COASTAL ZONE
INFORMATION CENTER

Coastal Zone
Information
Center

AN ECONOMIC BASE STUDY OF COASTAL LOUISIANA

By
Lamar B. Jones
G. Randolph Rice

HC
107
.L8
J65
1972

NTER for WETLAND RESOURCES
ISIANA STATE UNIVERSITY · BATON ROUGE
3/LSU-SG-72-02 Sea Grant

AUTHENTICATED
U.S. GOVERNMENT
INFORMATION
GPO

00230

AN ECONOMIC BASE STUDY

OF

COASTAL LOUISIANA

Conducted under the auspices of Louisiana State University's Sea Grant Program, a part of the National Sea Grant Program, maintained by the National Oceanic and Atmospheric Administration of the U.S. Department of Commerce

U.S. DEPARTMENT OF COMMERCE NOAA
COASTAL SERVICES CENTER
2234 SOUTH HOBSON AVENUE
CHARLESTON, SC 29405-2413

by

Lamar B. Jones

Associate Professor of Economics

and

G. Randolph Rice

Assistant Professor of Economics

HC107.L8 J65 1972
1826024
JUL 23 1997

Property of CSC Library

ABSTRACT

An Economic Base Study of Coastal Louisiana analyzes and describes certain basic sectors of a regional economy. Unique among base studies of local economies is inclusion of a chapter on investment in human capital in the region.

The fundamental methodological problems of base studies stem from inability to separate economic data into regional components, lack of data for many economic activities, and inability to analyze a regional economy as a closed system. Therefore, primary emphasis is toward systematization and generalization with reference to very large economic sectors that are most obviously related to regional characteristics. These sectors are commercial fisheries, mineral extraction, and water transportation. The potentially important tourist and recreation sector, because of severe data limitations, is described only briefly. Certain miscellaneous sectors are examined, and a list of Standard Industrial Classifications is given for industries dependent upon or related to the coastal economy.

Population projections for the region are made through use of cohort-survival techniques. Shift-share analysis is used to analyze economic growth trends. Substantial data are accumulated on trends in income growth, and the employment structure of the region is explained.

Inasmuch as economic activity involves transformation of natural resources into finished products, either to be directly consumed or to serve as tools for further production, the study should emphasize not only these resources but the effects of productive activities on the natural environment. Some suggestive material concerning environmental impacts is included, but the absence of economic data makes the analysis unsatisfactory. Accordingly, environmental impact information in the study is fragmentary.

The major accomplishment of the study is the amassing of rather sizable amounts of economic data on the coastal economy to provide a benchmark for more in-depth and more narrowly scoped research efforts.

ACKNOWLEDGMENTS

The authors are indebted to many individuals who contributed to preparation of this study. John Eckalbar, David John, John Shoemaker, and Jose Paniza researched various chapters. Professor Roger Burford and Sylvia Murzyn greatly aided our computer programming. Billie Townsend, assisted by Margaret Stafford, typed the numerous drafts and revisions without loss of good humor, a not insignificant accomplishment. Dr. Jack R. Van Lopik, Director of the Center for Wetland Resources and the Office of Sea Grant Development, provided administrative guidance and support.

This investigation was sponsored by Louisiana State University's Office of Sea Grant Development. LSU's Sea Grant Program is a part of the National Sea Grant Program, which is maintained by the National Oceanic and Atmospheric Administration of the U.S. Department of Commerce.

CONTENTS

	Page
ABSTRACT	iii
ACKNOWLEDGMENTS	iv
FIGURES	ix
EXHIBIT	x
TABLES	xi
PART I. ANALYSIS OF ECONOMIC AGGREGATES IN COASTAL LOUISIANA	
CHAPTER I. INTRODUCTION: THE LOUISIANA COASTAL REGION	3
Delineation of the Louisiana Coastal Region	4
Economic Approach to Resource Analysis of Coastal Louisiana	5
CHAPTER II. PHYSICAL CHARACTERISTICS OF THE LOUISIANA COASTAL REGION	7
Climate	11
CHAPTER III. ECONOMIC GROWTH IN COASTAL LOUISIANA	13
Introduction	13
The Economic Setting of the Louisiana Coastal Region	13
CHAPTER IV. SHIFT-SHARE ANALYSIS AS A TOOL FOR REGIONAL AND STATE ECONOMIC ANALYSIS	31
Employment Shift Ratios	31
Shift-Share Ratios	31
Components of income growth	33
The competitive position of Louisiana	33
Manufacturing in coastal Louisiana	35
CHAPTER V. POPULATION IN COASTAL LOUISIANA	39
Population Projections	51
CHAPTER VI. INVESTMENT IN REAL AND HUMAN CAPITAL	55
Real Capital Accumulation	55
Investment in Human Capital	56
The model	56
Empirical analysis	58
Migration as Investment	59
An economic model of migration	59
Empirical analysis	60
CHAPTER VII. CONCLUSIONS FROM ANALYSIS OF ECONOMIC AGGREGATES IN COASTAL LOUISIANA	63

Page

PART II. ANALYSIS OF MAJOR COASTAL INDUSTRIES

CHAPTER VIII. LOUISIANA COMMERCIAL FISHERIES. 67

Introduction. 67
An Overview of the United States Fishing Industry 67
Foreign trade. 67
Domestic supply. 68
Per capita consumption 69
Prices 69
Principal species. 69
An Overview of Louisiana Commercial Fishing 70
Geography. 70
Principal landing locations. 71
The general catch. 71
Fish processing plants 73
Canned fishery products. 73
Industrial fishery production. 75
Vessels and employment 75
Principal Species of Louisiana Fisheries. 78
The menhaden fishery 78
The Louisiana shrimp industry. 79
Summary and Conclusions 81

CHAPTER IX. MINERAL INDUSTRIES IN COASTAL LOUISIANA 83
Introduction. 83
The Oil and Gas Industry of Louisiana 83
Geography. 83
Drilling 85
Oil well completions. 85
Gas well completions. 85
Economics of offshore drilling. 85
Reserves 86
Crude oil and natural gas liquids 86
Production and State Revenues. 90
Production of crude oil and condensate. 90
Production of natural and casinghead gas. 94
Oil and gas production and State revenues 94
Oil and Gas Pipelines in Louisiana 98
Oil pipelines 98
Gas pipelines 98
Employment and Payrolls from Oil and Gas Production. . 98
National and State employment 100
Coastal parish employment 100
Mid-March production payrolls 100
Sulfur. 104
Environmental Impact of the Extractive Industries 106

CHAPTER X. WATER TRANSPORTATION AND SHIP AND BOAT BUILDING. . 109

Introduction. 109
Foreign Shipping. 109

Page
Ship and Boat Building. 119
Predictions 123

CHAPTER XI. TOURISM AND RECREATION IN COASTAL LOUISIANA . . . 125

CHAPTER XII. MISCELLANEOUS SECTORS. 131

Section I. Fur Trapping in Coastal Louisiana 131

Section II. SIC Listings. 131

Section III. Marine-Related Federal and State Expenditures 132

REFERENCES. 139

APPENDICES 143

FIGURES

Figure		Page
1.	Louisiana coastal region	6
2.	Natural regions of the State of Louisiana	8
3.	Succession of Mississippi deltas	9
4.	Map showing known distribution of salt domes in Gulf of Mexico basin	11
5.	Relative economic growth of Louisiana parishes, 1959-1968	17
6.	Percentage distribution of income payments to individuals in Louisiana and percentage of State distribution in coastal zone, 1967-1968	28
7.	Rural and urban parishes in Louisiana, 1970	44
8.	A. Changes in Louisiana urban population, 1960-1970. B. Changes in Louisiana rural population, 1969-1970	45
9.	Population density of Louisiana parishes	47
10.	Landings at selected Louisiana ports, 1969	72
11.	Locations of Louisiana fish processing firms, 1972	76
12.	Location of Intracoastal Canal, the Chapman Line, and Zones 0, 1, 2, 3, and 4, offshore Louisiana	84
13.	Oil well completions in Louisiana, 1965-1969	87
14.	Gas well completions in Louisiana, 1965-1969	87
15.	Reserves of crude oil and natural gas liquids at end of years 1965-1969	89
16.	Reserves of natural gas at end of years 1965-1969	91
17.	Louisiana crude oil and condensate production, 1965-1969	93
18.	Percentages of Louisiana crude and condensate production from various areas, 1965-1969	93
19.	Louisiana natural gas production by areas, 1965-1969	96
20.	Revenue from mineral production severance taxes and mineral leases, State of Louisiana	96

Figure Page

21. Approximate locations of the proposed and existing pipeline-flowing system, offshore Louisiana, March 1968. 99

22. Employment versus time in the Louisiana oil and gas production industry. 102

23. Oil industry production payrolls for March of the years 1965-1969. 104

24. Louisiana sulfur production. 105

25. Environmental impact of extractive activities in California's coastal zone 107

26. U.S. foreign trade routes between Gulf ports and Europe 111

27. U.S. foreign trade routes between Gulf ports and the Far East 112

28. Port of New Orleans foreign waterborne commerce, calendar year 1969 116

29. Commerce at the Port of New Orleans, 1960-1961 through 1969-1970. 117

30. Value of import, export, and total foreign trade, coffee imports, and grain exports, Port of New Orleans, 1960-1961 through 1969-1970 118

31. Inland waterways of the central and eastern United States. 120

32. Environmental impact of industrial and transportation activities in California's coastal zone. 124

33. Potential environmental impact of recreational activities in California's coastal zone. 128

EXHIBIT

Exhibit

1. National Recreation Area for Atchafalaya Basin? 130

TABLES

TABLE		Page
1.	PER CAPITA INCOME (MONEY AND REAL) BY PARISH, 1968 AND 1959	15
2.	ANNUAL GROWTH RATES OF REAL PER CAPITA INCOME, LOUISIANA PARISHES, 1959-1968	18
3.	RELATIVE PARISH ECONOMIC GROWTH, 1959-1968	19
4.	ECONOMIC CATEGORIES OF LOUISIANA PARISHES	22
5A.	PERCENTAGE DISTRIBUTION OF EMPLOYMENT ON NONAGRICULTURAL PAYROLLS, 1969	26
5B.	NATIONAL INCOME, BY INDUSTRIAL ORIGIN, 1968, U.S.	26
6.	EMPLOYMENT AND COMPONENTS OF EMPLOYMENT CHANGE, LOUISIANA COASTAL REGION, 1940-1950, 1950-1960	32
7.	SOURCES OF INCOME GROWTH, 1959-1969, LOUISIANA	34
8.	SHIFT-SHARE COMPONENTS	35
9.	DISTRIBUTION OF MANUFACTURING ESTABLISHMENTS BY MAJOR INDUSTRY GROUP, LOUISIANA COASTAL PARISHES, 1967	36
10.	PERSONAL INCOME BY MAJOR SOURCES AND EARNINGS BY BROAD INDUSTRIAL SECTOR, 1950, 1959, 1965, LOUISIANA COASTAL REGION	38
11.	TOTAL POPULATION FOR LOUISIANA PARISHES AND RELATIVE CHANGE, 1970 AND 1960	40
12.	POPULATION CHARACTERISTICS: COASTAL AREA AND STATE FIGURES, 1970	41
13.	URBAN POPULATION, RURAL POPULATION, AND URBAN POPULATION AS PERCENTAGE OF TOTAL POPULATION	43
14.	DENSITY OF POPULATION BY PARISH, 1970	46
15.	AGE DISTRIBUTION OF POPULATION, BY PARISH, 1970	49
16.	DISTRIBUTION OF 35-44-YEAR-OLD POPULATION, BY PARISH, 1970	50
17.	PERCENTAGE OF POPULATION NONWHITE, BY PARISH, 1970	52

TABLE Page

18. COHORT-SURVIVAL POPULATION PROJECTIONS FOR LOUISIANA COASTAL PARISHES. 54

19. ANNUAL EARNINGS DURING AND AFTER TRAINING 57

20. QUANTITY AND VALUE OF GULF REGION CATCH, VARIOUS YEARS, 1940-1969. 68

21. UNITED STATES PER CAPITA CONSUMPTION OF SHRIMP, 1936-1969 . . 70

22. GULF SHRIMP LANDINGS BY STATE, 1964-1969. 71

23. VOLUME AND VALUE OF LANDINGS AT CERTAIN U.S. PORTS, 1969. . . 73

24. LOUISIANA LANDINGS BY SPECIES, 1969-1970. 74

25. LOUISIANA FISH PROCESSING FIRMS, 1971 75

26. EMPLOYMENT AND FISHING CRAFT UTILIZATION IN THE UNITED STATES, 1930-1967. 77

27. EMPLOYMENT AND FISHING CRAFT UTILIZATION IN THE GULF STATES, 1967 78

28. LOUISIANA MENHADEN CATCH, 1966-1970 79

29. LOUISIANA MONTHLY MENHADEN LANDINGS, 1967-1969. 80

30. LOUISIANA SHRIMP CATCH, 1966-1970 80

31. SALT-WATER SHRIMP LANDINGS BY MONTH, 1967-1969. 81

32. LOUISIANA WELL COMPLETIONS, 1960-1969 86

33. GAS AND CRUDE OIL RESERVES. 88

34. LOUISIANA CRUDE OIL AND CONDENSATE PRODUCTION 92

35. AREA DISTRIBUTION OF CRUDE OIL AND CONDENSATE PRODUCTION. . . 92

36. LOUISIANA NATURAL AND CASINGHEAD GAS PRODUCTION 95

37. AREA DISTRIBUTION OF NATURAL AND CASINGHEAD GAS PRODUCTION. 95

38. REVENUE FROM MINERAL PRODUCTION, STATE OF LOUISIANA 97

39. OIL INDUSTRY PRODUCTION EMPLOYEES 101

40. OIL INDUSTRY PRODUCTION PAYROLLS, MARCH, 1965-1969. 103

TABLE Page

41. SULFUR PRODUCTION IN LOUISIANA. 106

42. UNITED STATES PORTS, RANKED BY TONNAGE, 1969. 110

43. TOTAL TONNAGE HANDLED BY MAJOR LOUISIANA PORTS, 1955-1969 . . 110

44. INTERNAL AND LOCAL DOMESTIC TONNAGE HANDLED BY MAJOR LOUISIANA PORTS, 1955-1969. 113

45. COASTAL DOMESTIC TONNAGE HANDLED BY MAJOR LOUISIANA PORTS, 1955-1969. 113

46. FOREIGN EXPORTS HANDLED BY MAJOR LOUISIANA PORTS, 1955-1969 114

47. FOREIGN IMPORTS HANDLED BY MAJOR LOUISIANA PORTS, 1955-1969 114

48. VESSEL ARRIVALS AT NEW ORLEANS. 115

49. TOTAL TONNAGE ON THE GULF INTRACOASTAL WATERWAY, 1955-1969. . 121

50. MAJOR COMMODITIES SHIPPED ON MISSISSIPPI RIVER SYSTEM, BATON ROUGE - NEW ORLEANS - MOUTH OF RIVER, 1969. 121

51. TOTAL TONNAGE ON THE MISSISSIPPI RIVER SYSTEM, 1955-1969. . . 122

52. MAJOR COMMODITIES SHIPPED ON LOUISIANA SEGMENT OF GULF INTRACOASTAL WATERWAY, 1969 122

53. WATER TRANSPORTATION EMPLOYMENT, PAYROLLS, AND NUMBER OF REPORTING UNITS, LOUISIANA, 1969. 123

54. VISITORS TO SELECTED TOURIST ATTRACTIONS. 126

55. TOURIST SPENDING BY EXPENDITURE CATEGORY, LOUISIANA, 1969 . . 127

56. COMPARATIVE TAKES OF FUR ANIMALS IN LOUISIANA, 1969-1970 SEASON. 132

57. STANDARD INDUSTRIAL CLASSIFICATION FOR COASTAL INDUSTRIES IN LOUISIANA 133

58

58. FEDERAL INFORMATION EXCHANGE SYSTEM PROGRAM SUMMARY FOR LOUISIANA AS OF JUNE 30, 1969 136

59. FEDERAL INFORMATION EXCHANGE SYSTEM FUNCTIONAL SUMMARY FOR LOUISIANA AS OF JUNE 30, 1969 136

60. SELECTED MARINE-RELATED APPROPRIATIONS, STATE OF LOUISIANA, FISCAL YEAR 1971. 137

PART I

ANALYSIS OF ECONOMIC AGGREGATES IN COASTAL LOUISIANA

CHAPTER I

INTRODUCTION: THE LOUISIANA COASTAL REGION

The Louisiana coastal region is in many respects the State's most valuable geographic feature, for it is at this juncture of the land, the sea, and the great rivers that most of the State's trade, commerce, industry, and population are located. This is a region with abundant deposits of hydrocarbon fuels and minerals, one whose estuaries comprise a significant part of the nation's most productive fish and wildlife habitat. Louisiana's estuaries--"the doorways between the ocean and the land mass" (Cronin, 1971)--are stressed by human activities throughout the watershed of the State and are subjected to the most intensive use of any of the natural-resource areas. It is here that processes of urbanization, sedimentation, chemical contamination, and general economic development reveal the delicate balance between man and his environment.

These characteristics are sufficient justification for an economic base study of the coastal region, but other reasons are also compelling, for the uses of the coastal region of the State are matters of intense and sometimes conflicting concern. Public and private interests are not always in harmony, nor are the interests of Federal, State, and local governments always compatible. The desire for economic development increasingly is tempered by the price costs such activity may exact from the environment. But protecting the environment from man has a reciprocal in the need to protect man from the environment--a serious need in an area, for example, where tropical storms are frequent occurrences. Accordingly, it is entirely appropriate to consider measures for positive manipulation of the rivers, bays, marshes, and lakes of coastal Louisiana, for if adequately protected this region is capable of providing not only sources of income for the citizens of the State but also unique and valuable opportunities for recreation.

Population growth in the coastal region surpasses the rate of growth for non-coastal areas. Such population growth in the coastal region, when coupled with increased income and leisure time, inevitably creates pressures for access to the estuaries and the sea. Contamination or destruction of beaches, marshes, waterways, and shorelines may, however, deny the recreational use of sea and shore to the expanded population. Moreover, expanding populations create vast amounts of wastes, which find their way to the rivers and estuaries and ultimately to the sea.

