OF FLORIDA'S TOTAL LAND AREA

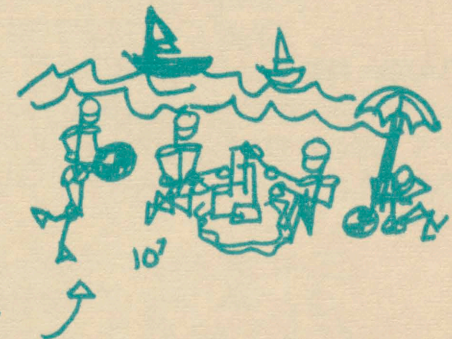
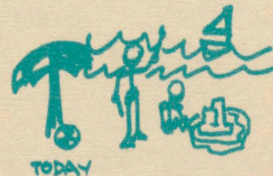


75% OF FLORIDA'S POPULATION LIVES IN THE COASTAL ZONE - 70% IN THE 16 MOST POPULOUS COASTAL COUNTIES

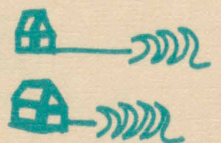
TODAY 5,102,208 → 10⁷ 7,510,000

OVER 20 MILLION PEOPLE VISITED THE COASTAL ZONE IN 1970 → ALMOST 40 MILLION ARE EXPECTED AT 10⁷.

BY POPULATION 10⁷ PUBLIC BEACH USE WILL HAVE ALMOST DOUBLED - BUT PUBLIC BEACH ACQUISITION AND DEVELOPMENT WILL HAVE INCREASED ONLY 20%



70% OF FLORIDA'S BEACHES ARE ERODING, 25% AT A CRITICAL RATE. UNLESS ACTION IS TAKEN TO ENFORCE COASTAL SETBACK LINES, THE PROBLEM WILL BE MUCH MORE CRITICAL BY POPULATION 10⁷



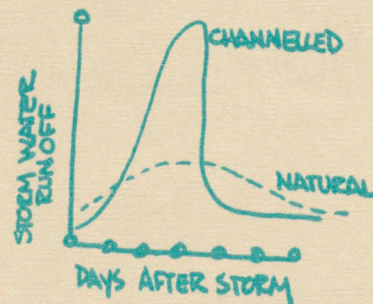
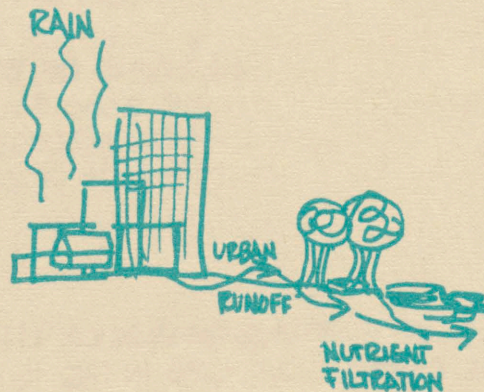
FRESH WATER WETLANDS COVER
OVER 22% OF FLORIDA'S LAND AREA.

WETLANDS INCLUDE
SWAMPS
FLOOD PLAINS
CYPRESS DOMES + STRANDS
WET PRAIRIES
SLOUGHS
BAYHEADS
LAKES
RIVERS.

WETLANDS ARE SELF-MAINTAINING,
HIGHLY PRODUCTIVE, AND PERFORM
PUBLIC SERVICE FUNCTIONS FREE
OF DOLLAR COSTS TO SOCIETY.

WETLANDS

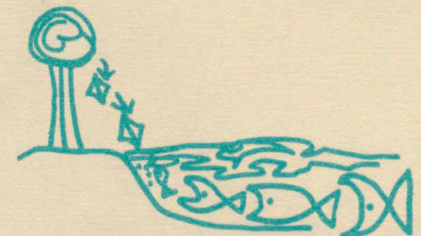
- FILTER NUTRIENTS AND PROTECT
DOWNSTREAM AREAS FROM
URBAN RUN OFF AND EUTROPHICATION



- PROVIDE FLOOD PROTECTION FOR
DOWNSTREAM AREAS BY RE-
TAINING STORM WATER FOR
LONGER PERIODS THAN
OPEN CHANNELS



- PROVIDE GREEN SPACE BUFFERS
WITHIN URBAN AREAS
- REDUCE SEDIMENT TRANSPORT BY
DECREASING VELOCITY OF WATER



- FORM THE BASIS FOR AQUATIC
FOOD CHAINS

MAN'S ECONOMIC SYSTEMS TEND TO PLACE HIGH VALUES ON THE AREAS OCCUPIED BY WETLANDS BUT NOT ON THE WETLAND COMMUNITIES.

WETLANDS CONTINUE TO BE LOST TO ACTIVITIES WHICH

- ALTER REGIONAL WATER FLOW PATTERNS
- DISPLACE WETLAND COMMUNITIES WITH ALTERNATE LAND USES
- ALTER REGIONAL WATER STORAGE
- CAUSE FIRES AND SUCCESSION OF SPECIES AS THE WATER TABLE LOWERS

DIKES + AGRICULTURAL ENCRoACHMENT ON FLOOD PLAINS



WETLANDS

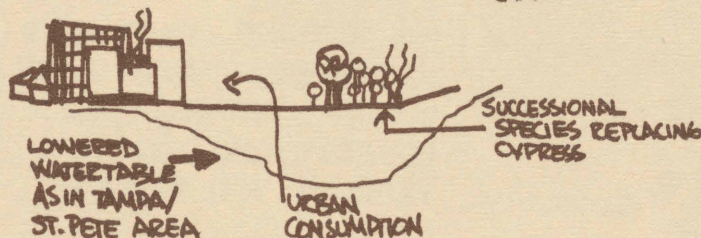
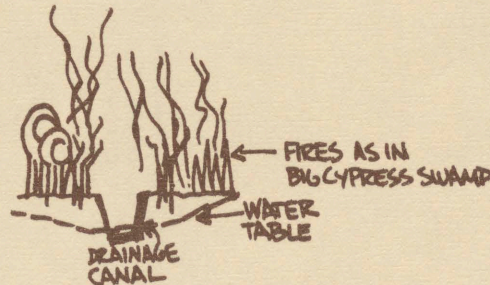
NATURAL PATTERN



CHANNELIZATION + URBAN DEVELOPMENT

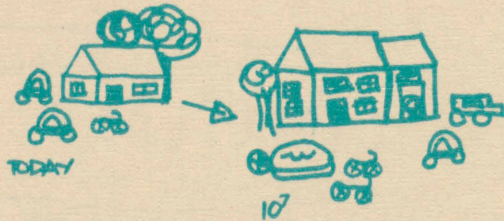


IT IS EXPECTED THAT SOCIETY'S VALUE SYSTEM WILL CONTINUE TO IGNORE THE FREE PUBLIC SERVICES FUNCTIONS PROVIDED BY NATURAL WETLANDS ECOSYSTEMS AND THAT WETLANDS IN FLORIDA WILL CONTINUE TO DECREASE THROUGH POPULATION 10?