Clearly the use of coastal Louisiana's land and water resources is accelerating. Delays in understanding the consequences of multi-purpose use alternatives can only mean excessive and perhaps irreversible damage to the Louisiana coastal region. Proper planning and recognition of the long-term importance of maintaining the productive quality of coastal Louisiana is necessary if the citizens of the State are to be assured of sound utilization of the coastal resources and the coastal environment.

Before successful management measures can be taken, it must be generally recognized that much of coastal Louisiana has the characteristics of a common property resource. To economists the primary feature of common property resources--air, water, fisheries, etc.,--is that processes of private economic activity cannot be expected to assign accurate relative values to alternative uses of the resource. In the words of the economist Allen V. Kneese (1971), "Now that many properties of the natural environment have clearly become scarce resources, we are confronted with a vast asymmetry in the ability of our property institutions to form the basis for efficient resources allocation." Moreover, "unless decisive counter measures are taken, leading to more technically efficient use of materials and energy, we can expect this problem to grow more intense" (Kneese, 1971). What is needed over much of the Louisiana coastal region, again in Kneese's words, "is to view the various aspects of the natural environment as multiple purpose - multiple use natural assets, owned in common, which must be managed through some collective choice mechanism if they are to be developed, used, and conserved efficiently."

The authors of this report are fully cognizant of the need for operational analytical methods to explore the types of interdependencies occurring from multiple purposes - multiple uses of the resources of coastal Louisiana. Candidness compels us, however, to warn the reader that only partial headway is made in this report in meeting the needs for analytical assessment. This is so because of two facts: (1) the tools of analysis are themselves not readily available, and (2) when they are available they are very expensive to apply. These facts are regrettable, for the need for such measures is acute. Nevertheless, given these difficulties, about the best economists can do is to follow the advice of one member of their profession, E. J. Mishan (1970), who notes that the fact that

> no estimates have been made, or are likely to be made shortly, about the magnitude of some untoward social effect arising in the normal pursuit of commerce, need not intimidate the economist from occasionally respecting the plain and inescapable evidence of his own senses. Nor should such a fact inhibit his reasonable conjectures about future consequences if present trends remain unchecked.

What this report does accomplish is to present a comprehensive data survey of economic activity in coastal Louisiana. Perfection is not implied, for the report is a working document to be expanded and updated in the future. Moreover, as is true in most data-gathering efforts, there are omissions of items considered important by some and inclusions of items considered trivial by others. Accordingly, suggestions for improvements shall be most welcome.

Delineation of the Louisiana Coastal Region

There is no incisive definition of the coastal region of Louisiana. The State's shoreline has much too complex a configuration to permit sharp

distinction. We can speak of a marine environment, and in this sense the Louisiana coastal region may be considered to be the land area affected by the sea and the sea area affected by the land. This definition permits extension of coastal Louisiana as far north as Baton Rouge, the terminus of deep-draft navigation on the Mississippi River. Accordingly, coastal Louisiana is defined as a 24-parish (county) area which includes the shoreline and the estuaries formed by the lower portion of the Mississippi River, as well as major portions of other rivers such as the Atchafalaya, Calcasieu, Sabine, Mermentau, and Pearl. The inner continental shelf is also included in the coastal region because of its growing importance in mineral resource supply. Because economic data follow political boundaries, some entire parishes are included when it would be preferable to use only their areas contiguous to rivers or lakes which connect to the ocean. Figure 1 depicts the limits of coastal Louisiana chosen for this study. Recognition is granted that perhaps too many or too few parishes are included. On balance, the choice made seems sufficiently logical to allay most criticism.

Economic Approach to Resource Analysis of Coastal Louisiana

The essential thrust of economic analysis of the region considered to be coastal Louisiana is to explore the interrelationship of land-based economic activities with the estuaries and the Gulf of Mexico. The analysis is structured around two focal points: replenishable and nonreplenishable resources. Replenishable resources are such items as fish, wild animals, waterfowl, timber, etc. Nonreplenishable resources, insofar as coastal Louisiana is concerned, are minerals, especially oil, natural gas, and sulfur. The authors have also included a section on population and human resources in coastal Louisiana. No only does this inclusion seem justified on the basis that human capital should be valued in economic terms, but there is the all-important justification that the wisdom to develop properly and appreciate the problems of coastal Louisiana is a function of the skills and talents brought to bear on these problems.

The basic weakness of economic analysis stems from the lack of effective tools to explore the interrelationships between replenishable and nonreplenishable resource use. In short, economists have to rely upon static rather than dynamic methods, and for reasons detailed earlier the full social costs of many economic activities are not quantifiable. For example, the impact of mineral extraction upon the replenishable resource base is not readily subject to economic analysis at present.

In terms of statements about industries that are visibly dependent upon the land-estuary-sea interface, the report relies on Standard Industrial Classification (hereinafter SIC) procedures (U.S. Bureau of the Budget, 1972, Standard Industrial Classification Manual). At least five general industry groups can be identified by project or service especially oriented toward coastal Louisiana. These five are fisheries, mineral industries, marine transportation, tourism and recreation, and a catch-all category titled "other industries" which includes fur trapping.

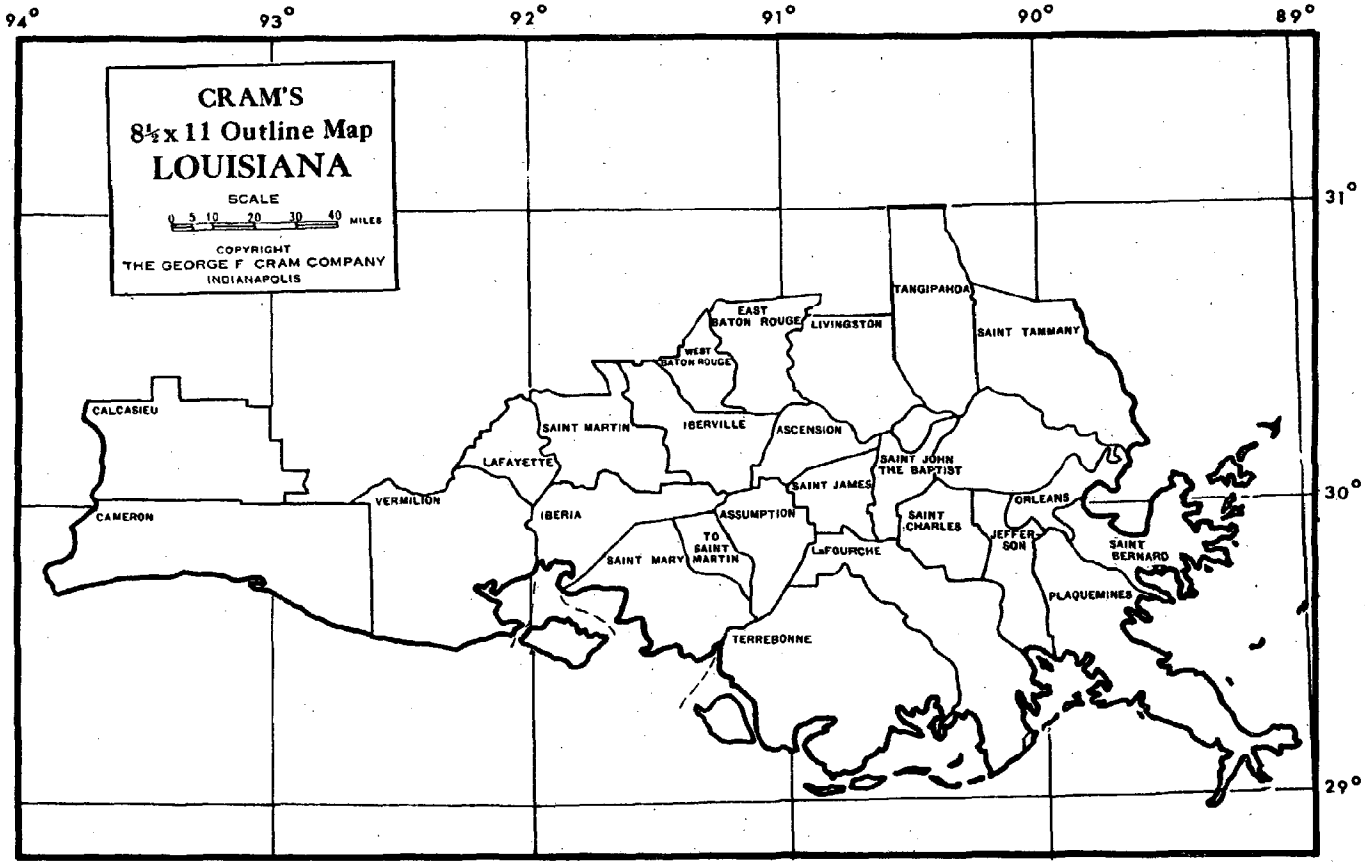


Fig. 1. Louisiana coastal region.

CHAPTER II

PHYSICAL CHARACTERISTICS OF THE LOUISIANA COASTAL REGION

The 24 parishes that constitute the Louisiana coastal region occupy 15,695 square miles, which is 34.7 percent of the State's total. The region covered in this study extends eastward from the Sabine River to the Pearl River (see Fig. 1).

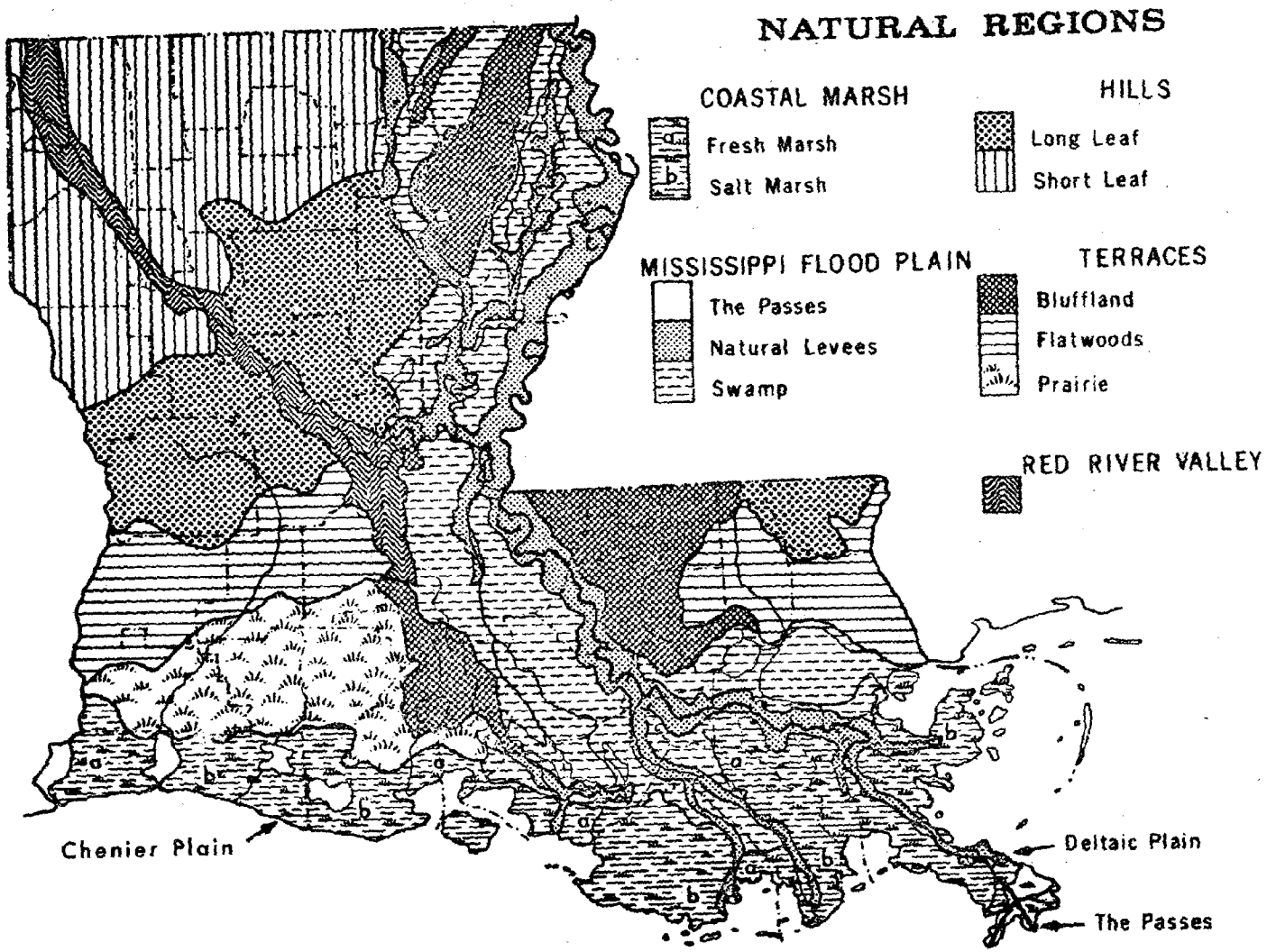
The Louisiana coastal region lies within a physiographic unit known as the West Gulf Coastal Plain. Four natural regions are distinguished in this area: the coastal marshlands, the Mississippi flood plains, the terraces, and the hills. These regions are shown in Figure 2.

The deltaic plain of the Mississippi River and the chenier plain of southwestern Louisiana constitute the coastal marshlands. The deltaic plain, which makes up the main part of the marshlands, extends for nearly 200 miles between the Mississippi Sound on the east and Vermilion Bay on the west. The chenier plain is only 25 to 30 miles wide; it extends from the Sabine River on the west to Vermilion Bay on the east (Fisk, 1956). These regions have developed owing to shifting sites of Mississippi River sedimentation and to regressional and progradational shoreline processes (Gould and Morgan, 1962).

The Prairie Terrace, north of the chenier plains and flanking the Mississippi River, is underlain by fluvial sediments laid down in late Pleistocene time. Now locally dissected 20 to 30 feet, the Prairie surface forms the "uplands" bordering lakes Maurepas and Pontchartrain in southeastern Louisiana (Fig. 3).

Cut within Prairie age deposits and burying them downvalley is a heterogeneous mixture of sediments laid down by the Mississippi River within approximately the last 10,000 years. Physiographically, this alluvial plain is characterized by major natural levee systems flanking modern and abandoned distributaries. Ranging in elevation from a few to about 15 feet above the adjacent backswamps, these levees have long been cleared and brought into cultivation. Their relative freedom from inundation and the inherent fertility of their pedologically youthful soils makes levee terrain some of the best agricultural land in the State.

As shown in Figure 3, within the last 5,000 years at least seven Mississippi deltaic systems and sublobes have built out along the Gulf Coast (Kolb and Van Lopik, 1958). These formed when the Mississippi River abandoned old courses for new ones, which generally had higher gradients and shorter distances to the sea. Sediments deposited along radiating distributaries then caused progradation of the shoreline.



CARTO. SECT., SCH. OF GEOSCIENCE, LSU

Fig. 2. Natural regions of the State of Louisiana.

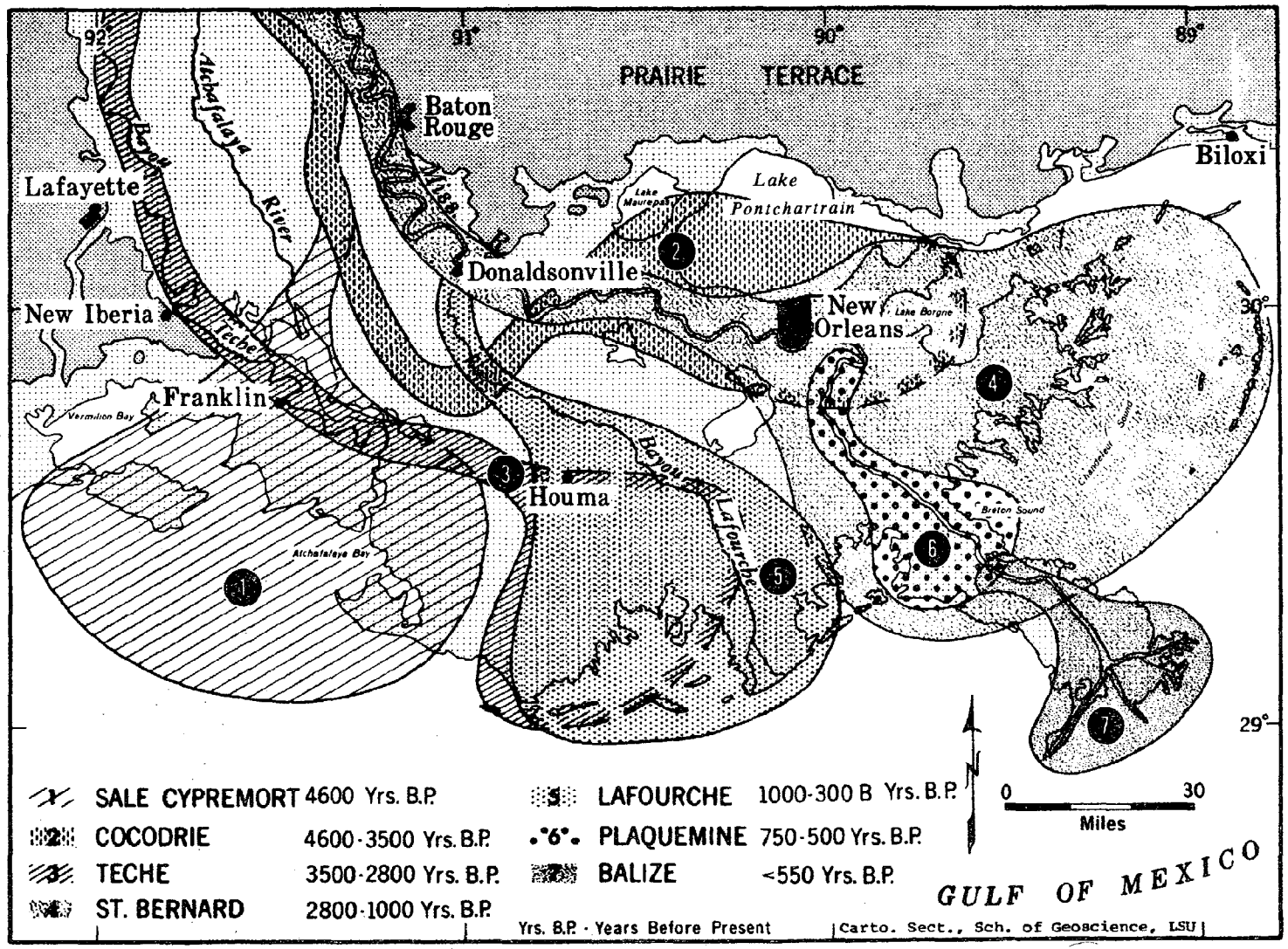


Fig. 3. Succession of Mississippi deltas. Source: Kolb, C. R., and J. R. Van Lopik, 1958, Geology of the Mississippi River deltaic plain, Southeastern Louisiana. U.S. Army Engr. Waterways Experiment Station, Vicksburg, Miss., Tech. Rept. 3-483.