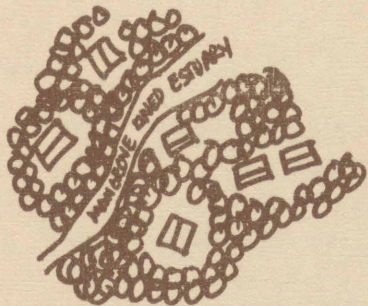


THERE IS SOME EVIDENCE, HOWEVER, THAT THE VALUE OF WETLANDS TO MAN IS COMING TO BE APPRECIATED. PROTECTIVE LEGISLATION AND RECENTLY INSTITUTED RESEARCH PROJECTS ON FUTURE USE OF WETLANDS ARE INDICATORS OF THIS TREND.

FLORIDIANS ARE CONSUMING MORE THAN EVER AND IN THE PROCESS GENERATING MORE WASTES.

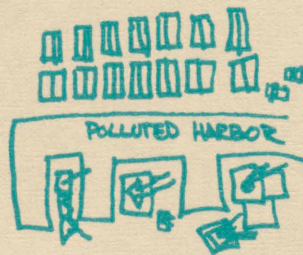


FLORIDIANS ARE ALSO LIVING CLOSER TOGETHER THAN EVER BEFORE. WASTES ARE CONCENTRATED IN A SMALLER LAND AREA AND NATURE'S ABILITY TO ABSORB THE EFFECTS IS SEVERELY STRAINED.

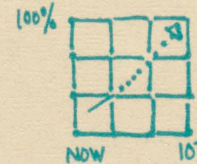


LESS CLUSTERED LIVING PATTERNS → NATURE IS ABLE TO ASSIMILATE WASTES BY DILUTION, TIDAL FLUSHING, AND FILTRATION THROUGH NATURAL VEGETATION.

URBAN LAND USE DESIGN WITH MORE PEOPLE, WASTES, AND RUNOFF ON A SMALLER LAND AREA → LITTLE NATURAL VEGETATION REMAINS, TIDAL FLUSHING IS LESS EFFECTIVE DUE TO HARBOR DEEPENING AND ALTERED CURRENT PATTERNS.

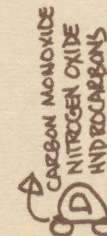


CURRENTLY, ONLY 24% OF FLORIDIANS RECEIVE ADEQUATE SEWAGE TREATMENT. NATIONAL AND STATE GOALS CALL FOR ALL WASTES TO RECEIVE ADVANCED TREATMENT BY 1977 AND ELIMINATION OF DISCHARGE OF ALL POLLUTANTS INTO THE WATERS BY 1985.

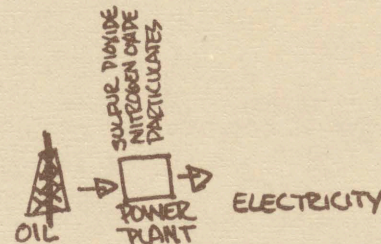


OVER 90% OF FLORIDIANS SHOULD RECEIVE ADEQUATE SEWAGE TREATMENT BY POPULATION 10' BUT THIS WILL COST OVER 2 BILLION DOLLARS.

ELEVEN FLORIDA COUNTIES EXPERIENCED AIR QUALITY PROBLEMS IN 1972.



THE MAJOR SOURCE OF AIR POLLUTANTS IN FLORIDA IS THE AUTOMOBILE.

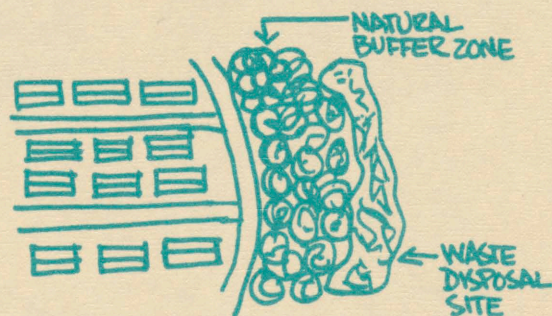


POWER PLANTS ARE FLORIDA'S SECOND BIGGEST AIR POLLUTER. IF FUEL SHORTAGES FORCE A RETURN TO COAL, POLLUTION PROBLEMS WILL INCREASE.

UNDER EXISTING FEDERAL AUTOMOBILE EMISSION STANDARDS AND FLORIDA AIR POLLUTION REQUIREMENTS, AIR POLLUTION PROBLEMS SHOULD DECREASE BY POPULATION 10⁷. THIS ASSUMPTION REQUIRES, HOWEVER, PUBLIC ACCEPTANCE OF INCREASED UTILITY COSTS AND REDUCED AUTOMOBILE EFFICIENCY.

PER CAPITA SOLID WASTE GENERATION WILL INCREASE FROM TODAY'S 4.5 POUNDS PER DAY TO OVER 8 POUNDS PER DAY AT POPULATION 10⁷.

FLORIDIANS NOW PRODUCE OVER 8 MILLION TONS OF SOLID WASTE REQUIRING OVER 2400 ACRES OF LAND FOR DISPOSAL PER YEAR. BY POPULATION 10⁷ PROJECTIONS INDICATE THAT 5200 ACRES WILL BE REQUIRED FOR DISPOSAL EACH YEAR.