Upon the Mississippi River's taking a new course, the old deltaic areas were deprived of sediment nourishment and slowly recessed under wave attack and subsidence. The contemporary Mississippi Delta, the Balize, has built out and attained its form only within the last 600 years (Fig. 3). In fact, if it had not been modified by man, the present Mississippi River would have been diverted down its major distributary, the Atchafalaya, thereby abandoning the modern course via Baton Rouge, New Orleans, and the Balize Delta (Fisk, 1952).

The prairie terrace is located north of the chenier plain. Firm, arable land is formed on the terrace, which is the remnant of a huge Pleistocene deltaic plain. Bisecting the terrace is the Mississippi flood plain, a region consisting mainly of natural levees and swamps. Tangipahoa Parish has the highest elevation of the Louisiana coastal region, reaching a maximum just over 200 feet above sea level.

The major structural element in the Gulf Coast as described by Bornhauser (1958) is the Gulf Coast geosyncline, a huge downwarp of the earth's crust, the axis of which has been gradually shifting seaward. A steady eastward migration of the sediment in the geosyncline occurred throughout Tertiary time because of the changing influence of the river systems delivering sediments to the geosyncline (Antoine and Gilmore, 1970). The Rio Grande, in early Tertiary, and now the Mississippi River, which discharges more than 1 million tons per day of sediment, have contributed the major sediment load. The Atchafalaya River, the principal distributary of the Mississippi, enters the Gulf of Mexico approximately 150 miles west of the Mississippi bird-foot delta. This important source of shelf sediment introduces a daily load of at least 100,000 tons of silt and clay. At present little sand reaches the Gulf via the Atchafalaya River, for most coarse-grained sediments have been deposited in lakes some 50 miles inland. However, as these lakes or natural stilling basins fill, more sediments will enter the shallow Atchafalaya Bay, and a subaerial delta is expected to appear in the next few years. In fact, complete filling of the 200 mi^2 bay is thought likely to occur within the next 50 years (Shlemon, 1972).

The Gulf Coast area offshore of Louisiana is also characterized by diapiric salt structures, which strongly influence its localized occurrence of mineral resources in the coastal area. The major hydrocarbon fields in the coastal area exist basinward from the Mexia-Talco fault system. The presence of salt domes in the Louisiana coast has also influenced the localization of oil and gas deposits. Much of the oil and gas production of offshore Louisiana is from reservoirs associated with piercement type salt domes (see Fig. 4).

The most important minerals found in the Louisiana coast, besides oil and gas, are clays, sand and gravel, salt, and sulfur. Louisiana is second among the states as a producer of oil, natural gas, and natural gas liquid.

The mineral resources found in the Gulf of Mexico partially account for the importance of the Gulf to the Louisiana coastal region. However, the Gulf itself, being among the ten largest bodies of water in the world,

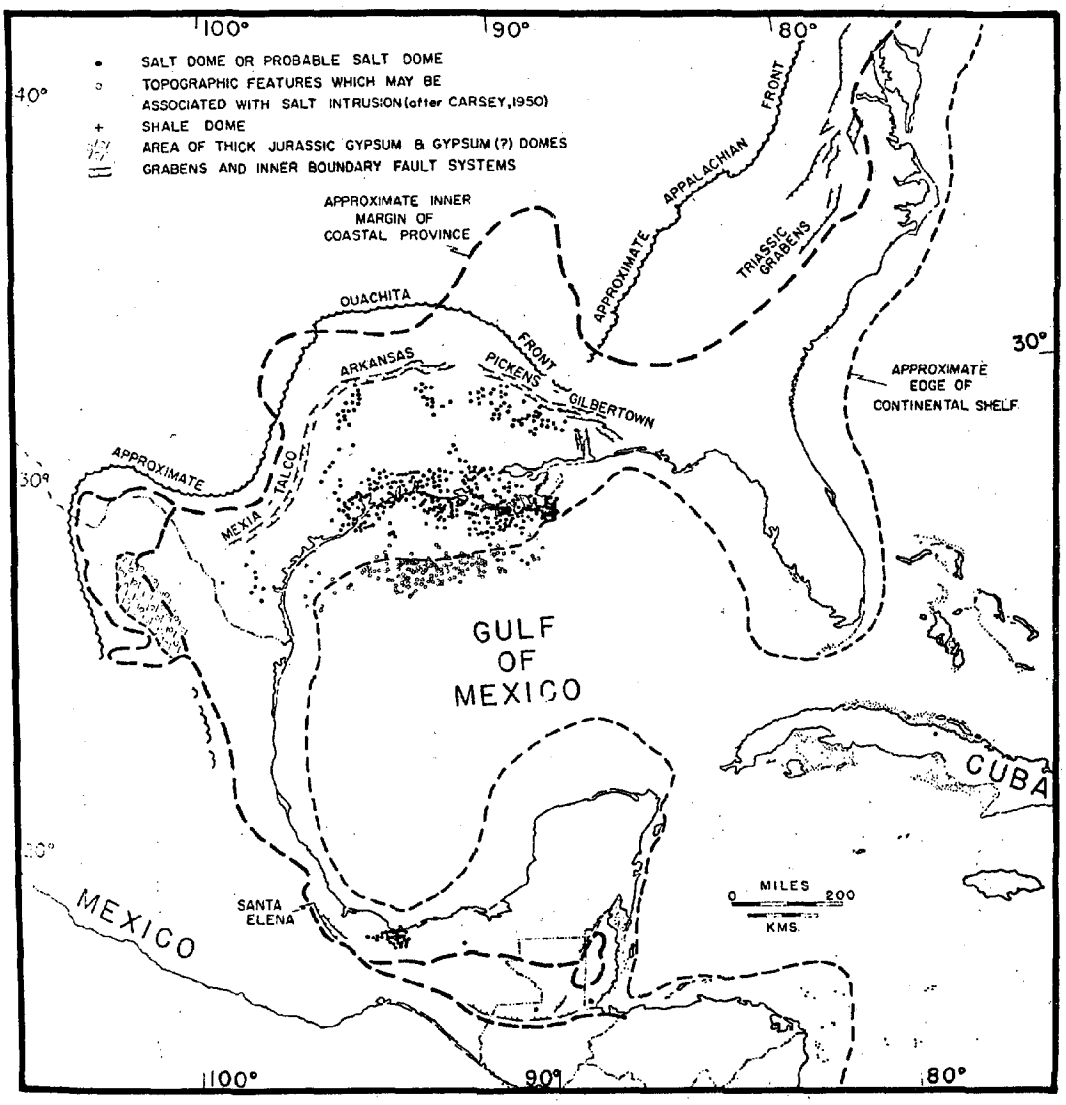


Fig. 4. Map showing known distribution of salt domes in Gulf of Mexico basin in United States, Mexico, and Cuba. Solid dots are proven domes, open circles are probable domes. Source: Murray, G. E., 1961, Geology of the Atlantic and Gulf Coastal Provinces of North America. New York (Harper and Brothers), p. 203.

is an important marine resource to the State. Fishery products taken from Gulf waters have long contributed to the economy of Louisiana. There are 37 species common to the Gulf Coast which are listed as commercially important by the National Marine Fisheries Service, and Louisiana's major rivers are the principal nutrient sources that make coastal Louisiana one of the most productive estuarine areas in the world.

Climate

The climate of the Louisiana coastal region is determined mainly

by the subtropical latitude of the area and its proximity to the Gulf of Mexico. January average temperature in this region is 54°F and that of July, 82°; the annual average temperature is 68°. The number of frost-free days averages 270 per year. The marine tropical influence is obvious in the fact that the average water temperature of the Gulf along its northern shore ranges from 64°F in February to 84° in August.

Average annual precipitation is 60 inches, of which approximately 55 percent occurs during the period from April through September. July and August are the wettest months, average monthly precipitation being 7.1 and 6.0 inches, respectively. Much of this precipitation is associated with afternoon thundershowers, which occur almost daily during certain periods of the summer.

Storms and hurricanes are important factors. A 3-year period during which one of these storms fails to strike the Louisiana coast is rare. Such events cause extensive damage to homes, business establishments, and offshore structures. The oyster grounds in St. Bernard Parish, east of the Mississippi River - Gulf Outlet channel, appear to have sustained substantial damges from Hurricane Camille in 1969.

CHAPTER III

ECONOMIC GROWTH IN COASTAL LOUISIANA

Introduction

In recent years people have become increasingly aware of regional influences within national boundaries. In particular, economic development within the United States presents a pattern of regional diversity. Thus the most important goal of overall economic progress and growth must be the emulation of national trends by the underdeveloped constituents. The establishment of this and similar prescriptions have been originated in the context of a relatively new subdiscipline, regional economics. Regional economics is the study, from the viewpoint of economics, of the differentiation and interrelationships of areas in a universe of unevenly distributed and imperfectly mobile resources; particular emphasis in application is on the planning of the social overhead capital investments and private market motivations to mitigate the social problems created by these circumstances (Dubey, 1970). It is the objective of the following chapters to analyze the Louisiana coastal region within the established methodology of regional economics.

It is particularly desirable that quantitative analysis be used in lending guidance to practice. First Count 1970 Census tapes facilitate a preliminary survey of some of the quantitative changes in the past decade, and it is such changes and their relative differences that set many of the economic norms. However, in some cases data for 1970 were not accessible at the time this report was written; therefore, the year closest to 1970 for which data were available was substituted. This proxy does not distract significantly from the trend but makes the contemporary analysis less precise.

The Economic Setting of the Louisiana Coastal Region

Economic growth may be most simply defined as the expansion of output. However, there are tacit components of output which must be revealed if output is to be a valid measure of economic expansion. Even among professional economists the focus on economic growth is less than precise. In some cases the definition pinpoints increasing productive capacity as the prerequisite to and ultimate determinant of economic progress. For others, the measure of growth is *ex post* of the production channels, i.e., real consumption per capita. In either case, welfare, as measured by the increased availability of goods and services, is the *raison d'être* of economic growth.

The Federal concern with economic growth was accentuated in June 1970 when President Nixon established the National Commission on Productivity. The background for the Commission was concern over the inflation problem and its link with labor costs per hour. However, the interests of the Commission extend beyond the immediate problem of inflation to a broad realization of the importance of economic growth in the future and the contribution that all sectors and regions can make (Economic Report of the President, 1971). Therefore, the growth of Louisiana and its coastal area are a logical application of this concern.

The policies and prospects for economic growth in the Louisiana coastal region will be discussed later. For the present it is proposed that hindsight be used in dissecting the region. In 1960, 58.84 percent of Louisiana's population resided in the 24-parish coastal area. In 1970, this proportion had increased to 61.46 percent. Of the net change in the State's population from 1960 to 1970, 83.72 percent occurred in the designated coastal zone. To the extent that increases in population contribute to a rise in product per capita, the potential growth center for Louisiana appears to be the coastal area. One direct contribution of such population increases is the greater opportunities for economies of scale or, more commonly, the economies of mass production.

Economic growth is presented here in terms of real income changes. This definition correctly recognizes that the standard of living of any economy is meaningfully portrayed by real income per capita. Real income refers to monetary income after adjustments have been made for price changes inasmuch as the money value of different years' outputs can be accurately compared only if the value of money itself does not change because of inflation or deflation. A price index, which is a percentage comparison from a fixed point of reference (the base period), is used to compare prices through time. Table 1 summarizes the money per capita personal income for 1959 and 1968 by parish and the real per capita income during the 1957-59 base period. The first 24 parishes listed represent the coastal zone; they are followed by the remaining parishes of the State. The data, compiled by the Regional Economics Division of the Office of Business Economics, Department of Commerce, are collected for Standard Metropolitan Statistical Areas (hereinafter referred to as SMSA) and the non-SMSA parishes; therefore, individual parishes within SMSA's are not delineated. Also, three non-SMSA parishes--Livingston, Plaquemines, and St. John the Baptist--do not have data available because of the extensive commuting out of the parishes to places of employment in contiguous parishes.

In column 3 of Table 1, headed real per capita income, 1968, the parishes are ranked (the rankings are denoted in parentheses) in decreasing order, i.e., from the highest to the lowest. For the nation in 1968 the money per capita income was $3421. This figure compared to a Louisiana average of $2645, 77.3 percent of the United States average. When these two per capita figures are converted to real per capital income, 1968, using the index 121.2 (1957-59 = 100), their values are $2823 and $2182, respectively. Only two Louisiana parishes, Vernon and Webster, show values in excess of the national average. Within the State, 15 parishes have per capita values greater than the State average; of these, 10 are coastal region parishes. Computation of the average value of income for the coastal zone parishes in column 3 yields a value of $2144 as compared to an average for the rest of the State of $1598. Note that these figures do not represent real per capita income in the coastal zone versus the rest of the State but are merely an average of the individual parishes contained therein.

Table 2 summarizes annual growth rates of real per capita income, 1959-68, for the Louisiana parishes. The United States growth rate for

TABLE 1

PER CAPITA INCOME (MONEY AND REAL)
BY PARISH, 1968 AND 1959

Parish	(1) 1968 Per capita income ($)	(2) 1959 Per capita income ($)	(3) 1968*** Real per capita ($) (1957-59 = 100, index 121.2)[t]		(4) 1959 Real per capita ($) (1957-59 = 100, index 101.5)[t]
Ascension	3035	1067	2504	(7)	1051
Assumption	1758	1241	1450	(33)	1223
Calcasieu	3134*[2]	1969*[2]	2586*[2]	(6)	1940*[2]
Cameron	3003	1533	2478	(8)	1510
East Baton Rouge	3173*[3]	2121*[3]	2618*[3]	(5)	2090*[3]
Iberia	2336	1402	1927	(17)	1381
Iberville	2567	1155	2118	(14)	1138
Jefferson	3250*[1]	2133*[1]	2682*[1]	(4)	2101*[1]
Lafayette	2573*[4]	1676*[4]	2123*[4]	(12)	1651*[1]
Lafourche	2056	1504	1696	(27)	1482
Livingston	N.A.**	N.A.**	N.A.*		N.A.*
Orleans	3250*[1]	2133*[1]	2682*[1]	(4)	2101*[1]
Plaquemines	N.A.**	N.A.*	N.A.*		N.A.*
St. Bernard	3250*[1]	2133*[1]	2682*[1]	(4)	2101*[1]
St. Charles	3325	1788	2743	(3)	1762
St. James	2444	1235	2017	(16)	1217
St. John	N.A.**	N.A.**	N.A.**		N.A.**
St. Martin	1265	717	1044	(55)	706
St. Mary	2818	1491	2325	(10)	1469
St. Tammany	3250*[1]	2133*[1]	2682*[1]	(4)	2101*[1]
Tangipahoa	1688	1141	1393	(37)	1124
Terrebonne	2468	1447	2036	(15)	1426
Vermilion	2079	1401	1715	(23)	1380
West Baton Rouge	1830	1086	1510	(31)	1070
Acadia	1892	1125	1561	(29)	1108
Allen	1895	1331	1564	(28)	1311
Avoyelles	1470	973	1213	(50)	959
Beauregard	1588	1300	1310	(41)	1281
Bienville	1424	1031	1175	(51)	1016
Bossier	2884*[6]	1945*[6]	2380*[6]	(9)	1916*[6]
Caddo	2884*[6]	1945*[6]	2380*[6]	(9)	1916*[6]
Caldwell	1618	990	1335	(39)	975
Catahoula	1714	850	1414	(35)	837
Claiborne	1976	1215	1630	(27)	1197
Concordia	1601	1297	1321	(40)	1278
Desoto	1579	1112	1303	(42)	1096
East Carroll	2113	1450	1743	(21)	1429
East Feliciana	1318	823	1087	(54)	811
Evangeline	1487	878	1227	(48)	865
Franklin	2010	904	1658	(24)	891
Grant	1565	1098	1291	(44)	1082
Jackson	1983	1414	1636	(26)	1393
Jefferson Davis	2570	1494	2120	(13)	1472
Lasalle	1575	1317	1300	(43)	1298
Lincoln	1990	1336	1642	(25)	1316
Madison	1704	1094	1406	(36)	1078
Morehouse	2187	1359	1804	(20)	1339
Natchitoches	1771	1005	1461	(32)	990
Ouchita	2708*[5]	1654*[5]	2234*[5]		1630*[5]
Pointe Coupee	1405	835	1159	(52)	823
Rapides	2278	1438	1880	(18)	1417
Red River	1750	891	1444	(34)	878
Richland	1883	911	1554	(30)	898
Sabine	1484	1112	1224	(49)	1096
St. Helena	1494	759	1233	(47)	748

(continued)

TABLE 1 (continued)

Parish	(1) 1968 Per capita income ($)	(2) 1959 Per capita income ($)	(3) 1968*** Real per capita ($) (1957-59 = 100, index 121.2)[t]		(4) 1959 Real per capita ($) (1957-59 = 100, index 101.5)[t]
St. Landry	1554	911	1282	(45)	898
Tensas	1687	1037	1392	(38)	1022
Union	1396	966	1152	(53)	952
Vernon	3701	1025	3054	(1)	1010
Washington	2084	1686	1719	(22)	1661
Webster	3507	1644	2894	(2)	1620
West Carroll	1534	956	1266	(46)	942
West Feliciana	2226	721	1837	(19)	710
Winn	1990	1141	1642	(25)	1124

*These per capita incomes represent dollar figures for the SMSA designation

[1]SMSA = New Orleans (Jefferson, Orleans, St. Bernard and St. Tammany parishes)

[2]SMSA = Lake Charles (Calcasieu Parish)

[3]SMSA = Baton Rouge (East Baton Rouge Parish)

[4]SMSA = Lafayette (Lafayette Parish)

[5]SMSA = Monroe (Ouachita Parish)

[6]SMSA = Shreveport (Bossier and Caddo parishes)

**Data are not available for these parishes because of the extensive commuting out of the parishes to places of employment in contiguous parishes. Income figures are not available for parishes where net commuting income is greater than 10 percent of total personal income.