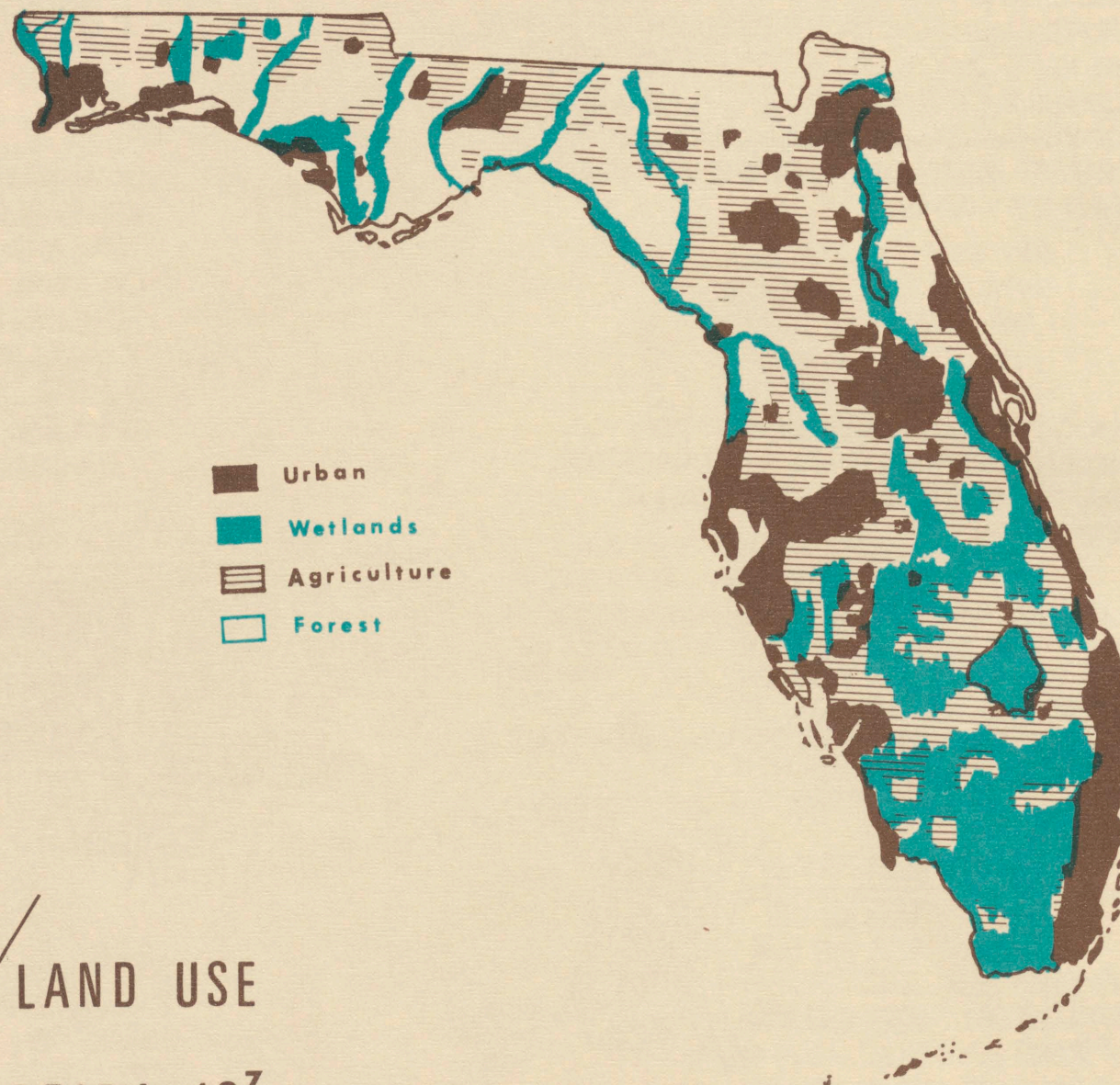
POLLUTION

URBANIZATION, ESPECIALLY IN COASTAL AREAS, HAS CREATED HUGE DEMANDS FOR LAND FOR HOUSING AND RECREATION. PUBLIC AGENCIES ARE FINDING IT EXTREMELY DIFFICULT TO ACQUIRE LAND FOR SOLID WASTE DISPOSAL AT REASONABLE PRICES.



SOLID WASTE DISPOSAL PROBLEMS WILL MOST PROBABLY BECOME MORE SEVERE BY POPULATION 10⁷ UNLESS PUBLIC INVESTMENT IN SANITARY DISPOSAL SHARPLY INCREASES.

URBANIZATION / LAND USE
FLORIDA 10⁷



FLORIDA 10 MILLION: THE PEOPLE



"Hurry up, Dad, you'll be late for class!" shouted little Dave. Little Dave was over six feet tall and played varsity football in his last year of high school. His father hastily gathered the papers he had been studying and followed his son out the apartment door. Lengthening shadows reached out as the sun settled behind them, and the two men strode purposefully across a broad lawn which separated their high-rise home from the parking garage where a shiny little car waited. A warning buzzer sounded until both men had fastened their crash nets in place; then the motor hummed into life.

Heading the little machine out of the driveway, little Dave switched the radio to the local traffic monitor channel. "Congestion is at level three on

Interstate Niner-five between Sweetwater Interchange and the south terminus," a feminine voice announced. "All motorists are requested to use alternate routes until further notice." Recorded music replaced her voice and the young man switched the radio off.

"Dad, I don't know what to do about that scholarship offer from the university." His father watched traffic for a moment before answering. "Well, do you want to stay in school, or are you itching to go into mechanics full time?" he asked. Little Dave frowned, obviously wrestling with his thoughts. "You know how I love working on cars," he began, "otherwise I wouldn't be going to school both night and day. But I know I'll never get another opportunity like this." He continued, "If I take a year or two off to work, I can't get another scholarship, at least not for football. Then if I decided to go to college, could we afford it?"

"Well, Son, since your grandmother moved in with us and we had to take this larger apartment, it has been a little hard . . ." his voice trailed off, but then his face brightened. "Look, I'll be finishing this accounting course soon, and I feel sure I'll pass the exam for a certificate." A police car passed, siren wailing and lights flashing.

Little Dave edged the car over into the right lane to take the off-ramp. No further conversation broke the silence until the car was parked at the community college. "You know how I feel about education," the older man concluded, "and I think that whatever you decide, we'll make it work out." At the door they separated and lost each other in the bustling crowd.

Early in the 1980's, Florida's population surpassed the 10⁷ mark, making it the eighth most populous state, ahead of New Jersey and only slightly behind Michigan. As had been the case in the 1950's and '60's, most of the new people were migrants from the northern states. Retirees maintained their predominant position, comprising nearly 20% of the new-resident population.

The population profile reflects changes in composition that have taken place during the past decade. While females still outnumber males (52% versus 48%), whites now make up 86% of the population as compared to 84% in 1970. The median age of the population has risen from 32.4 years to 34, a result of disproportionate increases in the over 30 age groups. The 65 and over group has increased by 64%, so that the elderly now represent 16.2% of the population.

Although the socioeconomic characteristics of the typical tourist have changed, tourism is still a major contributor to the migratory trend as well as the mainstay of the state's economy. The Florida 10⁷ tourists are younger and relatively less affluent, but far more numerous. The tourism industry now entertains 40 million visitors each year, representing an increase of 90% since 1970. While the older, more affluent Americans retire in Florida, they typically vacation outside the U.S.A. Foreign visitors, in turn, are vacationing in Florida in greater numbers, because of favorable currency exchanges, convenience, safety, and the economy of intercontinental air travel.

The urbanization of Florida is a source of mounting concern, since 91% of the residents now live in densely populated areas. Urban development is practically continuous along the eastern coastline from Daytona southward to Homestead, and along the Gulf coast from New Port Richey to Fort Myers. Across the center of the state, a similar urbanizing corridor connects Tampa, Orlando, and the east coast megalopolis. Other metropolitan centers dot the map, but most of the population concentrations cling to the coastline where 7.5 million people now make their homes. This generally concentrated locational pattern has brought increasing pressures on the natural ecological systems and amenities, and has created complex and difficult problems for environmental protection authorities.

Florida's economy continues to mirror the major trends of the national economy, but its distinguishing characteristics remain the same as in the 1970's. The service-oriented industries still dominate the employment picture, reflecting the continued strong influence of tourism and a maturing national economy. Women and teen-agers now comprise one-half of the labor force employed in the state, and even though personal per capita incomes have risen, Florida's wages and incomes have not caught up with national averages. The employment to population ratio has remained constant at 37%, and some sectors, such as agriculture, have experienced improved incomes in relation to the average.

The trend toward automation, which has caused structural unemployment problems in some parts of the country, has had little impact in Florida's service-oriented economy. Relatively small productivity gains provide more income and increased options such as longer vacations, shorter work weeks, earlier retirement, more opportunities for in-service training, and greater outlays for environmental improvements. The economic downturns of the middle '70's have given way to moderate upward growth. Florida's work force is stable, even though paid less than national norms.

Adequate housing has become a problem for many Floridians. Residential land costs have doubled, and construction costs have increased over 50% since 1970. While incomes have increased, gains in real purchasing power have not kept pace with the faster escalation of real estate costs. The result has been a proliferation of cheaply-built apartment houses in high-density areas. In the less urbanized areas, there is a heavy reliance on mobile homes to meet the need for low-cost housing.