***The rankings, in decreasing order of real per capita income, are given in the parentheses. SMSA incomes are represented by one ranking number, and those parishes with identical per capita incomes are given the same rank.

[t]The indexes are from The Federal Reserve Bulletin.

Source: Department of Commerce, Regional Economics Division of the Office of Business Economics.

this same period was 3.6 percent, and the State of Louisiana had a growth rate of 4.5 percent. The disparity between the United States rate and the State value is consistent with, and explanatory of, the fact that the ratio between Louisiana's per capita income and the United States' total converged toward one in the last decade. In 1960 Louisiana's per capita income was 75.7 percent of the U.S. average, but by 1968 this percentage had increased to 77.3 percent. Of course, this does not imply a convergence in absolute amounts, only in percentages.

Another measure of economic growth is the relative growth chart developed by Edgar M. Hoover and Joseph L. Fisher (1949). This chart brings together data on relative (percentage-wise) changes in population, total income, and per capita income in order to show the interplay of the key elements in regional growth. The relative growth chart is shown in Figure 5, where the solid horizontal axis measures 1968

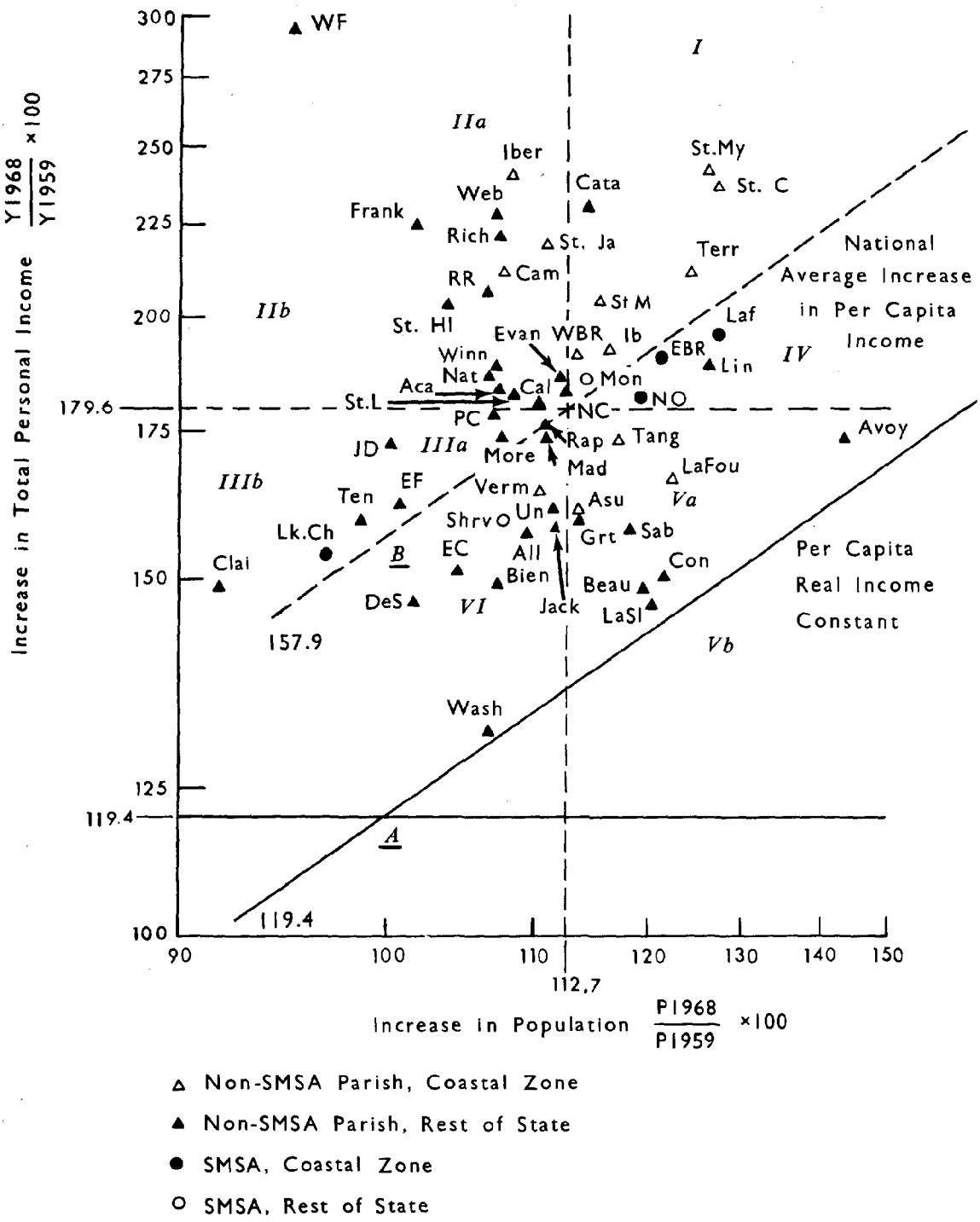


Fig. 5. Relative economic growth of Louisiana parishes, 1959-1968.

TABLE 2

ANNUAL GROWTH RATES OF REAL PER CAPITA INCOME,
LOUISIANA PARISHES, 1959-1968

Parish	1959-68 rate	Parish	1959-68 rate
Ascension	15.4	Catahoula	7.7
Assumption	2.1	Claiborne	4.0
Calcasieu	3.7	Concordia	0.4
Cameron	7.1	Desoto	2.1
East Baton Rouge	2.8	East Carroll	2.4
Iberia	4.4	East Feliciana	3.8
Iberville	9 6	Evangeline	4.6
Jefferson	3.1	Franklin	9.6
Lafayette	3.2	Grant	2.2
Lafourche	1.6	Jackson	1.9
Livingston	N.A.	Jefferson Davis	4.9
Orleans	3.1	Lasalle	0.0
Plaquemines	N.A.	Lincoln	2.7
St. Bernard	3.1	Madison	3.4
St. Charles	6.2	Morehouse	3.9
St. James	7.3	Natchitoches	5.3
St. John	N.A.	Ouachita	4.1
St. Martin	5.3	Pointe Coupee	4.5
St. Mary	6.5	Rapides	3.6
St. Tammany	3.1	Red River	7.2
Tangipahoa	2.7	Richland	8.1
Terrebonne	4.8	Sabine	1.3
Vermilion	2.7	St. Helena	7.2
West Baton Rouge	4.6	St. Landry	4.8
Acadia	4.5	Tensas	4.0
Allen	2.1	Union	2.3
Avoyelles	2.9	Vernon	22.5
Beauregard	0.3	Washington	0.4
Bienville	1.7	Webster	8.7
Bossier	2.7	West Carroll	3.8
Caddo	2.7	West Feliciana	17.6
Caldwell	4.1	Winn	5.1

N.A. - Not Available

Source: Computed from Table 1

population as a percentage of 1959 population and the solid vertical axis measures 1968 total personal income in current prices as a percentage of 1959 total income, also in current prices. The data for each parish, summarized in Table 3, are plotted on a double logarithmic scale, which is characterized by equal distances representing equal ratios. The origin of the diagram (A) is at 100 for population, which represents population unchanged between the two dates, and at 119.4 for total personal income at current prices. Since prices increased by 19.4 percent between the two dates, as measured by the consumer price index, an increase in total money income of 19.4 percent between 1959 and 1968 is the same as an unchanged total real income.

TABLE 3

RELATIVE PARISH ECONOMIC GROWTH, 1959-1968

Parish		$\frac{\text{Pop. 1968}}{\text{Pop. 1959}} \times 100$	$\frac{\text{Income 1968}}{\text{Income 1959}} \times 100$
Ascension	(ASC)	125.8	354.9
Assumption	(ASU)	113.6	160.6
Calcasieu		X*	X*
Cameron	(CAM)	107.4	211.3
East Baton Rouge		X*	X*
Iberia	(IB)	116.1	192.9
Iberville	(IBER)	108.1	239.6
Jefferson		X*	X*
Lafayette		X*	X*
Lafourche	(LAFOU)	122.4	166.3
Livingston		N.A.	N.A.
Orleans		X*	X*
Plaquemines		N.A.	N.A.
St. Bernard		X*	X*
St. Charles	(St. C)	127.3	235.9
St. James	(ST. JA)	111.0	219.2
St. John		N.A.	N.A.
St. Martin	(ST. M)	115.7	203.6
St. Mary	(ST. MY)	126.4	240.1
St. Tammany		X*	X*
Tangipahoa	(TANG)	117.3	173.1
Terrebonne	(TERR)	124.2	211.6
Vermilion	(VERM)	110.7	163.9
West Baton Rouge	(WBR)	113.7	191.0
Acadia	(ACA)	108.3	182.3
Allen	(ALL)	109.7	157.2
Avoyelles	(AVOY)	141.7	172.8
Beauregard	(BEAU)	119.6	145.6
Bienville	(BIEN)	107.3	148.5
Bossier		X*	X*
Caddo		X*	X*
Caldwell	(CALD)	110.1	181.2
Catahoula	(CATA)	114.3	230.1
Claiborne	(CLAI)	91.6	148.7
Concordia	(CON)	121.8	
Desoto	(DES)	101.7	144.3
East Carroll	(EC)	104.2	151.9
East Feliciana	(EF)	101.0	162.1
Evangeline	(EVAN)	111.9	188.8
Franklin	(FRANK)	101.6	224.9
Grant	(GRT)	113.7	160.3
Jackson	(JACK)	112.2	157.7
Jefferson Davis	(JD)	100.3	172.6
Lasalle	(LASL)	120.3	143.9
Lincoln	(LIN)	126.7	188.7
Madison	(MAD)	111.1	172.3
Morehouse	(MORE)	107.5	173.0
Natchitoches	(NAT)	106.3	187.1
Ouachita		X*	X*
Pointe Coupee	(PC)	106.8	179.5
Rapides	(RAP)	110.8	175.9
Red River	(RR)	106.1	207.1
Richland	(RICH)	107.2	221.6
Sabine	(SAB)	118.0	157.6
St. Helena	(ST. HL)	103.3	204.5
St. Landry	(ST. L)	107.7	183.6
Tensas	(TEN)	98.3	159.0
Union	(UN)	111.5	160.6
Vernon	(VER)	336.7	1213.3
Washington	(WASH)	106.7	131.8
Webster	(WEB)	106.9	227.9
West Carroll	(WC)	112.9	181.7
West Feliciana	(WF)	95.1	294.4
Winn	(WINN)	107.0	187.2

*These values are computed according to the SMSA classifications:

SMSA		Parish(es)	$\frac{\text{1968 Pop.}}{\text{1959 Pop.}} \times 100$	$\frac{\text{1968 Income}}{\text{1959 Income}} \times 100$
Baton Rouge	(EBR)	East Baton Rouge	121.1	188.1
Lafayette	(LAF)	Lafayette	127.3	195.6
Lake Charles	(LKCH)	Calcasieu	96.8	154.0
Monroe	(MON)	Ouachita	114.2	186.9
New Orleans	(N.O.)	Jefferson Orleans St. Bernard St. Tammany	119.1	181.5
Shreveport	(SHRV)	Bossier Caddo	107.7	159.8

Each parish, or SMSA, is represented by a point on the graph; coordinates are determined by percentage changes in population and in total personal income between the two dates. Any point to the right of the solid vertical axis represents an increase in population; any point above the solid horizontal axis, an increase in real total personal income.

The solid diagonal line drawn through the origin in Figure 5 is the locus of all points on the chart for which per capita income in current dollars increased 19.4 percent, or for which per capita real income remained unchanged between 1959 and 1968. Any point above this line represents an increase in per capita real income.

The origin of the dashed areas shown in Figure 5 (B) is the United States average increases from 1959 to 1968--12.7 percent for population, 79.6 percent for total personal income in current prices, and 57.9 percent for per capita income in current prices. Any point to the right of the dashed vertical axis represents a population increase greater than the national average, and any point above the dashed diagonal axis, a per capita income increase greater than the national average.

The various combinations of increases or decreases relative to the national average are as follows:

I. Above-average increases in population, total income, and per capita income:

The non-SMSA coastal zone parishes fall mainly into this category; St. Mary and St. Charles parishes lead in both relative population increase and relative increase in total income. Only one SMSA, Monroe, is located in this quadrant, and only two of the non-SMSA parishes not in the coastal zone are represented.

II. Above-average increases in total and per capita income, below-average increases in population:

A large proportion of the non-coastal parishes fall into this group. In one parish--West Feliciana--population actually declined between 1959 and 1968, whereas total income and per capita income increased quite substantially. Three coastal zone parishes--Cameron, Iberville, and St. James--are located in this category, and all three outranked the majority of non-coastal zone parishes in terms of total and per capita income increases.

III. Above-average increases in per capita income, below-average increases in population and total income:

All of the non-SMSA parishes in this category are non-coastal zone parishes. Two of those included showed actual declines in population for the designated period. One SMSA, Lake Charles (coastal), falls into this category.

The groups of parishes comprising the first three categories have the common feature of an above-average increase in per capita income. In the three remaining categories, per capita income increased less rapidly than for the nation as a whole.

IV. Above-average increases in population and total income, below-average increases in per capita income:

Three SMSA's, all in the coastal zone, are located in this category. The East Baton Rouge SMSA falls extremely close to the line denoting "national average increase in per capita income," and the Lafayette and New Orleans SMSA's are not too far removed. Only one parish, Lincoln, falls into this area.

V. Above-average population increases, below-average increases in total and per capita income:

The parishes in this category are predominantly non-coastal. Only three coastal zone parishes--Assumption, Lafourche and Tangipahoa--have the characteristics of this quadrant. Four of the parishes in this category deviate significantly from the national trend in per capita income: Avoyelles, Beauregard, Concordia, and Lasalle, all non-coastal area parishes.

VI. Below-average increases on all three counts:

One SMSA area falls into this category, Shreveport (non-coastal). The majority of the parishes are those of north and central Louisiana, e.g., Desoto, Bienville, East Carroll, Jackson, etc. Only one coastal area parish, Vermilion, is part of this category.

Percentage-wise increases in per capita income for the State have not been at all closely correlated with growth in population. Of the 31 parishes in which per capita income increased more rapidly than the national average, 22 had a below-average increase in population.

Of the total classifications in Figure 5 (Table 4), 52.7 percent are parishes, or SMSA's, fitting into the first three categories, i.e., categories featuring above-average increases in per capita income. Within category I--above-average increases in population, total income, and per capita income--70 percent are coastal zone parishes. Of the coastal zone parishes not in category I, 42.9 percent are in either II or III.

As to the various causes of economic growth, much of the model building for regional economies attempts to reproduce a highly simplified form of the prevailing relations between population changes, investment in capital (whether material or embodied in human beings), and technological changes as the independent variables and per capita product as the dependent variable. In addition, natural resources and geographical factors are recognized as significant contributors to

TABLE 4

ECONOMIC CATEGORIES OF LOUISIANA PARISHES

Parish	Category	Parish	Category
Ascension	I	Catahoula	I
Assumption	V	Claiborne	III
Calcasieu (SMSA)	VI	Concordia	V
Cameron	II	Desoto	VI
East Baton Rouge (SMSA)	IV	East Carroll	VI
Iberia	I	East Feliciana	III
Iberville	II	Evangeline	II
Jefferson (SMSA)	IV	Franklin	II
Lafayette (SMSA)	IV	Grant	V
Lafourche	V	Jackson	VI
Livingston		Jefferson Davis	III
Orleans (SMSA)	IV	Lasalle	V
Plaquemines N.A.		Lincoln	IV
St. Bernard (SMSA)	IV	Madison	VI
St. Charles	I	Morehouse	III
St. James	II	Natchitoches	II
St. John N.A.		Ouachita (SMSA)	I
St. Martin	I	Pointe Coupee	III
St. Mary	I	Rapides	III
St. Tammany (SMSA)	IV	Red River	II
Tangipahoa	V	Richland	II
Terrebonne	I	Sabine	V
Vermilion	VI	St. Helena	II
West Baton Rouge	I	St. Landry	II
Acadia	II	Tensas	III
Allen	VI	Union	VI
Avoyelles	V	Vernon	
Beauregard	V	Washington	VI
Bienville	VI	Webster	II
Bossier (SMSA)	VI	West Carroll	I
Caddo (SMSA)	VI	West Feliciana	II
Caldwell	II	Winn	II

Categories are described on pages 20 and 21.

economic growth. In Louisiana much of the growth to date has been directly related to mineral resources (Melton, 1969). This dependency is seen through the somewhat disproportionate mineral production that has occurred within the State. In 1966 Louisiana contributed 14.97 percent of the dollar value of minerals produced in the United States; and of this State total, 80.49 percent originated in the coastal zone.

In general, the potential sources of growth are many. For example, levels of capital per worker, education per worker, average hours worked, and the allocation of resources all contribute to output. The main thrust of these and other factors of economic growth comes from increasing the output per unit of input. Basically, there are five groups of reasons for changes in output per unit of input.

1. Advances in technological and managerial knowledge, including business organization, permit more production with the same inputs.

2. At any time there is some allocation of resources that would yield a maximum total product. This allocation would be such that every input--each individual worker, in the case of labor--is used where the value of its marginal product is greatest.

3. Obstacles against the most efficient utilization of resources may be deliberately imposed by governments, business, or labor unions in the use to which they are put. Changes in these restrictions may affect the growth rate.

4. Enlargement of markets makes possible the reduction of unit costs by greater specialization and thus increases output per unit of input.

5. The above reasons are from the "supply" rather than the "demand" side of the determinants of actual output. But a region's actual output may also be altered because of changes in the extent to which its available resources are used (Denison, 1967).

Investment, or technological advancement, as means of increasing output has several forms. Three of these types--real capital accumulation, investment in human capital, and migration as an investment--will be discussed briefly below and treated in detail later. With regard to the other reasons for changes in output listed above, (2) and (3) have experienced extended scrutiny in Louisiana. For example, it has often been asserted that the State has unlimited resources and that only corruption is holding it back economically (Smith, 1971). The degree of potential within the State is extremely speculative. Nevertheless, Louis J. Rodriguez (1971) concludes that it appears that the level of Louisiana's economic performance is not commensurate with its natural resources potential. However, the State's resource base is not as unlimited as many would like to believe. If Louisiana is to achieve a much needed improved rate of economic growth, it must cast aside its traditional reliance on natural resource superiority to do the job.

As to point (4) above, the extent of Louisiana's proximity to final markets is adequate to a limited degree. The State's geographical location makes it, via the New Orleans Port, a gateway to the mid-continent of the United States, and the deepwater ports at Baton Rouge and Lake Charles provide additional access to foreign regions. However, in spite of these advantages the State is poorly situated relative to important United States markets, e.g., Atlanta, Georgia, a fact which is a deterrent to industrial location in the area because of the increased cost of transporting finished products (Chaffin, 1968).

The rate of real investment, or capital formation, is the means by which the stock of plant and equipment is increased--a vital force in the changing structure of per capita output. There appear to be no serious barriers to the flow of capital either interstate or intrastate within our national boundaries. However, the opportunities and inducements for investment in a particular region are varied. In 1963 only 1.85 percent of the capital expenditures in the United States were made in Louisiana. In this respect Louisiana presents a substandard performance in the one function which is mentioned more than any other as a factor of economic growth. Furthermore, of this somewhat meager outlay on capital expenditures, the coastal zone, heretofore hailed as a major source of economic growth, provided only 54.3 percent of the State total.

Recently another form of capital investment, investment in human inputs, has captured the attention of economists and others interested in the maximum use of all available resources. It is not obvious that all skills and knowledge that people acquire are a form of capital. However, it has been observed in Western societies that most national outputs have grown faster than the accompanying increases in non-human inputs. Investment in human capital is probably the major explanation (Schultz, 1961). Although the benefits to our national economy from the overall progress of human investment are apparent, Louisiana has suffered from a somewhat inferior program. In fact, a principal factor holding back the State's rate of economic growth is the skill level of the people (Melton, 1969). The median years of school completed by persons 25 years and older in Louisiana in 1960 was 8.6 for the male population and 9.0 for the female counterpart, and the composite figure was 8.8 years.[1] Given this total value, only two states in the coterminous United States [Kentucky (8.7) and South Carolina (8.7)] had a lower median value. A detailed analysis of education and the returns to schooling will be given later.

Among various sectors of the national economy, manufacturing is one of the largest and most dynamic in terms of total employment and output. In 1965, 31 percent of the national income originated in manufacturing. A useful measure of manufacturing activity is provided by value added by manufacturing, which is a "net" figure derived by subtracting the cost of raw materials, semi-manufactured parts and components, supplies, fuels, purchased electrical energy, and contract work from the value of shipments of manufacturing establishments. This measure avoids duplication in the value of shipments which results from the use of products of some establishments as materials by others. As

---

[1]It is accepted here that "average (or median) years of schooling" is not a precise measure of knowledge, especially across regions. Many factors, above and beyond mere time spent in a classroom, determine the quality of output. However, in quantitative analysis, such a measure is a reasonable proxy.

such, it constitutes the best value available for comparing the relative economic importance of manufacturing among regions. Louisiana, in 1963, had 1.00 percent of the national value added by manufacturing, while 0.83 percent of the total U.S. employees in manufacturing were located in the State. There are various reasons for regional concentration of manufacturing activities. In particular, such a factor as straightforward ties with intermediate manufacturing markets is likely to be important. Hence the Middle Atlantic and the East North Central states produce over one-half of manufacturing activity, both in terms of number of employees and value added.[2]

More generally, the employment structure of Louisiana's nonagricultural sectors is noticeably disparate vis-a-vis the national distribution. The complete percentage distribution of employment (Table 5) shows that mining and contract construction are two areas in which the Louisiana economy finds greater concentration than the national distribution. The State's focus on mining operations stems from the resource base which, in 1968, placed Louisiana second in the U.S. in the value of mineral production, with the principal elements being petroleum, natural gas, natural gas liquids, and sulfur. The value of construction contracts in Louisiana in 1968 represented 1.77 percent of the national total. Furthermore, 8.3 percent of the national mining employment and 2.4 percent of the contract construction total occurs within the State boundaries.

As a barometer of industrial income-generating power in the United States, the percentage of national income originating in each of the sectors of Table 5A is presented in Table 5B.

Mining and construction produce a diminutive proportion of national income: 6.0 percent of the total. Louisiana pays 6.9 percent of its total wage and salary disbursements to the mining population and 10.2 percent to the contract construction sector. Furthermore, of these State totals, 81.1 percent of the mining disbursements and 77.4 percent of the contract construction payments are made within the 24-parish coastal zone.

The importance of agriculture in the aggregate income of a state is clearly related to its level of economic advancement. Farm families account for much poverty and, consequently, a large agricultural sector usually indicates a less highly developed economy. The agricultural drag on a state's economy has been verified in several empirical studies (McDonald, 1961). Specifically for 1960, cross-sectional computation of State patterns renders a simple correlation coefficient of -0.38 between State per capita income and percentage of income originating in the agricultural sector, i.e., high per capita income figures follow relatively in phase the indexes of low agricultural dependency (Rice, 1970).

---

[2]The Middle Atlantic states are New York, New Jersey, and Pennsylvania. The East North Central states are Ohio, Indiana, Illinois, Michigan, and Wisconsin.

TABLE 5A

PERCENTAGE DISTRIBUTION OF EMPLOYMENT ON NONAGRICULTURAL PAYROLLS, 1969

	Nation	Louisiana
Total	100.0	100.0
Mining	0.9	5.0
Contract Construction	4.9	8.0
Manufacturing	28.6	17.3
Transportation and Public Utilities	6.3	8.9
Wholesale and Retail Trade	20.8	21.8
Finance, Insurance, and Real Estate	5.1	4.7
Services	16.0	14.5
Government	17.4	19.8

Source: U.S. Department of Labor, Bureau of Labor Statistics, Employment and Earnings, States and Areas 1939-69. Bull. 1370-7, p. xiii.

TABLE 5B

NATIONAL INCOME, BY INDUSTRIAL ORIGIN, 1968, U.S.

Industry	Dollar Value (In Billions of Dollars)	Percent of Total
All Industries	714.4	100.0
Mining and Construction	42.9	6.0
Manufacturing	215.4	30.2
Transportation and Communications	41.4	5.8
Wholesale and Retail Trade	105.2	14.7
Finance, Insurance, and Real Estate	78.2	10.9
Services	86.1	12.1
Government and Government Enterprises	105.0	14.7
Rest of World	40.2	5.6

Source: U.S. Department of Commerce, Bureau of the Census, 1970, Statistical Abstract of the United States. Table 481, p. 317.

Fortunately, Louisiana does not suffer from a large agricultural dependency. In 1967 only 4.2 percent of the total State employment was in agriculture, and, furthermore, this percentage represented a declining trend from 1959, when the figure was 8.2 percent. These values compare with national averages of 8.5 percent employed in agriculture in 1960 and 6.7 percent in 1967. Hence, the relatively decreasing importance of agriculture as an income generator (in 1950, 7.01 percent of national income originated on farms, whereas in 1967 this percentage had declined to 3.04) does not substantially place Louisiana in the agriculture syndrome that pervades many states and functionally contributes to their underdevelopment.

The farm income generated within Louisiana in 1969 represented 1.27 percent of the total U.S. farm receipts. The principal commodities for the State, in order of cash receipts for that year, were rice, cattle, soybeans, and sugarcane. This hierarchy of cash crops shifted somewhat during the 1960's. For example, in 1964 cotton was the top cash-producing crop for the State of Louisiana. Also, in 1967 Louisiana produced 6.29 percent of the total farm value of cotton and cottonseed in the U.S., but by 1969 this percentage had dropped to 5.09. This declining trend, plus the decreasing farm value of cotton nationally, accounts for the declining cash receipts from cotton in Louisiana. In 1960 the farm value of cotton, excluding linters, was $2,150 million, whereas preliminary reports on the 1969 produce indicated a value of $1,076 million. The crop which supplanted cotton as Louisiana's chief cash crop, rice, has made significant national gains. The farm value of rice in 1960 was $248 million, but by 1969 this figure had increased to $449 million.

Within Louisiana, the coastal zone is less dominant in the percentage of agricultural production than in industrial output. For example, in 1968, of the State's total earnings in contract construction, the coastal zone produced 77.27 percent, and in manufacturing, 69.62 percent of the total, whereas it provided only 27.97 percent of total farm earnings. In the production of specific crops, particularly the leading cash crops of the State, the coastal zone produces less than half the total output; e.g., in 1963, 41.13 percent of the total State production of rice and only 2.59 percent of the total cotton output was produced in the coastal region. However, as emphasized above, the prospects for economic growth and increased output in Louisiana are not highly dependent on a strong agricultural sector. This trend is corroborated by the fact that in 1967 only 0.65 percent of the State's income disbursements went to agriculture. This fact is somewhat a function of low per capita farm incomes vis-a-vis other sectors, although Louisiana did produce net income per farm which was 104.9 percent of the United States value, but it also reflects the diminutive proportion of the population which depends on farming. Even nationally the farm population had diminished to 5.1 percent of the total population in 1969 compared to 15.3 percent in 1950.

To present a sketch of the total Louisiana economy and the relative importance of the coastal region, Figure 6 delineates the total State

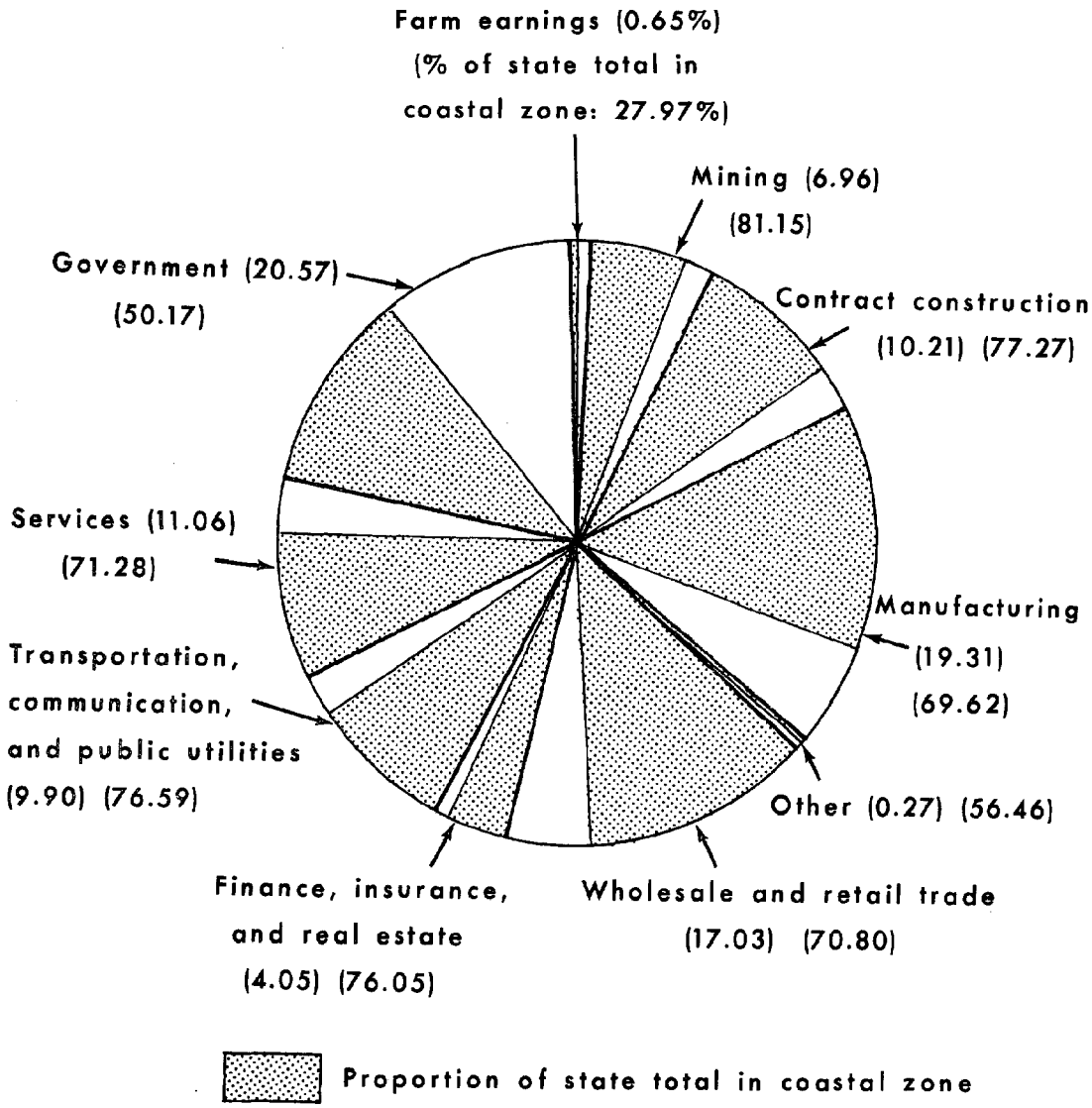


Fig. 6. Percentage distribution of income payments to individuals in Louisiana and percentage of State distribution in coastal zone, 1967-1968. First figure in parentheses following industry designation indicates percentage of State income payments to this sector; second denotes percentage of sector located in the coastal zone. Sources: Percentage of income payments to the various sectors from U.S. Department of Commerce, 1969, Personal Income by States since 1929, in Survey of Current Business. Percentage of State totals in coastal region based on specially requested data from the 1 percent Social Security sample, Regional Economics Information System, Office of Business Economics, U.S. Department of Commerce, Washington, D.C.

income payments among the various sectors. Within each sector, the percentage of income originating in the coastal region is denoted by the shaded area.

CHAPTER IV

SHIFT-SHARE ANALYSIS AS A TOOL FOR REGIONAL AND STATE ECONOMIC ANALYSIS

Employment Shift Ratios

One of the basic and most frequently used tools of measurement of employment and income change in a region is the shift ratio. If employment is the relevant variable to be studied, then calculation is made to determine the rate of growth of employment in a given industry over a 10-year intercensal period on an overall or national basis. Then, for each region or state, computation is made to ascertain the difference between the actual employment in the industry and the employment that would have resulted had the region or state's rate of growth in the industry conformed to the national rate. A shift of industry into a region or state is signified by a positive sign; for the opposite situation the sign is negative. The shift ratio for an industry involves summing all the positive or negative shifts in employment to express the result as a proportion of total industry employment (Bretzfelder, 1970).

Data are not available at present for the 1960-1970 intercensal period. Accordingly, analysis of employment shift data for the 24-parish coastal area is presented in Table 6 for the periods 1940-1950 and 1950-1960.

In Table 6 the term "national growth" represents the employment increase in each particular industry that would have occurred in the Louisiana coastal economy if the particular industry had grown at the national rate for all industries combined--it equals employment in industry i in the base year times the national growth rate for all industries. "Industrial mix" represents adjustment for the fact that the national growth rate for industry i was greater than or less than the employment growth rate for all industries in the nation--it equals employment in industry i in this region for the base year times the national growth rate for industry i minus the national growth rate for all industries. "Regional share" reflects the fact that employment in industry i expanded more or less rapidly in the coastal economy than in the nation as a whole over the period of measurement--it is equal to employment in industry i in the base year times the growth rate for industry i in the coastal economy minus the growth rate for industry i for the nation (Blizzard and Burford, 1971).

Shift-Share Ratios

Shift-share ratios of income provide an analytical tool for analyzing trends in the growth of regional personal income. Use of the shift-share technique permits decomposition of the growth of a region or state's

TABLE 6

EMPLOYMENT AND COMPONENTS OF EMPLOYMENT CHANGE, LOUISIANA COASTAL REGION, 1940-1950, 1950-1960

	Employment in Years			1940-1950 Changes Related to				1950-1960 Changes Related to			
	1940	1950	1960	National Growth	Indus. Mix	Regional Share	Total Change	National Growth	Indus. Mix	Regional Share	Total Change
Agriculture	69,188	47,338	24,419	18,448	-30,789	-9,410	-21,751	7,328	-25,563	-4,686	-22,921
Forestry and Fisheries	6,039	6,994	3,648	1,610	- 646	- 12	952	1,083	- 2,868	-1,560	- 3,345
Mining	6,703	12,677	24,643	1,787	- 1,695	6,502	6,594	1,962	- 5,730	15,732	11,964
Contract Construction	21,916	39,514	49,643	5,843	8,871	2,893	17,607	6,117	- 2,015	6,006	10,108
Food & Kindred Products Mfg.	17,195	20,903	23,960	4,585	206	-1,083	3,708	3,236	2,801	-2,989	3,048
Textile Mill Products Mfg.	2,670	1,887	2,573	712	- 507	- 988	- 783	292	- 728	1,123	687
Apparel Mfg.	3,648	4,364	4,537	973	233	- 492	714	676	- 284	- 218	174
Lumber, Wood Products, Furniture Mfg.	8,387	8,755	4,862	2,236	3	-1,870	369	1,355	- 2,259	-2,994	- 3,898
Printing and Publishing Mfg.	3,437	4,617	5,284	916	296	- 34	1,547	715	826	- 877	664
Chemicals and Allied Products Mfg.	4,667	7,991	15,282	1,244	1,078	999	3,321	1,237	1,247	4,803	7,287
Electrical and Other Machinery Mfg.	1,577	2,437	4,383	420	1,068	- 629	859	377	758	812	1,947
Motor Vehicles and Equipment Mfg.	251	210	310	67	61	- 169	- 41	33	- 39	107	101
Other Transportation Equipment Mfg.	2,029	4,155	6,511	541	619	966	2,126	643	3,607	-1,895	2,355
Other and Miscellaneous Mfg.	15,526	26,692	34,335	4,140	963	6,055	11,158	4,132	854	2,643	7,629
Railroads and Railway Express	8,302	11,279	7,923	2,214	- 382	1,146	2,978	1,746	- 5,380	271	- 3,363
Trucking and Warehousing	5,081	5,575	7,879	1,355	615	-1,479	491	863	792	647	2,302
Other Transportation	14,515	22,901	26,303	3,870	4,702	- 189	8,383	3,545	- 2,931	2,794	3,408
Communications	3,448	6,249	7,781	919	1,841	38	2,798	967	1	562	1,530
Utilities and Sanitary Service	3,842	7,616	9,918	1,024	672	2,075	3,771	1,179	- 84	1,203	2,298
Wholesale Trade	12,625	22,402	25,500	3,366	4,697	1,704	9,767	3,468	- 851	470	3,087
Food and Dairy Products Stores	15,505	18,354	18,905	4,134	- 1,768	481	2,847	2,841	- 3,212	918	547
Eating and Drinking Places	11,890	19,076	20,695	3,170	2,901	1,106	7,177	2,953	- 1,736	382	1,599
Other Retail Trade	30,976	48,631	61,940	8,259	3,717	5,669	17,645	7,528	924	4,863	13,315
Finance, Insurance, and Real Estate	10,914	15,711	25,722	2,910	437	1,452	4,799	2,432	3,896	3,676	10,004
Hotels and Other Personal Services	15,722	17,533	20,794	4,192	2,594	204	6,990	2,714	- 1,964	2,507	3,257
Private Households	36,012	26,090	34,771	9,602	-20,346	792	- 9,952	4,039	365	4,279	8,683
Business and Repair Services	6,738	11,636	16,063	1,797	1,664	1,435	4,896	1,801	838	1,780	4,419
Entertainment, Recreation Services	4,132	6,165	4,963	1,102	- 87	1,016	2,031	954	- 857	1,301	1,398
Medical, Other Professional Serv.	26,787	43,983	73,207	7,142	4,634	5,411	17,187	6,808	18,693	3,695	29,196
Public Administration	13,024	22,449	28,947	3,473	5,561	391	9,425	3,475	2,671	337	6,483
Armed Forces	448	4,453	8,650	119	936	2,949	4,004	689	2,382	1,127	4,198
Industry Not Reported	4,481	6,400	24,774	1,195	- 211	932	1,916	991	12,442	4,954	18,387
TOTAL	387,675	505,037	629,125	103,372	- 8,062	13,956	109,266	78,180	- 3,404	45,958	126,548

Source: U.S. Department of Commerce, Office of Business Economics, 1965, Growth Patterns in Employment by County, 1940-1950 and 1950-1960. Vol. 5, Southeast.

personal income into three components, which facilitates identification of factors underlying income trends in the study area.