Living costs for Florida families have reached an all-time high, aggravated by limited availability of land, limited supplies of water, increasing costs of services of all kinds, pollution control expenses, and long travel distances for access to recreational areas. Consumers are increasingly aware of "quality inflation," wherein higher prices are paid for poor quality workmanship and inferior materials, a trend reflecting a throw-away life style. A growing portion of disposable income is required for replacement or repair of shoddy goods. Higher taxes and increasing restrictions on private property rights have become necessary for protection of the environment.

Many of Florida's families enjoy improved health due to greater acceptance of preventive practices and increased use of primary care financed through improved insurance programs. Floridians are healthier throughout a longer portion of their lives even though life expectancy has not increased appreciably. Mental health problems are no longer stigmatized, and the incidence of severe mental illness is gradually being reduced as research brings to light underlying causes and new methods of treatment.

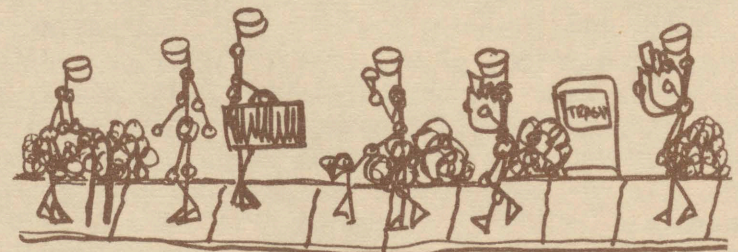
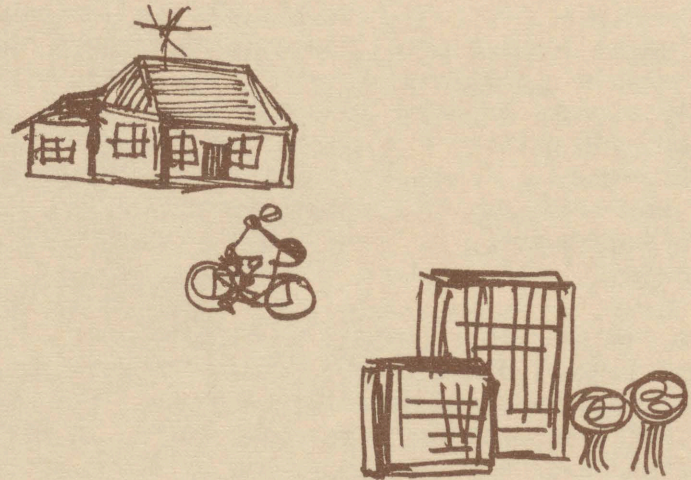
Approximately one million persons in Florida are in need of mental health care annually. Of this group, 10% would benefit from intensive treatment at mental hospitals, while the remainder might be aided more appropriately in their own community. The state hospitals are able to accommodate only one in five of those in need, while community mental health clinics are able to service only one in four of their potential patients.

The leisure patterns of families have also been affected by dramatic growth, urbanization, and a more sophisticated and diversified population. A major new trend is the emergence of voluntary participation in almost every area of life. This unpaid and unmeasurable corps of workers has increased at least 20% since the early 1970's. Many people, especially teenagers and youthful retirees, find great satisfaction in devoting their leisure time to helping other people in activities such as the arts, conservation, and advocacy groups. Smaller growth has occurred in traditional voluntary associations such as welfare, health, and services to the disadvantaged.

Unfortunately there is still evidence of a tremendous waste of human resources in correctional institutions and migrant labor camps. Violent crimes have increased at a rate 7% faster than property crimes, and greater affluence has contributed to increases in all crime rates.

Poverty is still a major societal problem, although in numbers and absolute deprivation it is gradually diminishing. Disparities exist in access to health services, housing, transportation, and education, although a growing sense of social responsibility for the disadvantaged person's plight makes all of these problems solvable. With the widespread provision of kindergarten and day care services, more mothers with preschool children are able to become wage-earners, and a broader acceptance of family planning techniques is tending to hold down the numbers of children born into poverty level families.

Older Floridians, while increasing in numbers, are enjoying greater acceptance by society in general and are finding new ways to prolong the productive phase of their lives well beyond the age of retirement. Old age poverty is still a problem, especially among those who live alone, but increased benefits under Social Security and medicare now assure greater resources for the majority. Health clinics staffed by salaried doctors are within reach of all but a small fraction of the elderly living in rural areas. Thus, the disadvantaged and the elderly find much less disparity between their lifestyles and that of the average citizen than was commonplace a decade earlier.



FLORIDA 10 MILLION: THE STRUCTURE



"Hey, Dave, I hear your kid came home," the shorter man craned his neck over the plexiglass panel that divided his work area from David Mann's desk. "Yeah, Jimmy's been home for a couple of weeks now," replied Dave. "What's he going to do? Is he looking for work?" asked the friend. "I wish he would," said Dave. "My mother-in-law is driving us all crazy. She just can't seem to accept his lack of motivation, and she picks at the kid." The monitor on his desk signaled a remote but urgent problem. Dave grabbed a tool kit and raced down the corridor toward the back of the warehouse.

At the end of his shift, Dave avoided further conversation with the others and headed directly for the pubtrans station. The ride home was swift, pleasant, and uneventful. A short walk from the terminal brought him to his high-rise apartment building.

His wife, Mary, greeted him. "Darling, Mother's having another arthritis attack. She says it's her neck this time, and she's gone to bed." "Oh, for Pete's sake! It's all in her head!" he groaned. "Anyway, she's miserable," replied Mary. "Well, at least we won't have to listen to her griping at the table. What's for supper?" "David! How can you be so unfeeling? . . . We're having soyribs again, but I found some vine-ripened tomatoes at the market today," she replied.

Jimmy joined them at the table. "Hello, son. What did you do today?" Jimmy seemed not to hear, but answered after an awkward pause, "We were doing some sounds over in Freaky Red's garage . . . you know, livin' the good life." His father looked up with mild amusement. "Sure, I know, but my life's pretty good, too, and I manage to work!"

This prompted no further response, and Jimmy drifted off toward the kitchen. When the parents were alone, Mary suggested, "Maybe we should all talk with a family counselor. Jane said her family went to the clinic when they were having problems, and it didn't cost much, either." "I don't think your mother would go for that, Mary."

Jimmy reappeared from the kitchen with a dish of synthacream. "What do you think about a family counselor, Jimmy?" asked Dave. Jimmy shrugged, "We used to have one come to our commune sometimes. He helped some of the sisters all right." "Well, I'm going to talk to Mother about it tomorrow," Mary replied, "if her arthritis is better."

Over \$100 million have been invested in new and expanded attractions for tourists. Central Florida has become a mecca for vacationers, not only from the north, but also from Central and South America, the more affluent European countries, and the Orient. Affluent Americans, however, show more interest in visiting abroad. Two-way traffic that has ensued is enabling international airlines to render efficient and economical service from at least three major air terminals in Florida.