The income growth of a region relative to the national growth can be factored into two elements: (1) The effect of differences between the income structure of the region and that of the nation (the component-mix effect) and (2) the effect of differences between regional and national growth rates in each source of income (the regional-share effect). The regional-share effect provides the major explanation of the relative income experience of a region, as evidenced by the high correlation between it and relative growth in total income. Where the regional share effect is positive, one would anticipate above-average growth in total income, and where negative, below-average income gains would be anticipated.

Components of income growth. The components of income growth for Louisiana from 1959 to 1969 are shown in Table 7. The data are categorized by income source as fast growth (growing at above-average rates) and slow growth (growing at below-average rates).

In Table 7 a regional increase in share of a fast-growing component increases that region's income growth, and the size of the increase depends on the proportion of the component located in the area. At the same time, a rise in a slow-growth factor has a negative effect on differential income growth. But this effect is relative inasmuch as an increase in any income component will raise total income. If a large proportion of an area's total economy consists of industries or types of income that are growing slowly nationally, total income in the area might expand at less than the national average rate even though each income source in the area were increasing at a rate above the average.

The competitive position of Louisiana. The regional-share effect may also be regarded as an indicator of the competitive position of a given geographic area vis-a-vis other areas. This is so because the regional-share effect compares the performance of an industry in a given area with that of the same industry in other areas. Of course, this economic interpretation of the regional-share effect requires distinction between industries whose markets are largely outside the region and those that supply primarily intraregional demand.

During the 1960's, the most rapid income growth occurred in the Southeast, where total personal income more than doubled while the nation gained only 95 percent. However, very little of the gain in the Southeast is attributable to Louisiana growth, where the component mix was negative and the regional share was small. Moreover, the competitive gain in Louisiana was quite low for the period. See Table 8.

For the Southeast as a whole, the component mix was negative over the period 1959-1969. This was so because of the importance of farm income to the region. Farm income had the smallest growth rate over the decade, and so income growth was retarded. Mining payrolls showed

TABLE 7

SOURCES OF INCOME GROWTH, 1959-1969, LOUISIANA
(Millions of Dollars)

	National Growth	Component Mix	Regional Share
Total Personal Income*	5,048	-122	144
Fast-Growing Components	2,493	890	- 72
Ordnance	1	**	90
State and Local Government	379	243	-116
Transfer Payments	409	214	- 66
Other Labor Income	144	74	- 1
Services	353	145	- 69
Property Income	694	164	- 33
Rubber and Miscellaneous Plastic Products	**	*	1
Electrical Machinery	1	*	28
Finance, Insurance, Real Estate	135	21	- 7
Machinery, Except Electrical	18	3	3
Automobiles	1	**	2
Instruments	1	**	**
Federal Civilian	113	9	5
Contract Construction	245	16	89
Slow-Growing Components	2,649	-879	236
Chemical and Allied Products	102	- 2	34
Wholesale and Retail Trade	571	- 16	33
Federal Military	111	- 4	37
Miscellaneous Non-manufacturing Industry	11	- 1	- 4
Fabricated Metal Products	29	- 3	20
Transportation, Communication, & Public Util.	377	-100	2
Stone, Glass, Clay	30	- 10	7
Textile Mill Products	2	- 1	- 1
Primary Metal Industries	23	- 8	2
Food and Kindred Products	119	- 57	2
Lumber and Wood Products	54	- 26	**
Farm Proprietors' Income	173	- 94	- 12
Non-farm Proprietors' Income	491	-267	- 11
Tobacco Manufacturing	2	- 1	- 2
Mining	261	-164	101
Leather and Leather Products	1	**	**
Petroleum Refining and Related Industries	91	- 64	- 19
Farm	42	- 35	- 11
Less: Personal Contributions to Social Insurance	94	134	21

*All components except property income, proprietors' income, transfer payments, and other labor income represent salaries and wages.

**Less than 0.05.

Source: U.S. Department of Commerce, 1970, Geographic Trends in Personal Income, in Survey of Current Business.

TABLE 8

SHIFT-SHARE COMPONENTS
(Millions of Dollars, 1959-1969)

	Number of Components Which Grew Faster or Slower than Nation		National Growth Effect	Component Mix Effect	Regional Share (Competitive) Effect
	Faster	Slower			
Southeast	34	4	57,056	-1,607	19,139
Virginia	31	5	6,607	- 59	1,899
West Virginia	12	23	2,775	- 148	- 830
Kentucky	27	11	4,397	- 188	338
Tennessee	31	6	5,095	- 129	828
North Carolina	34	2	6,358	- 402	2,342
South Carolina	34	3	2,958	- 140	1,067
Georgia	33	2	5,878	- 210	2,363
Florida	34	4	8,792	278	4,018
Alabama	23	14	4,433	- 127	116
Mississippi	28	9	2,429	- 154	388
Louisiana	18	15	5,048	- 122	144
Arkansas	31	6	2,284	- 205	465

Source: U.S. Department of Commerce, 1970, Geographic Trends in Personal Income, in Survey of Current Business.

a small rate of growth, a fact which especially slowed Louisiana income growth because of the high proportion derived from mining payrolls (oil, gas, sulfur, etc.). Considering all southeastern states, only West Virginia and Alabama lagged behind Louisiana in terms of competitive gains.

The Southeast did manage to make competitive gains in all but 4 of the slow-growth components of income, but Louisiana made gains in only 18 of the 38 components. Of these 18, 11 were slow-growth components.

The entire competitive gain--the regional share--for Louisiana was just adequate to offset the negative effects of the component mix and thereby yield for the State a positive net relative change in income. Louisiana placed at the bottom in a ranking of fast-growing states.

Louisiana clearly has an economy highly dependent upon slow growth, so that competitive gains are barely sufficient to offset the relative declines from adverse industrial mix. Furthermore, most of the competitive gains which were made during the 1960's were in these same slow-growth industries. This scarcely bodes well for the future. Future prospects are made even bleaker by the finding that the great bulk of income growth in Louisiana during the 10 years from 1959 to 1969 resulted solely from aggregative national growth. Only approximately 0.5 percent of the net income growth during this period resulted from local factors, and only 2.8 percent of the net income growth was a result of competitive gains.

Manufacturing in coastal Louisiana. Table 9 illustrates the distribution of manufacturing establishments by major industry group in the

TABLE 9

DISTRIBUTION OF MANUFACTURING ESTABLISHMENTS BY MAJOR INDUSTRY GROUP, LOUISIANA COASTAL PARISHES, 1967

	Total Establish-ments	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	CAO
Ascension	29	--	7	--	--	2	--	--	--	--	10	--	--	--	2	1	3	2	--	--	--	1	--
Assumption	10	--	8	--	--	--	1	--	--	1	--	--	--	--	--	--	--	--	--	--	--	--	--
Calcasieu	102	--	19			2	6	4		14	14	6			8	1	4	10	--	6	--	4	--
Cameron	7	--	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1	--	--	--	--	--
East Baton Rouge	194	--	29	1	--	3	16	3	1	30	22	6	2	1	18	2	21	19	2	6	2	6	4
Iberia	56	--	20				3	4	1	4	2	--	--	--	5	1	2	11	--	2	--	1	--
Iberville	31	--	3	--	--	--	12	--	--	3	4	--	--	--	2	--	1	2	--	3	--	--	--
Jefferson	226	--	43	--	5	2	15	9	5	22	16	8	1	--	21	3	32	14	2	15	1	11	1
Lafayette	67	--	17	--	--	--	3	3	--	9	3	--	1	--	10	--	4	11	--	1	1	3	1
Lafourche	55	--	22	--	--	--	2	--	1	3	--	--	1	--	4	2	1	4	1	13	--	1	--
Livingston	53	--	2	--	--	--	42	--	--	4	1	--	--	--	2	1	1	--	--	--	--	--	--
Orleans	598	2	113	--	4	42	15	23	20	123	37	1	5	2	28	4	59	29	16	25	11	28	14
Plaquemines	22	--	5	--	--	--	1	1	--	--	4	1	--	--	4	--	--	--	--	6	--	--	--
St. Bernard	29	--	10	--	--	1	4	--	--	3	--	2	--	--	--	1	2	3	--	3	--	--	--
St. Charles	15	--	1	--	--	--	--	1	1	8	3	--	--	--	1	--	--	--	--	--	--	--	--
St. James	12	--	4	--	--	--	1	--	--	1	4	1	--	--	1	--	--	--	--	--	--	--	--
St. John the Baptist	13	--	4	1	--	--	--	1	1	4	--	--	--	--	2	--	--	1	--	--	--	--	--
St. Martin	18	--	10	--	--	--	1	--	--	1	1	1	--	--	2	--	1	1	--	--	--	--	--
St. Mary	71	--	16	--	--	--	4	--	--	8	5	--	--	--	9	--	8	12	--	8	--	--	1
St. Tammany	53	--	4	--	--	--	22	--	--	4	1	2	--	--	9	--	1	--	1	6	--	3	--
Tangipahoa	89	--	21	--	--	1	42	2	--	5	1	--	--	--	9	--	3	3	--	--	--	2	--
Terrebonne	71	--	22	--	--	--	2	--	--	7	4	1	--	--	3	--	5	11	--	15	--	1	--
Vermilion	46	--	20	--	1	--	--	--	--	3	4	--	--	--	4	--	3	2	--	6	--	1	2
West Baton Rouge	6	--	2	--	--	--	--	--	--	1	1	--	--	--	--	--	1	--	--	1	--	--	--
Total Coastal	1873	2	408	2	10	53	192	51	30	258	137	29	10	3	146	16	152	136	19	116	15	62	23
Total State	3639	5	612	2	10	73	1127	79	59	382	205	50	15	5	225	25	207	224	36	145	17	94	42
Total Coastal as percent of State Total	51	48	67	100	100	73	17	65	51	68	67	58	67	60	65	64	73	61	53	80	88	66	55

19 Ordnance and accessories
20 Food and kindred products
21 Tobacco manufactures
22 Textile mill products
23 Apparel and other textile products
24 Lumber and wood products
25 Furniture and fixtures
26 Paper and allied products
27 Printing and publishing
28 Chemicals and allied products
29 Petroleum and coal products
30 Rubber and plastic products, NEC*
31 Leather and leather products
32 Stone, clay, and glass products
33 Primary metal industries
34 Fabricated metal products
35 Machinery, except electrical
36 Electrical equipment and supplies
37 Transportation equipment
38 Instruments and related products
39 Miscellaneous manufacturing industries
CAO Central Administrative Offices

*NEC = Not elsewhere classified

Source: U.S. Department of Commerce, 1970, 1967 Census of Manufacturers in Louisiana.

coastal parishes in 1967. Of the 21 major industry groups, all but 4 are in the category of slow growth, and one of these, ordnance, has undoubtedly slipped considerably because of the decrease in the National Aeronautics and Space Administration budget.

In spite of over-reliance on slow-growth manufactures, there are some offsetting features for the coastal economy, though not for the State as a whole. The category of fast-growing components (see Table 7) includes several items in which the coastal economy ranks high within Louisiana. Table 10 compares, as a percentage of the U.S. total, coastal region personal income by major sources and earnings by broad industrial sector with the rest of Louisiana for the years 1950, 1959, and 1968. The following components are considered fast growing for the nation, and they are components that are highly concentrated in the coastal economy: other labor income; property income; contract construction, and wholesale and retail trade. Moreover, the coastal economy is not, as a percentage of the U.S., very far behind the national average in the fast-growing components of services; state and local government; and finance, insurance, and real estate.

Given the shift-share ratios for Louisiana manufacturing and personal income, one has to be quite skeptical about the future of the State economy at large and in the coastal region. What is not known is how other major variables may alter the future. For example, regional realignments in population, private investment expenditure, and public spending on ports, waterways, highways, and recreational facilities may significantly change or modify the shift-share ratios. What is obviously needed in Louisiana is to seek ways of increasing the State's share of fast-growing components--if, of course, that is the wish of the citizens of Louisiana.

TABLE 10

PERSONAL INCOME BY MAJOR SOURCES
AND EARNINGS BY BROAD INDUSTRIAL SECTOR, 1950, 1959, 1968
LOUISIANA COASTAL REGION
(Percentage of State)

	1950	1959	1968
Total Personal Income	61.63	66.30	66.53
Total Wage and Salary Disbursements	64.54	68.78	68.81
Other Labor Income	63.62	68.89	76.43
Proprietors' Income	51.03	55.13	52.96
Property Income	69.15	70.94	70.27
Transfer Payments	59.93	56.33	57.24
Less: Personal Contributions for Social Security	63.06	67.36	70.58
Total Earnings	61.45	66.54	67.05
Farm Earnings	32.66	32.00	27.97
Total Non-farm Earnings	64.80	68.48	68.93
Government Earnings	57.60	58.52	50.17
Total Federal	58.16	58.71	35.87
Federal Civilian	71.82	67.11	64.66
Military	43.00	50.89	11.39
State and Local	57.12	58.41	58.77
Private Non-farm Earnings	65.98	70.39	73.10
Manufacturing	68.14	70.59	69.62
Mining	38.89	73.07	81.15
Contract Construction	65.27	67.43	77.27
Transportation, Communication, and Public Utilities	72.71	73.93	76.59
Wholesale and Retail Trade	67.09	69.22	70.80
Finance, Insurance, and Real Estate	76.27	75.55	76.05
Services	64.56	68.01	71.28
Other	65.88	53.47	56.46

Source: Based on specially requested data from the 1 percent Social Security sample, Regional Economics Information System, Office of Business Economics, U.S. Department of Commerce, Washington, D.C.

CHAPTER V

POPULATION IN COASTAL LOUISIANA

From 1960 to 1970, Louisiana's population increased from 3,257,022 to 3,641,306, an 11.8 percent gain. In the coastal region the population increased from 1,916,414 to 2,238,021, whereas the rest of the State experienced a net change of 62,677, only 16.31 percent of the total State increase. The population of the parishes in 1960 and 1970 and the percentage changes are shown in Table 11; the first 24 parishes again represent the designated coastal zone. In certain parishes the population increased relatively more than in adjacent parishes. In the jargon of regional economics, such areas may be called "growth centers." One characteristic of a growth center is that its rate of growth is larger than the State's average (11.8 percent). Of the 20 parishes in the State which met this criterion, 15 were in the coastal region.

Only 2 of the coastal area parishes--Calcasieu and Orleans--had decreases in population between census counts, whereas in the rest of the State 18 of the 40 parishes had decreasing populations. To some degree relative population changes imply intrastate migration, which results most often from economic incentives arising from disequilibrium across spatially separated labor markets. One dominant factor which affects income differences is the agglomeration of the population within an area, since often the scale of subeconomies determines the type of work readily available to the individual. The residents of large metropolitan areas generally have a wider choice of industries in which they may seek employment. One approach by the Bureau of the Census to organize the economic landscape of the United States into areas of functional integration is the designation of Standard Metropolitan Statistical Areas (SMSA). The principle of the SMSA is that areas tied to the same central node should be considered a region. Essentially, an SMSA is defined (except in New England) as a county (parish) or group of contiguous counties (parishes) that contain at least one city of 50,000 inhabitants or more, or "twin cities" with a combined population of at least 50,000. In addition to the county or counties containing such a city or cities, contiguous counties are included in an SMSA if (1) 15 percent of the workers living in the county work in the central county of the area, (2) 25 percent of those working in the county live in the central county of the area, or (3) other measures such as telephone calls from the county to the central county and newspaper circulation indicate their integration with the central county (U.S. Bureau of the Budget, 1964).

There are six SMSA's in Louisiana. Table 12 shows the coastal parishes designated as SMSA's and their SMSA label. Also, it shows that of the total State population 54.82 percent resides in SMSA

TABLE 11

TOTAL POPULATION FOR LOUISIANA PARISHES AND RELATIVE CHANGE, 1970 AND 1960

Parishes	1970	1960	Absolute Change	Percent Change
Ascension	37,086	27,927	9,159	32.8
Assumption	19,654	17,991	1,663	9.2
Calcasieu	145,415	145,475	- 60	--
Cameron	8,194	6,909	1,285	18.6
East Baton Rouge	285,167	230,058	55,109	24.0
Iberia	57,397	51,657	5,740	11.1
Iberville	30,746	29,939	807	2.7
Jefferson	337,568	208,769	128,799	61.7
Lafayette	109,716	84,656	25,060	29.6
Lafourche	68,941	55,381	13,560	24.5
Livingston	36,511	26,974	9,537	35.4
Orleans	593,471	627,525	-34,054	- 5.4
Plaquemines	25,225	22,545	2,680	11.9
St. Bernard	51,185	32,186	18,999	59.0
St. Charles	29,550	21,219	8,331	39.3
St. James	19,733	18,369	1,364	7.4
St. John	23,813	18,439	5,374	29.1
St. Martin	32,453	29,063	3,390	11.7
St. Mary	60,752	48,833	11,919	24.4
St. Tammany	63,585	38,643	24,942	64.5
Tangipahoa	65,875	59,434	6,441	10.8
Terrebonne	76,049	60,771	15,278	25.1
Vermilion	43,071	38,855	4,216	10.9
West Baton Rouge	16,864	14,796	2,068	14.0
Acadia	52,109	49,931	2,178	4.4
Allen	20,794	19,867	927	4.7
Avoyelles	37,751	37,606	145	0.4
Beauregard	22,888	19,191	3,697	19.3
Bienville	16,024	16,726	- 702	- 4.2
Bossier	64,519	57,622	6,897	12.0
Caddo	230,184	223,859	6,325	2.8
Caldwell	9,354	9,004	350	3.9
Catahoula	11,769	11,421	348	3.0
Claiborne	17,024	19,407	-2,383	-12.3
Concordia	22,578	20,467	2,111	10.3
Desoto	22,764	24,248	-1,484	- 6.1
East Carroll	12,884	14,433	-1,549	-10.7
East Feliciana	17,657	20,198	-2,541	-12.6
Evangeline	31,932	31,639	293	0.9
Franklin	23,946	26,088	-2,142	- 8.2
Grant	13,671	13,330	341	2.6
Jackson	15,963	15,828	135	0.9
Jefferson Davis	29,554	29,825	- 271	- 0.9
Lasalle	13,295	13,011	284	2.2
Lincoln	33,800	28,535	5,265	18.5
Madison	15,065	16,444	-1,379	- 8.4
Morehouse	32,463	33,709	-1,246	- 3.7
Natchitoches	35,219	35,653	- 434	- 1.2
Ouachita	115,387	101,663	13,724	13.5
Pointe Coupee	22,002	22,488	- 486	- 2.2
Rapides	118,078	111,351	6,727	6.0
Red River	9,226	9,978	- 752	- 7.5
Richland	21,774	23,824	-2,050	- 8.6
Sabine	18,638	18,564	74	0.4
St. Helena	9,937	9,162	775	8.5
St. Landry	80,364	81,493	-1,129	- 1.4
Tensas	9,732	11,796	-2,064	-17.5
Union	18,447	17,624	823	4.7
Vernon	53,794	18,301	35,493	193.9
Washington	41,987	44,015	-2,028	- 4.6
Webster	39,939	39,701	238	0.6
West Carroll	13,028	14,177	-1,149	- 8.1
West Feliciana	11,376	12,395	-1,019	- 8.2
Winn	16,369	16,034	335	2.1

Source: U.S. Department of Commerce, Bureau of the Census, 1970 Census of Population. Advance report, December 1970, PC (VI) - 20, Louisiana.

TABLE 12

POPULATION CHARACTERISTICS: COASTAL AREA AND STATE FIGURES, 1970

(1)	Total Population in Coastal Area	2,238,021
(2)	Total Population in Rest of State	1,403,285
(3)	Total State Population [(2) + (3)]	3,641,306
(4)	Percentage of State Population in Coastal Area	61.46
(5)	Coastal Population in SMSA's	1,586,107*
(6)	Percentage of Coastal Population in SMSA's	70.87
(7)	Total State Population in SMSA's **	1,996,197
(8)	Percentage of State SMSA Population in Coastal Zone SMSA's	79.46
(9)	Percentage of Total State Population in SMSA's	54.82

*Coastal Parishes Designated SMSA's	SMSA	SMSA Population
Calcasieu	Lake Charles	145,415
East Baton Rouge	Baton Rouge	285,167
Jefferson	New Orleans	337,568
Lafayette	Lafayette	109,716
Orleans	New Orleans	593,471
St. Bernard	New Orleans	51,185
St. Tammany	New Orleans	63,585

**Other parishes in Louisiana designated SMSA are Bossier and Caddo (the Shreveport SMSA) and Ouachita (the Monroe SMSA).

Source: U.S. Department of Commerce, Bureau of the Census, 1970 Census of Population.

parishes. However, within the coastal zone, 70.87 percent of the population is within SMSA boundaries. To the extent that certain economies accompany metropolitan agglomerations, the coastal area is relatively superior to the rest of the State. The hypothesis of urbanization's contribution to economic development has been positively verified throughout the literature.[1] For a causative explanation, industrialization is commonly taken to be the prime motivating force behind city formations. Given the dichotomous demarcations of Louisiana, the coastal region and the rest of the State, there exists a marked disparity between population distribution and SMSA distribution. In particular, 1970 census counts show that 61.46 percent of the State's population resides in the coastal region, but 79.46 percent of the State's SMSA population is in the coastal region. This relative concentration of individuals provides a better basis for industrial growth than is available to northern and central Louisiana.

Concomitant with the SMSA distribution is the location of the population in a rural or an urban setting. As mentioned above, the agglomeration of people in metropolitan areas provides some external economies which arise from locational advantages, e.g., wider choice of occupations and the opportunity to develop a higher degree of specialization. In fact, as an empirical rule, families living in metropolitan areas show

[1]For example, Schnore, L. F., 1961, The Statistical Measurement of Urbanization and Economic Development. Land Economics, 37:229-245.

a marked superiority in average income.[2] Concentration of people and economic activity, however, involves costs as well as benefits. In particular, traffic congestion and air pollution increase with city size; also, commuting time rises and recreation areas become less accessible as the city expands. In addition, expenditures for police protection, welfare, and waste disposal are higher per person in very large cities. The distribution of the Louisiana population, by parish, is delineated into rural and urban classifications in Table 13. The definition of urban population as used here and in the 1970 Census is all persons living in urbanized areas and in places of 2,500 inhabitants or more outside urbanized areas. More specifically, the urban population consists of all persons living in (a) places of 2,500 inhabitants or more incorporated as cities, villages, boroughs, and towns, but excluding those persons living in the rural portions of extended cities; (b) unincorporated places of 2,500 inhabitants or more; and (c) other territories, incorporated or unincorporated, included in urbanized areas. The population not classified as urban constitutes the rural population.

The 1970 Census reports Louisiana as having a population that is 66.1 percent urban and 33.9 percent rural. The urban population is 2,406,150; 1,235,156 live in rural areas. If we arbitrarily label parishes "urban" when 50 percent or more of their residents are classified "urban" by the Census definition and "rural" when less than 50 percent, 21 are urban and 43 are rural statewide (Fig. 7). Ten of these urban parishes are in the coastal zone.

Changes in the urban and rural populations from 1960 to 1970 are illustrated in Figures 8A and 8B. The 1970 State urban population represents an increase of 16.8 percent from 1960. Considering individual parishes, 20 exceeded the State's rate of growth in urban population. Vernon Parish surpassed all others in the percentage increase, 592.7 percent, reflecting the reactivation of Fort Polk in August 1961. Within the coastal zone, 54.2 percent of the parishes showed a rate of increase greater than the State's total. The rural population of 26 parishes statewide increased at a rate greater than that of the State from 1960 to 1970. The parish experiencing the largest percentage increase, 57.9 percent, was St. Tammany. For the coastal zone parishes, three-fourths had a greater growth rate in rural population than the State as a whole.

Many of the problems that are commonly attributed to excessive population are actually caused by uneven distribution. In Louisiana, there are 81 persons per square mile compared to the U.S. average of 58. Table 14 gives the population density for each of the Louisiana parishes, and Figure 9 shows the corresponding distribution. These figures compare with an extremely diverse distribution within the United States, which ranges from 5,327 persons per square mile in the New York City area to

---

[2]For example, in 1969 families living in metropolitan areas of a million or more had average incomes 13 percent higher than those of families in smaller metropolitan areas and 37 percent higher than those of families outside metropolitan areas (Economic Report of the President, p. 113, February 1971).

TABLE 13

URBAN POPULATION, RURAL POPULATION, AND
URBAN POPULATION AS PERCENTAGE OF TOTAL POPULATION

Parish	Urban Population	Rural Population	Urban Population Percentage
Ascension	11,879	25,207	32.0
Assumption	0	19,654	0.0
Calcasieu	108,713	36,702	74.8
Cameron	0	8,194	0.0
East Baton Rouge	247,869	37,298	86.9
Iberia	36,469	20,928	63.5
Iberville	10,245	20,501	33.3
Jefferson	323,507	14,061	95.8
Lafayette	78,544	31,172	71.6
Lafourche	26,753	42,188	38.8
Livingston	6,752	29,759	18.5
Orleans	591,502	1,969	99.7
Plaquemines	7,135	18,090	28.3
St. Bernard	46,719	4,466	91.3
St. Charles	8,028	21,522	27.2
St. James	6,478	13,255	32.8
St. John	12,334	11,479	51.8
St. Martin	12,095	20,358	37.3
St. Mary	39,609	21,143	65.2
St. Tammany	23,271	40,314	36.6
Tangipahoa	23,361	42,514	35.5
Terrebonne	39,999	36,050	52.6
Vermilion	16,536	26,535	38.4
West Baton Rouge	6,558	10,306	38.9
Acadia	29,591	22,518	56.8
Allen	7,301	13,493	35.1
Avoyelles	9,914	27,837	26.3
Beauregard	8,030	14,858	35.1
Bienville	2,970	13,054	18.5
Bossier	41,845	22,674	64.9
Caddo	196,765	33,419	85.5
Caldwell	0	9,354	0.0
Catahoula	2,761	9,008	23.5
Claiborne	7,538	9,486	44.3
Concordia	10,777	11,801	47.7
Desoto	6,432	16,332	28.3
East Carroll	6,183	6,701	48.0
East Feliciana	4,697	12,960	26.6
Evangeline	12,967	18,965	40.6
Franklin	5,349	18,597	22.3
Grant	0	13,671	0.0
Jackson	5,072	10,891	31.8
Jefferson Davis	18,537	11,017	62.7
Lasalle	0	13,295	0.0
Lincoln	21,772	12,028	64.4
Madison	9,643	5,422	64.0
Morehouse	14,713	17,750	45.3
Natchitoches	15,974	19,245	45.4
Ouachita	90,567	24,820	78.5
Pointe Coupee	3,945	18,057	17.9
Rapides	61,584	56,494	52.2
Red River	0	9,226	0.0
Richland	6,849	14,925	31.5
Sabine	3,112	15,526	16.7
St. Helena	0	9,937	0.0
St. Landry	31,399	48,965	39.1
Tensas	0	9,732	0.0
Union	3,416	15,031	18.5
Vernon	32,483	21,311	60.4
Washington	21,974	20,013	52.3
Webster	20,492	19,447	51.3
West Carroll	0	13,028	0.0
West Feliciana	0	11,376	0.0
Winn	7,142	9,227	43.6

Source: U.S. Department of Commerce, Bureau of the Census, 1970 Census of Population.

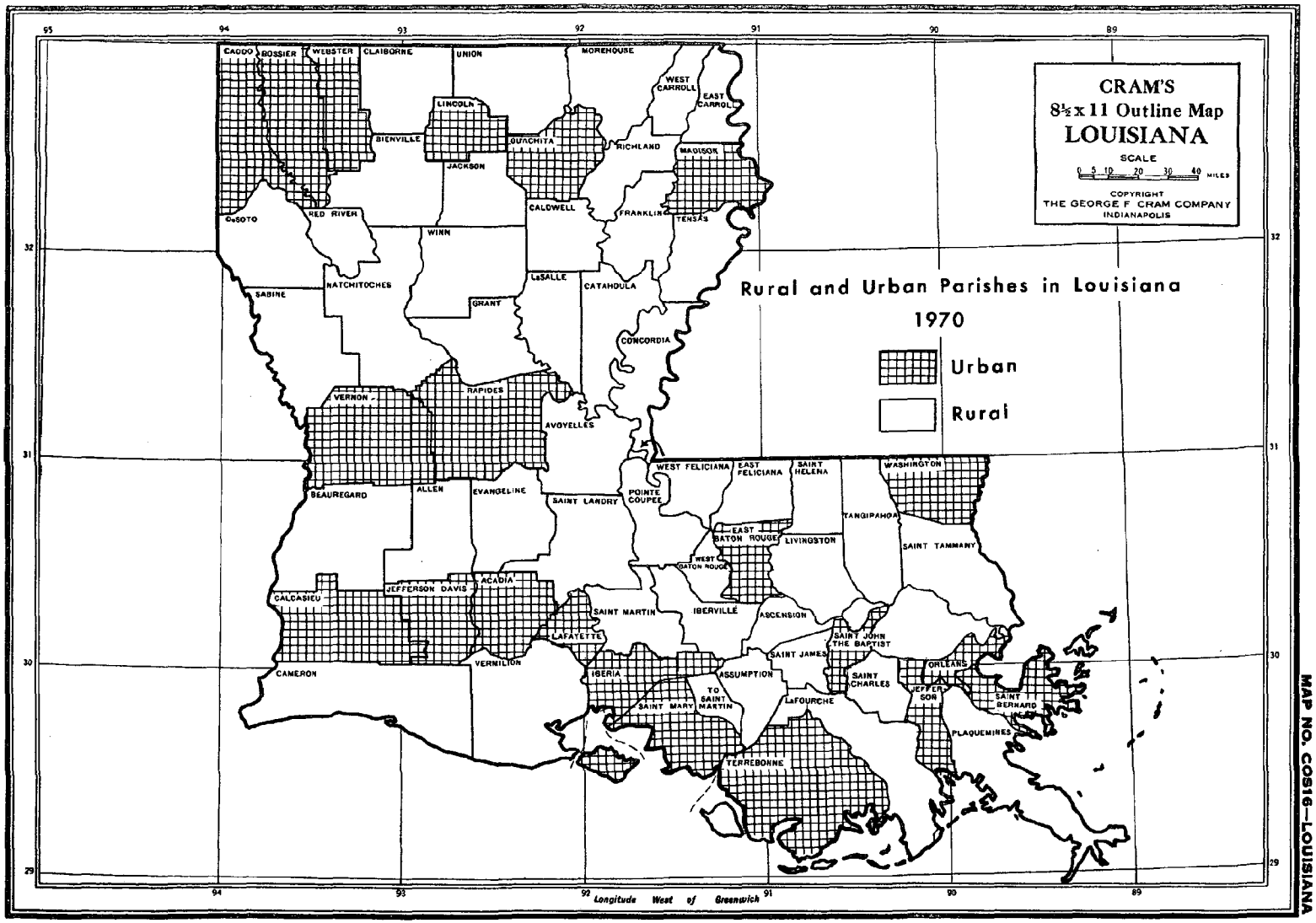


Fig. 7. Rural and urban parishes in Louisiana, 1970.

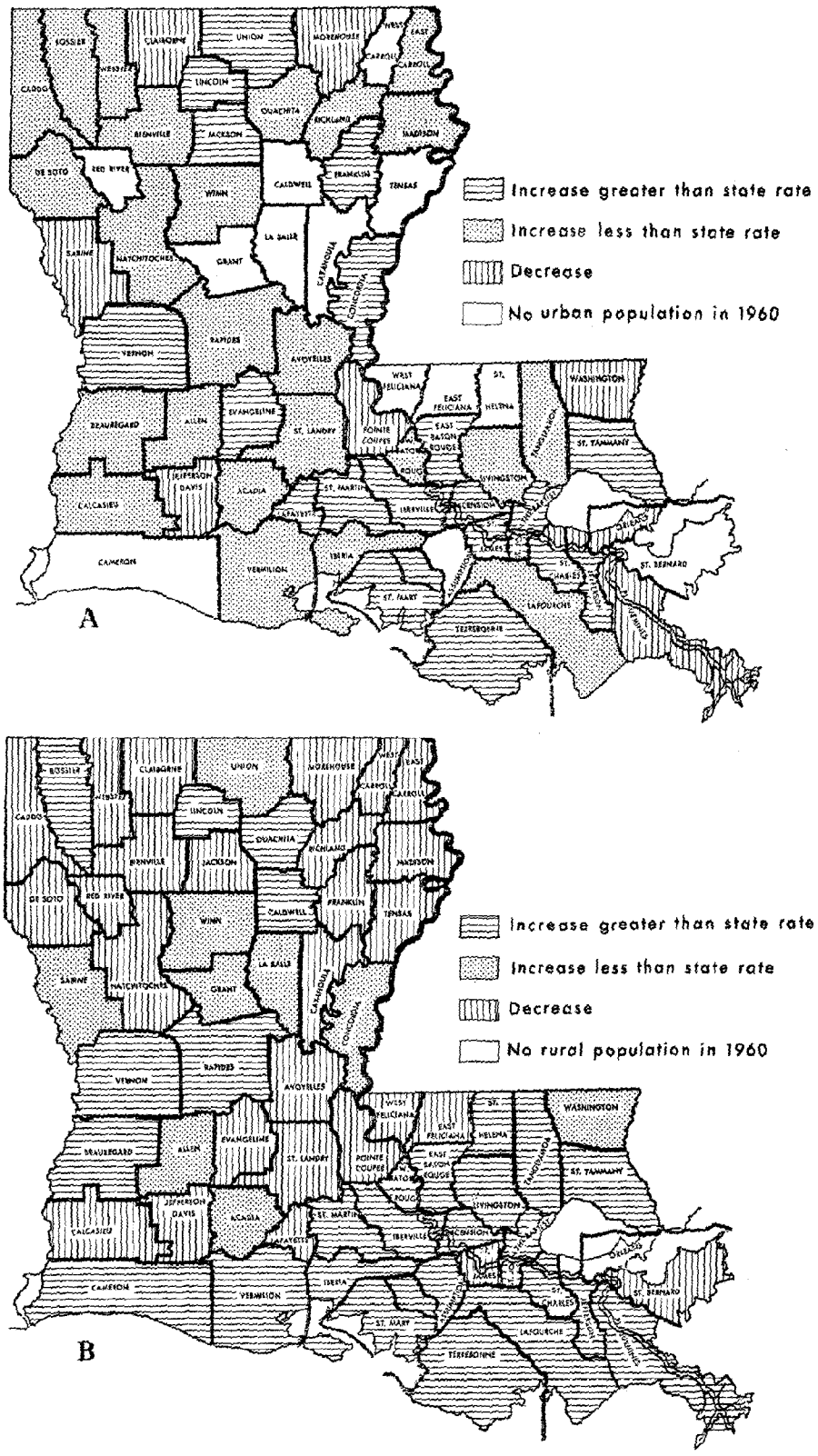


Fig. 8. A. Changes in Louisiana urban population, 1960-1970. B. Changes in Louisiana rural population, 1960-1970. Source: Bureau of Business Research, College of Business Administration, Louisiana State University, Baton Rouge.