Agriculture is still a highly important industry, relying on mechanization at all stages of production. Agricultural workers are better trained and better paid, and even migrant workers have an improved standard of living. In all industries, the widespread adoption of new technology and automation has lessened the need for laborious and boring work, and more men and women are employed as thinkers and creators. In fact, the concept of work is changing so that people are paid for effort which has less direct relationship to economic productivity. Service industries such as hotels and lodging, public service, sales, and government are somewhat more resistant to automation and still employ the majority of Florida's 3.7 million workers. Necessary work, such as garbage collection, dishwashing and domestic service, now pays wages comparable to white-collar employment. Unionization, too, has brought an escalation of wages for labor and has forced most labor-intensive businesses to either mechanize or go out of business. Despite a general rise in wages and salaries, the continued influx of retirees on limited incomes contributes to keeping Florida's average per capita income below the national average.

There are now nearly 3.5 million households in the state and single-person "families" have increased by approximately 50%. The average household consumption of electricity has increased by 77% since 1970, but per capita water use is unchanged from earlier levels. Localized shortages of both electricity and water occasionally occur during periods of peak usage. New legislation has reduced the level of air pollution to 2.5 tons per household annually, and 94% of the population now receive adequate treatment of waste water. However, solid waste produced by each household has increased by 75% to an average of 4.2 tons per year.

Modern highways require large expenditures of energy for construction and maintenance. This tends to reinforce their permanence and to emphasize their importance as shapers of the urban forms that grow around them.

The rural areas of Florida are highly accessible as a result of programs aimed at providing primary highways in the 1920's, "farm-to-market" roads in the 1930's, and interstate highways in more recent times. The cities, however, are still building arterial and collector systems to serve their growing populations and expanding suburbs. Improved planning methods now recognize the permanence and city-shaping impact of road building, and new facilities are carefully designed to achieve community goals.

While highways and private vehicles still provide for the bulk of Florida's travel needs, mass transit development is gaining momentum. In Florida's seven major urban centers, the early stages of long-range transit development plans are being implemented, and in sixteen smaller cities, public bus systems are being expanded to provide mobility for the disadvantaged and non-drivers. Travel in urban areas now accounts for 72% of all surface travel in the state. The resulting major problems are congestion, air and noise pollution, and accidents. The advantages of public mass transit are becoming increasingly apparent and ridership is increasing.

A rapid-transit system provides high-speed surface transportation connecting Daytona, Orlando, and the Tampa Bay region. A similar system is nearing completion between Dade and Palm Beach Counties. AMTRAK service now carries high volumes of inter-city passengers, and railroad freight movements have exceeded 1970 levels by 20%.

Many of the problems plaguing aviation in the 1970's have been ameliorated. A multilevel network of feeder airlines provides for the travel needs of businessmen and others wishing to make shorter trips, and brings travelers into the major air terminals where longer flights connect. New airports are relieving congested, older fields, some of which have been overloaded since the early 1970's.

Waterways and ports have changed very little in physical appearance since the early 1970's. However, technological improvements in ships, containerization, and cargo handling have increased the tonnage handled.

In order that the increasing demand for electrical energy may be met (150% over 1970 levels), thirty new generating plants have been built. Four of these are nuclear fueled, and the remainder burn petroleum products. Although occasional power shortages are experienced, the recent completion of a sophisticated power exchange grid insures a high degree of reliability in the system. Pipelines have been constructed connecting Pensacola to Tampa Bay for the movement of petroleum products from offshore oil fields.

Adequate water supplies, too, are a critical problem for many Florida cities, especially in the coastal zone and, to a lesser degree, in the central Florida urban corridor. Water costs for consumers have increased as local supplies run out and more distant sources are tapped. Rationing of some sort is commonplace.

Telephone service has deteriorated due to failure of the companies to modernize. The information boom has passed them by, and aggressive coaxial cable companies have captured the market in data transmission and related computer services. Large businesses are increasingly dependent upon the more reliable communication provided by these technologically superior systems.

Over-the-air broadcasting is still the dominant mode for passive home entertainment and remains a profitable enterprise. Although the long-range potential for cable TV is beginning to be realized, it is still used mainly for piping broadcast programs to areas of poor reception. Experimental applications are already operational in several areas, including in-service training, consultation for professionals, and originating programs for communities and schools. Several of the larger cable networks have been interconnected to provide a larger audience which justifies "tying-in" to the state's public TV stations. State law now provides that all residents in a cable TV service area have the opportunity to connect to the system and that all public service institutions have free access to the network.

"Staying in touch" is a bit easier for the elderly and for people confined to their homes. Public education programming provides information on how to use available public services and on general topics such as nutrition, health practices, money management, and hobbies. Pilot programs in two-way medical monitoring and consultation enable more people to receive these services in their homes, while the doctor remains in his offices. About one fourth of the over-65 population have incomes below the poverty level, and transportation for the non-urban, non-driving elderly remains a problem. General acceptance and concern for this group has grown slowly, but their political power is felt more strongly than ever before.

Welfare and health services now constitute a much larger share of the federal and state budgets than was allotted in the 1970's. The number of physicians in the state has increased at an even faster rate than the population and, while distribution is still uneven, community hospital residency programs and rural clinics have extended primary medical care to previously underserved areas. The rate at which people use hospital beds has leveled off and, at the same time, the high vacancy rates formerly experienced in the larger urban area hospitals is no longer a problem. Restrictions on the construction of new hospitals require that a proven need exist so that oversupply is prevented. County health units, medical clinics, hospitals, and community mental health centers have begun to integrate their services for greater efficiency and lower cost to the patients. The state-wide emergency medical services system has been fully developed, and its modern ambulances and helicopters are used to transfer patients from small clinics to larger facilities as well as provide a rapid response capability in emergencies.

The incidence of violent crimes is associated with the younger age groups, the density of urbanization, and increasing affluence. All of these factors have increased in the past decade, with a resulting higher incidence of criminal activities. In some areas, growth of population has been more rapid than the expansion of law enforcement capabilities, leaving these areas relatively more vulnerable. The most notable trends in law enforcement and corrections are: (1) greater use of community correctional centers and halfway houses, (2) earlier parole with better counseling, (3) more rehabilitative services employed before the trial, and (4) use of technology in detection and prevention of crimes.

The most visible shift in the education system has been the 49% growth in post-high school enrollments. The state now boasts 148 institutions offering education beyond the compulsory years, and life-long learning has become a new way of life for many Florida citizens of all ages. Continued learning is available in a variety of settings and locations, in most cases at minimal cost to the student. Private institutions now play a smaller part in higher education (from 19% down to 16%, since 1970), and credit is increasingly awarded for experience as well as classroom time.

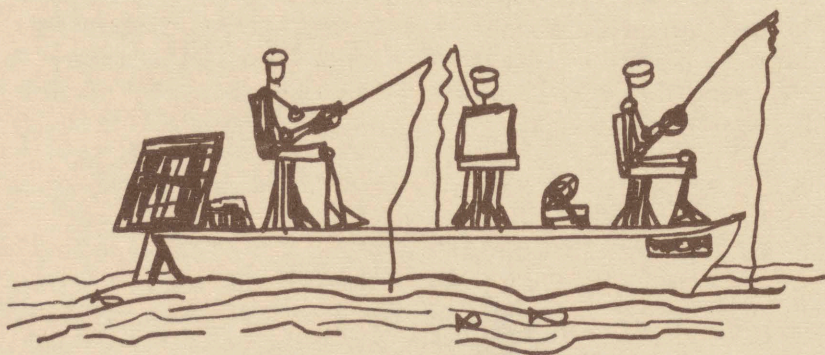
The elementary-secondary school sector has declined from 83% to 81% of the 2,667,000 persons enrolled. One in four of the larger churches now offers an alternative to the public school system. Community-oriented "open-schools" are widely used and publicly supported. They offer individually tailored, open-ended curricula and time frames, without the usual discrete subjects. Teaching staffs include non-academic professionals from the community as well as professional educators. For adults, and to a lesser extent for young people, education and leisure tend to overlap. However, as in other areas, too many human resources are wasted in unchanged, regimented schools which tend to confine students rather than free them to think.

Outdoor recreation activities as measured by user-occasions have increased at a rate 50% faster than the population increase. Pressure on environmentally sensitive areas such as the coastal zone and fresh water wetlands requires continuous monitoring and regulation to prevent irreparable damage.

Performing arts are priced out of competition for the leisure dollars of the mass market, and philanthropic contributions can no longer cover the difference between production costs and admission revenues. Movie theaters are a declining entertainment medium being replaced by pay cable TV and rental video tape machines for home viewing. The recreational reading habits of the population have shifted from magazines, which are very costly if delivered by mail, to increasing use of public library services. Libraries now lend videotapes and recorded music as well as reproductions of art for home enjoyment.



FLORIDA 10 MILLION: THE ENVIRONMENT



David Mann waited impatiently as the line of cars inched forward, each in its turn pulling around, then backing its trailer to the water's edge. One by one, the boats were launched, pulled off to the side, and the next car maneuvered into position. When his turn came, he roused the boys dozing in the cramped back seat. "Hey, men, turn to, and man the lines!" His early morning jollity was met by mumbles and yawns. The two young giants squeezed out the door and he backed down the ramp. The new boat and trailer worked very well, considering the inexperience of the handlers, so they stowed their gear aboard and moved off into the waterway without any difficulty.

"Well, this is great." remarked big Dave. Little Dave and Jimmy were rummaging through the tackle boxes and busily rigging their lines. "Yeah," replied Jimmy, "been a long time since I've been fishing." "Sure has, Son. Say, I wonder how far out we'll have to go to find any fish?" His younger son answered, "I don't see anybody fishing along shore here, Dad. Let's go on down the lake toward the inlet." The little outboard purred quietly for what seemed like a long time. Finally, they passed a familiar landmark, a series of man-made fingers of land sticking out from shore and separated by canals. "I remember when we were kids, we used to fish off those seawalls." said Jimmy. "That's right, Son, but we quit going there a long time back." the father recalled. "After the houses were built, those canals must have been polluted. Anyway, the fish stopped coming in there."

"How about trying out around those mangrove islands?" asked little Dave. Big Dave swung the bow of the boat over toward the mounds of greenery. "I've never heard of anyone catching any fish around there, but maybe this early . . . before the traffic gets heavy . . . there might be something." The little boat began a rhythmic rise and fall as they crossed the wake of a larger cruiser. Big Dave reached into the cooler and extracted a cold drink. After draining the can, he carefully stowed it in a bag for return. To purchase another six-pack he would need six empties, and they were not easy to find. "Drop the anchor, Jimmy." Big Dave cut the motor and the boat began to drift with the tide. Three lines went into the water, and the three men found comfortable seats to recline on. A seagull swooped over their heads to investigate while the waves rocked the boat gently. The sun climbed swiftly above the treeline to the east, and its first rays warmed the still hands that waited for that first nibble.

Through technology, the energy forms found in the environment are used to drive the processes of growth and to maintain man's structures. Competing for the same resources are natural ecological systems which perform similar functions including food production, waste treatment, mineral recycling, and other processes necessary for life support. The human population which shares this natural resource base is ultimately dependent upon the continuation of these natural cycles and upon a continuing flow of energy to maintain its structures.

Florida's population growth over the past four decades has been almost entirely a growth of cities. Urbanization has reached a stage in which 9 out of 10 Floridians live in cities and towns, and most of these are crowded into a narrow strip of land known as the coastal zone. Urbanization is synonymous with concentrations. It means high density residential construction, high levels of activity, and concentrated flows of money, energy, and pollutants. Concentrations of people place heavy demands on the natural environment, and the physical structures of an urban population disrupt the natural cycles of ecological systems. In Florida's coastal zone, environmental stress has reached a critical stage.

Developed land area in the coastal zone has increased from 15% of the total land in 1970 to 23%, including over 900,000 new homes and 2,000 additional manufacturing facilities. In Pinellas and Dade counties all land suitable for urban uses has been developed. In others, such as Broward and Palm Beach, only marginal land with major physical limitations is available. Most of the remaining coastal land suitable for development is in counties with little or no desirable beachfront or developed recreational facilities. Coastal-oriented development patterns continue to place enormous pressure on ecologically valuable areas. However, further losses of mangrove swamp and coastal marshes are not expected due to tightened state regulation of dredge and fill activities.

On a statewide basis, over 350,000 acres of new residential development consume an additional 463 million gallons of water and 86 million kilowatt hours of electricity per day. 5,200 acres of land are required annually for solid waste disposal (an increase of over 100% since 1970), and over the past decade, well over \$2 billion has been invested in waste water treatment facilities. Air and water pollution in urban areas is generally reduced from 1970 levels, but in many areas a shortage of suitable land greatly hinders the disposal of solid wastes.

Water supply and distribution continues to be a problem, especially in the urban areas of the coastal zone. Development of recharge areas, urban runoff to sea, surface water pollution, salt intrusion, channelization of streams, and drastically increased demand all contribute to water deficits. Regional surface flows must be diverted, and municipal well fields continually moved farther afield to insure a continuing supply of fresh water to population centers. Intensive agriculture requires more water for irrigation, and expanded industry (including power generation) consumes even greater amounts of water. Miami/Fort Lauderdale, Tampa/St. Petersburg, the Florida Keys, Orlando/Disney World, Brevard County and numerous smaller coastal communities experience infrequent, but severe, water restrictions.

Although there is some evidence that the value of wetlands to man is gaining recognition, thousands of acres have been lost since 1970. Drainage and filling for urban expansion, surface water management and flood control projects, agricultural encroachment on flood plains, and water table drawdowns associated with urban water demand have all contributed to the declining supply of this valuable resource.

While population increases at a linear rate, consumption of electrical energy continues to increase at an even more rapid rate. Location of the necessary new generating plants resulted in much environmental controversy, but the demands outweighed the fears of ecological peril. As a result of studies performed during these contests, there is increasing evidence that the coastal marshes of northwest Florida may be able to tolerate the thermal discharge from generating plants and sustain minimal harm.

Outdoor recreation has grown to become a \$150 billion industry in the nation, and broad, intensive planning for leisure is required. Public beaches in Florida are 20% larger than in 1970, but some rationing of these resources is necessary to accommodate the 65% increase in peak day demand. Other sports, such as hunting, which involve the use of public and privately owned lands are becoming increasingly expensive as population pressure reduces available acreage and game is more difficult to find. Increasing restrictions are necessary, especially on the use of recreational vehicles, to protect natural woodlands and wetlands against over utilization. An additional 8 million new saltwater fishermen now use 750 new marinas, and 1,600 new boat launching ramps, all in the coastal zone. Floridians have grown to accept somewhat less individual freedom as the cost of preserving the environment.

POSTSCRIPT

One of the underlying assumptions in this presentation has been "that availability of natural resources will not become a limiting factor." In fact, to date, the specter of shortages has not affected growth projections. But there is an increasing accumulation of evidence that a direct relationship exists between declining world fuel reserves, inflation, and Florida's economy. While not enough is known about the immediacy of this threat, the potential of world-wide economic and social problems and the effects these changes may have on Florida's future have been examined. Further understanding is needed if the impact of these trends is to be minimized.

Modern society is completely dependent on increasingly large flows of cheap, concentrated petroleum energy, for survival. In a sense, oil feeds us, clothes us, protects us against extremes of heat and cold, provides inexpensive transportation, and drives all of the technological institutions contributing to a high standard of living. Modern agriculture, while using large quantities of solar energy, is actually dependent on the availability of fuel energy for its mechanized operations, for irrigation and drainage, for education of farmers, for the manufacture and application of fertilizers and pesticides, and so on. In this sense, corn can be thought of as being over 45% petroleum.

Petroleum reserves in the continental United States are declining, forcing increasing reliance on foreign imports, and thereby contributing to our foreign trade deficits. New oil ventures must explore ever more remote or difficult to reach sources such as the Alaskan north slope or the continental shelf. Greater efforts and more expensive investments are required to explore these sources, resulting in higher prices paid at the gas pump.

Hoped-for technological alternatives seem less promising when the degree to which petroleum energy subsidizes new technology is examined. If oil builds nuclear power plants, feeds and educates the people who design and run the plants, and collects, delivers, and disposes of nuclear fuels and wastes, how much of the final power generated can be attributed to nuclear energy and how much to oil? Can coal be substituted economically for oil if only coal-derived energy is used to power the equipment to mine it, transport it, train manpower, and develop the technology to process and burn it without pollution?

Since petroleum energy performs most of the work of society, declining reserves must lead directly to higher dollar costs for the same amount of work. Cost increases of this kind are almost impossible to control.

The relationship is clearly demonstrated in the electrical utilities industry. New fossil-fueled generating capacity cost \$71 per kilowatt in 1968, \$111 in 1973, and is projected to cost \$149 in 1976. Not only does it cost more to build new generating plants, but the cost of oil for fuel has increased from approximately \$1.70 per barrel in 1970 to \$3.60 per barrel in 1973, and the forecast is for continued escalation.

It is difficult to determine how much of the general inflationary trend is due to declining fuel reserves. If the relationship holds, however, and other sources of cheap energy are not found, Americans are faced with a choice between two alternatives: (1) continuing inflation, or (2) sharply reduced consumption of petroleum and petroleum-processed products (which is just about all commodities). Either choice suggests a decline in national living standards.

The structure of Florida's economy has been discussed in preceding parts of this publication. Most of Florida's economic progress is dependent upon continuation of the growth of the United States economy, and the increasing affluence of the national population. Recent studies indicate that any economic downturn in the national economy is quickly followed by a decline in both numbers of tourists and daily per capita expenditures by these visitors. If the suggested long-term implications of a declining supply of cheap energy should become a reality, how many tourists can Florida expect?

Environmental protection efforts, too, may be affected by increasing costs. Large amounts of energy are required to treat wastes, purify water, and control the toxicity of industrial discharges of various kinds. Money to pay for these vital services might be difficult to obtain in times of economic uncertainty.

An alternative being considered is a return to the use of natural systems for performance of some of these functions. An increasing public awareness of the value of ecological systems is resulting in efforts to preserve the coastal mangroves and marshes for fish nurseries, conserve sandy uplands for recharge of aquifers, protect freshwater swamps for water storage, and defend floodplains, swamps, and other naturally vegetated areas for their ability to control floods and absorb the discharge of liquid wastes. Unlike fuel-driven technology, nature performs these essential functions with self-maintaining systems using recurring, non-polluting, and non-inflationary energies in unending supply. Florida's future depends largely upon how wisely these natural systems are protected and utilized for the benefit of all.



AS THE NATION'S FASTEST GROWING
LARGE POPULATION STATE, FLORIDA
IS FOREVER FACING CHOICES BE-
TWEEN TREES OR TOWERS, CREEKS
OR CANALS, MARSHES OR MARINAS,
WATER OR WASTE, BEACHES OR
BARRIERS, SUNSHINE OR SMOG, MEN
OR MACHINES, AND GREENLANDS
OR GHETTOS.



HOW WE MAKE THOSE DECISIONS IN
THE YEARS AHEAD COULD VERY EASILY
DETERMINE FOR US THE MOST IM-
PORTANT DECISION OF ALL- THAT OF
LIFE OR DEATH FOR OUR STATE
AS WE KNOW HER.

GOVERNOR REUBIN O'D. ASKEW
17 NOVEMBER, 1972

POPULATION PROJECTIONS

Selected Characteristics of Florida's Population
Actual 1970 and Projected to 10⁷

	1970 CENSUS ^a						10 ⁷ PROJECTIONS ^b					
	0-19	20-64	65 over	Non White	Female	Total	0-19	20-64	65 over	Non White	Female	Total
Alachua	40,266	57,914	6,584	22,099	52,547	104,764	58,570	90,235	9,495	28,285	78,990	158,300
Baker	3,800	4,651	791	1,867	4,696	9,242	4,870	6,320	1,110	2,340	6,235	12,300
Bay	30,344	39,468	5,471	10,080	38,367	75,283	37,190	50,605	6,605	12,885	48,280	94,400
Bradford	5,570	7,747	1,308	3,432	6,866	14,625	6,165	9,405	1,730	4,230	8,155	17,300
Brevard	95,918	121,292	12,796	21,637	114,738	230,006	127,260	164,515	18,625	25,095	155,535	310,400
Broward	190,119	318,803	111,178	79,463	324,661	620,100	298,090	514,190	215,920	110,010	539,495	1,028,200
Calhoun	3,083	3,706	835	1,135	3,863	7,624	3,285	3,925	890	1,250	4,125	8,100
Charlotte	5,515	12,383	9,661	826	14,351	27,559	14,910	31,655	22,935	1,845	35,765	69,500
Citrus	5,138	9,066	4,992	1,857	9,921	19,196	12,890	21,740	12,170	2,700	24,045	46,800
Clay	13,692	15,717	2,650	3,001	16,199	32,059	20,830	25,400	4,570	3,725	25,595	50,800
Collier	12,655	20,062	5,323	3,334	19,067	38,040	25,530	46,540	20,330	5,325	45,855	92,400
Columbia	10,400	12,556	2,294	6,338	12,999	25,250	12,880	16,100	3,220	7,535	16,555	32,200
Dade	409,489	685,586	172,717	196,130	665,697	1,267,792	505,535	897,815	247,650	261,450	877,675	1,651,000
DeSoto	4,345	6,675	2,040	2,671	6,708	13,060	5,515	8,680	2,905	3,465	8,830	17,100
Dixie	2,270	2,715	495	953	2,750	5,480	2,705	3,300	595	1,130	3,325	6,600
Duval	205,891	283,474	39,500	121,170	268,883	528,865	264,760	370,225	55,215	142,910	349,100	690,200
Escambia	82,480	109,661	13,193	42,320	102,984	205,334	97,690	133,135	17,375	49,275	124,970	248,200
Flagler	1,640	2,130	684	1,394	2,243	4,454	2,260	3,010	930	2,350	3,125	6,200
Franklin	2,641	3,339	1,085	1,335	3,636	7,065	2,840	3,875	1,185	1,415	4,070	7,900
Gadsden	16,062	18,467	4,655	23,270	20,601	39,184	15,340	17,635	4,925	22,285	20,040	37,900
Gilchrist	1,362	1,793	396	292	1,753	3,551	1,690	2,225	485	290	2,155	4,400
Glades	1,522	1,813	334	1,144	1,802	3,669	1,905	2,325	470	1,175	2,290	4,700
Gulf	4,207	5,070	819	2,346	5,022	10,096	4,285	5,325	890	2,715	5,220	10,500
Hamilton	3,271	3,578	938	3,092	4,050	7,787	3,285	3,670	945	3,110	4,120	7,900
Hardee	6,165	7,237	1,487	1,564	7,352	14,889	8,200	9,800	2,000	1,655	9,975	20,000
Hendry	5,007	6,001	851	2,954	5,834	11,859	7,955	9,505	1,940	4,440	9,505	19,400
Hernando	5,472	8,075	3,457	2,445	8,659	17,004	10,610	16,430	6,760	4,680	17,280	33,800
Highlands	9,816	13,585	6,106	6,188	15,186	29,507	15,105	22,185	9,910	10,620	24,175	47,200
Hillsborough	181,359	257,720	51,186	68,146	252,652	490,265	235,860	358,485	73,455	88,425	343,850	667,800
Holmes	3,775	5,396	1,549	349	5,468	10,720	4,540	6,465	1,795	385	6,540	12,800
Indian River	12,685	17,056	6,251	6,583	18,764	35,992	18,975	25,665	11,100	9,050	29,230	55,800
Jackson	13,730	16,885	3,819	9,986	17,249	34,434	15,385	18,495	4,620	10,805	19,310	38,500
Jefferson	3,815	3,907	1,056	4,904	4,642	8,778	3,955	4,050	1,195	4,605	4,890	9,200
Lafayette	1,098	1,405	389	331	1,448	2,892	1,110	1,470	420	340	1,500	3,000
Lake	22,308	32,213	14,784	12,256	35,968	69,305	30,045	44,135	19,720	14,850	48,885	93,900
Lee	32,732	52,717	19,767	12,410	54,227	105,216	59,725	106,980	49,795	20,610	111,045	216,500
Leon	39,883	57,546	5,618	26,522	53,230	103,047	60,090	88,525	9,485	37,600	81,535	158,100
Levy	4,895	6,182	1,679	3,216	6,509	12,765	6,230	8,040	2,130	3,745	8,385	16,400
Liberty	1,356	1,653	370	485	1,691	3,379	1,500	1,880	420	585	1,900	3,800
Madison	5,622	6,270	1,589	5,919	7,075	13,481	6,140	7,030	1,630	5,895	7,775	14,800
Manatee	25,178	42,606	29,331	11,769	51,645	97,115	36,625	64,460	45,415	18,545	76,855	146,500
Marion	25,774	34,243	9,013	18,161	36,024	69,030	38,590	51,110	14,600	21,600	54,370	104,300
Martin	8,825	13,226	5,984	4,330	14,357	28,035	15,770	24,480	11,350	6,770	26,430	51,600
Monroe	17,625	30,465	4,496	4,896	24,405	52,586	19,360	35,090	6,050	6,185	28,240	60,500
Nassau	8,904	10,045	1,477	4,406	10,400	20,626	14,645	9,460	2,095	5,195	13,220	26,200
Ocala	37,528	47,658	3,001	6,968	42,486	88,187	48,635	63,490	4,675	8,855	56,110	116,800
Okeechobee	5,122	5,205	906	1,744	5,253	11,233	9,265	9,905	2,130	2,850	9,950	21,300
Orange	132,723	178,289	33,299	49,661	176,425	344,311	208,275	292,705	61,920	76,660	286,575	562,900
Osceola	8,041	11,656	5,570	2,225	13,154	25,267	17,860	26,495	13,245	4,630	29,945	57,600
Palm Beach	113,089	175,249	60,415	62,293	182,371	348,753	184,420	293,910	97,970	82,250	300,540	576,300
Pasco	17,871	34,063	24,021	4,031	39,118	75,955	49,585	92,970	64,045	5,410	106,835	206,600
Pinellas	132,200	236,206	153,923	44,286	281,932	522,329	189,880	356,120	234,000	55,545	420,495	780,000
Polk	85,273	113,279	28,670	39,782	116,820	227,222	124,545	168,295	43,760	52,060	172,215	336,600
Putnam	14,588	17,326	4,376	9,787	18,652	36,290	17,755	21,755	5,390	10,690	23,165	44,900
St. Johns	11,554	14,811	4,362	6,943	16,276	30,727	15,805	21,510	6,585	7,700	23,375	43,900
St. Lucie	18,932	24,499	7,405	15,803	26,136	50,836	24,220	33,260	12,620	21,110	36,045	70,100
Santa Rosa	15,244	20,224	2,273	2,249	18,357	37,741	19,930	26,015	3,455	2,525	24,000	49,400
Sarasota	29,511	56,453	34,449	8,457	64,251	120,413	53,225	89,200	58,175	10,430	106,340	200,600
Seminole	33,727	42,085	7,880	14,232	43,056	83,692	68,405	90,015	19,580	22,800	91,600	178,000
Sumter	5,478	7,413	1,948	3,481	7,218	14,839	8,050	11,175	2,875	4,925	10,740	22,100
Suwannee	6,110	7,567	1,882	3,683	8,053	15,559	6,310	8,130	2,160	3,740	8,645	16,600
Taylor	5,567	6,728	1,346	3,080	6,944	13,641	5,800	7,250	1,450	3,150	7,410	14,500
Union	2,378	5,165	569	2,323	2,751	8,112	2,955	6,530	715	3,005	3,500	10,200
Volusia	51,223	80,474	37,790	24,394	90,103	169,487	69,725	115,055	52,120	31,200	125,910	236,900
Wakulla	2,557	3,080	671	1,532	3,210	6,308	3,040	3,725	835	1,775	3,855	7,600
Walton	5,856	8,125	2,106	1,822	8,269	16,087	6,205	8,585	2,210	1,800	8,610	17,000
Washington	4,407	5,540	1,506	2,318	5,798	11,453	6,250	8,280	2,170	3,510	8,470	16,700
STATE TOTALS	2,326,683	3,503,394	959,366	1,070,100	3,513,872	6,789,443	3,277,255	5,103,545	1,619,200	1,390,000	5,182,775	10,000,000

^a General Population Characteristics: Florida. U. S. Department of Commerce, Bureau of the Census. PC(1)-B11 Fla.

^b By Division of Population Studies, Bureau of Economic and Business Research, University of Florida. June, 1973.

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