TABLE 14

DENSITY OF POPULATION BY PARISH, 1970

Parish	Pop. per Sq. Mile	Parish	Pop. per Sq. Mile
Ascension	123.21	Catahoula	15.86
Assumption	55.21	Claiborne	22.31
Calcasieu	131.60	Concordia	31.45
Cameron	5.69	Desoto	25.18
East Baton Rouge	621.28	East Carroll	29.55
Iberia	97.45	East Feliciana	38.89
Iberville	49.04	Evangeline	47.73
Jefferson	1019.84	Franklin	36.95
Lafayette	387.69	Grant	20.40
Lafourche	60.42	Jackson	27.43
Livingston	55.83	Jefferson Davis	44.91
Orleans	2894.98	Lasalle	20.68
Plaquemines	24.49	Lincoln	72.07
St. Bernard	99.58	Madison	22.79
St. Charles	102.60	Morehouse	40.38
St. James	78.00	Natchitoches	27.20
St. John	95.25	Ouachita	180.86
St. Martin	44.09	Pointe Coupee	39.08
St. Mary	97.36	Rapides	89.59
St. Tammany	68.74	Red River	22.72
Tangipahoa	81.63	Richland	37.80
Terrebonne	55.59	Sabine	18.11
Vermilion	35.74	St. Helena	23.66
West Baton Rouge	83.07	St. Landry	86.23
Acadia	78.60	Tensas	15.55
Allen	26.87	Union	20.36
Avoyelles	45.37	Vernon	39.64
Beauregard	19.33	Washington	63.14
Bienville	19.26	Webster	64.94
Bossier	76.08	West Carroll	36.60
Caddo	256.04	West Feliciana	28.09
Caldwell	16.98	Winn	17.23

3.4 for Wyoming and only one person for each 2 square miles in Alaska (Economic Report of the President, 1971, p. 111). The interpretation of population density as it pertains to economic well-being is far from precise. But we do know that in all the social sciences there is no more fundamental relationship than that between man and land. However, this relationship must consider all the environmental aspects, both natural and cultural. A high population-density figure may indicate overpopulation; but even a region with low population density may be overpopulated. Only the qualitative and critical appraisal of human wants and abilities and of the resources available can render conclusive evidence (Zimmerman, 1951). According to Zimmerman (1951), there are several ways to express the optimum population density:

1. The population density at which the optimum is attained depends primarily on the amount of foreign energy, particularly inanimate energy, available.

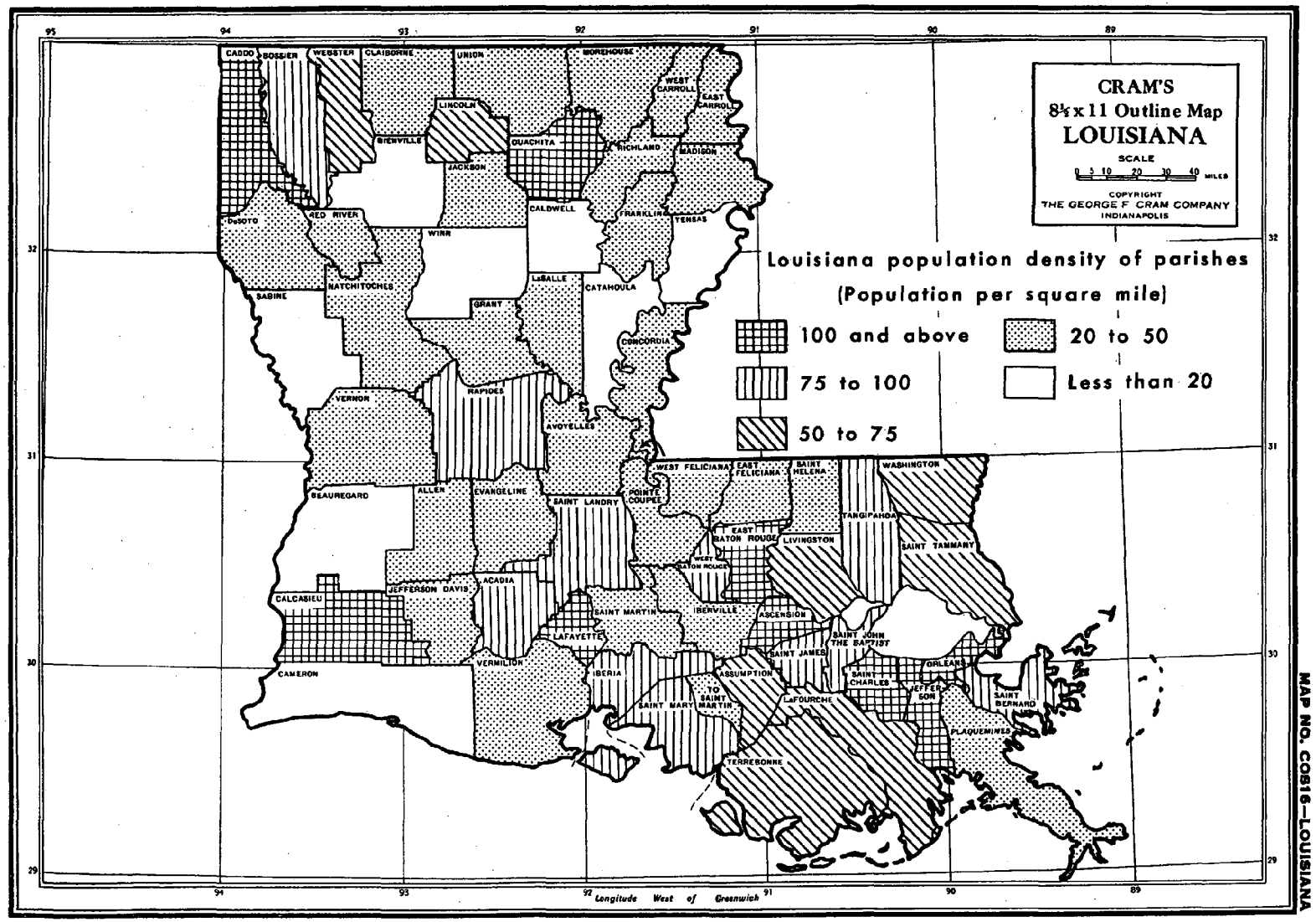


Fig. 9. Population density of Louisiana parishes.

Since foreign energy can be made available only by means of capital equipment, the same principle could be expressed as follows:

2. The population density at which the optimum is attained depends largely on the amount of capital equipment available.

   Furthermore, since a low density is compatible with a high degree of civilization only if the sparse population is very mobile, we can express the same idea a third way:

3. The population density at which the optimum is attained depends on the relative mobility of the population.

Zimmerman continues, "Hence, every improvement in the technique of transportation and communication reduces the space handicap, lowers the weight of the overhead burden, and thus brings us closer to the optimum." In the transportation category, Louisiana's expenditures for construction and maintenance of State-administered highways represented 1.94 percent of the United States total in 1966 as compared to 2.27 percent in 1950. In 1969, of Louisiana's total nonagricultural employment, 0.78 percent was engaged in railroad transportation; 5.24 percent, in transportation excluding railroads; and 2.87 percent, in communication, electric, gas, and sanitary services. These percentages compared with national values of 1.81, 2.96, and 2.46, respectively. For the communication sector, data show that in 1966 there were 1,440,000 telephones in Louisiana, representing a 41.7 percent increase from 1960; the national percentage increase, for the same period, was 32.9. However, the total net paid circulation of daily newspapers in Louisiana increased by only 3.8 percent from 1960 to 1967 versus a national increase of 4.5 percent.

A demographic characteristic which typically influences interregional income distributions is the age composition of the population. Different age categories traditionally impose either significant earning potential or onerous impacts on an economy. More specifically, an index of dependency might be computed as the percentage of population outside the range between 15 and 65 years of age. The parish values for this index are presented in Table 15. Although this index is not completely accurate in articulating the extent of dependency, it serves as a satisfactory proxy.

Two age categories specifically represent potential buoyancy for an economy. First, those individuals between the ages of 21 and 34--the young adults--provide a reservoir of new knowledge and initiative. If this proportion were to diminish, the burden upon development would be obvious in that the residual population would reflect inordinately large numbers of older people and children. The percentage of population in each parish between the ages of 21 and 34 is summarized in Table 15. In 1970, 19.0 percent of the coastal region population was in this age group, compared to 16.4 percent for the rest of the State. The percentage for the rest of the State excludes the data on Vernon and West Feliciana parishes because of the excessively skewed age distributions of Fort Polk

TABLE 15

AGE DISTRIBUTION OF POPULATION, BY PARISH, 1970

Parish	Percent Pop. 21-34 Yrs. of Age	Percent Pop. 15 & Under & 65 & Over	Parish	Percent Pop. 21-34 Yrs. of Age	Percent Pop. 15 & Under & 65 & Over
Ascension	19.3	44.4	Catahoula	15.5	46.2
Assumption	17.1	47.5	Claiborne	12.6	47.7
Calcasieu	17.9	41.9	Concordia	16.0	45.7
Cameron	17.6	43.7	Desoto	13.6	47.2
East Baton Rouge	21.1	39.0	East Carroll	12.9	51.4
Iberia	16.8	43.4	East Feliciana	15.5	43.8
Iberville	16.0	47.1	Evangeline	15.0	45.2
Jefferson	21.0	40.8	Franklin	13.3	47.1
Lafayette	19.7	41.5	Grant	14.5	61.9
Lafourche	19.0	43.9	Jackson	15.8	42.5
Livingston	19.8	43.5	Jefferson Davis	16.0	45.0
Orleans	17.9	40.9	Lasalle	15.1	42.8
Plaquemines	20.4	37.3	Lincoln	20.7	31.7
St. Bernard	19.2	40.1	Madison	13.0	51.1
St. Charles	18.8	45.9	Morehouse	13.8	46.8
St. James	16.7	48.2	Natchitoches	16.5	41.3
St. John	18.3	46.8	Ouachita	18.4	41.9
St. Martin	16.8	46.3	Pointe Coupee	14.6	47.2
St. Mary	19.5	45.6	Rapides	17.9	42.7
St. Tammany	17.7	44.0	Red River	13.7	46.8
Tangipahoa	17.2	43.3	Richland	13.5	47.0
Terrebonne	19.7	40.9	Sabine	14.8	45.7
Vermilion	15.5	44.9	St. Helena	15.5	48.2
West Baton Rouge	18.0	45.8	St. Landry	15.4	45.7
Acadia	16.0	44.7	Tensas	11.3	50.2
Allen	16.0	45.4	Union	14.1	44.8
Avoyelles	14.1	46.3	Vernon	30.9	24.0
Beauregard	17.8	42.8	Washington	15.1	44.0
Bienville	14.0	45.8	Webster	16.5	41.7
Bossier	21.0	43.0	West Carroll	14.4	44.4
Caddo	17.2	42.3	West Feliciana	36.7	26.5
Caldwell	15.2	44.4	Winn	15.1	44.1

Source: U.S. Department of Commerce, Bureau of the Census, 1970 Census of Population.

and Angola Penitentiary, respectively. The second age category which represents potential buoyancy for an economy is the 35-44 group, which encompasses the peak years of earning power. Table 16 presents the percentages of the total parish populations within this age category.

As noted in several studies, the differential in income between the South and other regions is in part attributable to the low economic status of nonwhites.[3] Nationally, in 1968, 10 percent of the white population had incomes below the Census-designated poverty level, compared to 34.7 percent for the nonwhite population. To ascertain the

[3]For example, Miller, H. P., 1955, Income of the American People. New York (John Wiley), pp. 11-12. Kuznets, Simon, 1963, Distribution of Income by Size. Economic Development and Cultural Change, 11:44.

TABLE 16

DISTRIBUTION OF 35-44-YEAR-OLD POPULATION, BY PARISH, 1970

Parish	Percent Pop. 35-44 Yrs. of Age	Parish	Percent Pop. 35-44 Yrs. of Age
Ascension	10.2	Catahoula	9.7
Assumption	9.0	Claiborne	9.1
Calcasieu	11.9	Concordia	11.2
Cameron	11.5	Desoto	8.9
East Baton Rouge	11.1	East Carroll	8.6
Iberia	10.7	East Feliciana	10.2
Iberville	9.5	Evangeline	10.1
Jefferson	12.5	Franklin	9.7
Lafayette	11.6	Grant	9.5
Lafourche	11.0	Jackson	9.7
Livingston	11.1	Jefferson Davis	10.9
Orleans	10.3	Lasalle	10.7
Plaquemines	11.7	Lincoln	8.1
St. Bernard	13.6	Madison	8.6
St. Charles	11.8	Morehouse	10.3
St. James	9.4	Natchitoches	8.7
St. John	10.2	Ouachita	11.0
St. Martin	10.0	Pointe Coupee	9.5
St. Mary	10.8	Rapides	10.9
St. Tammany	11.9	Red River	8.9
Tangipahoa	9.4	Richland	9.1
Terrebonne	10.8	Sabine	9.3
Vermilion	10.9	St. Helena	8.7
West Baton Rouge	9.8	St. Landry	10.4
Acadia	10.5	Tensas	8.0
Allen	10.2	Union	9.8
Avoyelles	10.0	Vernon	6.8
Beauregard	10.7	Washington	10.5
Bienville	9.0	Webster	10.9
Bossier	12.2	West Carroll	9.9
Caddo	11.4	West Feliciana	13.7
Caldwell	9.5	Winn	3.5

Source: U.S. Department of Commerce, Bureau of the Census, 1970 Census of Population.

regional impact of this concentration, note that in 1960 59.9 percent of the total Negro population resided in the southern census regions.[4] The plight of the nonwhite, the vast majority of whom are black, appears to be related in part to several kinds of economic discrimination in job opportunities and to be an indirect result of poor education obtained in schools with relatively low standards. Additionally, nonwhite families have backgrounds that allow less economic mobility than other families (Morgan et al., 1962).

[4]The census region designated as "South" includes three subdivisions: (1) South Atlantic--Delaware, Maryland, District of Columbia, Virginia, West Virginia, North Carolina, South Carolina, Georgia, and Florida; (2) East South Central--Kentucky, Tennessee, Alabama, and Mississippi; and (3) West South Central--Arkansas, Louisiana, Oklahoma, and Texas.

The percentage of each parish's population in 1970 which was nonwhite is summarized in Table 17. For the broader regional classifications, 28.6 percent of the coastal region population was nonwhite, compared to 36.6 percent for the rest of the State. Of the 21 parishes which had nonwhite populations representing 40.0 percent or more of the total population, only 5--Iberville, Orleans, St. James, St. John, and West Baton Rouge--are located in the coastal region. Such a distribution of population groups helps to explain per capita income differences between the two regions, coastal and the rest of the State.

Population Projections

One of the most useful sets of data in regional analysis relates to future population numbers. The projections for a region mirror such future conditions as market demand, demographic stratification, and industrial potential. Within the framework of projection methodology, one of the more precise variations is the "cohort-survival" method, which simulates the exact process of population change. In cases where vital rates are fairly reliable and where in-migration and out-migration numbers are reasonable, this method is very useful. However, it must be kept in mind that migration estimates for open areas, i.e., areas where population flows are not directly determined by government policy, are not generally congruent in successive time periods and thus should be viewed with discerning care. Nevertheless, the cohort-survival method of analysis, by considering temporal changes in the composition of a regional population, is relatively efficient.

In general, the population of any age-race-sex group at a given time can be stated conceptually as follows:

$$P_{i,j,k,t} - P_{i-1,j,k,t-1} + B_{i,j,k,t} - D_{i,j,k,t} + M_{i,j,k,t} \qquad (1)$$

$P_{i,j,k,t}$ represents the population of the area in question in age group i, race j, and sex k at time t. $P_{i-1,j,k,t-1}$ is the population in the area in the age group one period younger in race j and sex k in the preceding time period. $B_{i,j,k,t}$ is the number of births in age group i, race j, and sex k, between time t-1 and t. Of course, for all but the youngest age group, $B = 0$. $D_{i,j,k,t}$ is the number of deaths between time t-1 and t of persons who were of age i-1 in period t-1 for race and sex groups j and k. Finally, $M_{i,j,k,t}$ is the net migration (difference between in- and out-migration) between periods t-1 and t for people aged i-1 in t-1 and for race and sex groups j and k, respectively. It is now obvious that, if $P_{i-1,j,k,t-1}$, $B_{i,j,k,t}$, $D_{i,j,k,t}$, and $M_{i,j,k,t}$ are all known, then the population by age, race, and sex in time t can be determined exactly.

Consider in more detail each of the three components of change in population (B, D, and M). Look first at births. It has already been indicated that $B_{i,j,k,t} = 0$ for all $i \neq 1$. Therefore, it is necessary

TABLE 17

PERCENTAGE OF POPULATION NONWHITE, BY PARISH, 1970

Parish	Percentage Nonwhite	Parish	Percentage Nonwhite
Ascension	26.8	Catahoula	30.5
Assumption	37.3	Claiborne	50.0
Calcasieu	22.1	Concordia	38.8
Cameron	8.4	Desoto	53.3
East Baton Rouge	28.9	East Carroll	59.2
Iberia	28.3	East Feliciana	53.2
Iberville	48.0	Evangeline	27.2
Jefferson	12.7	Franklin	35.9
Lafayette	22.2	Grant	22.8
Lafourche	11.5	Jackson	32.8
Livingston	12.0	Jefferson Davis	21.5
Orleans	45.5	Lasalle	11.4
Plaquemines	25.3	Lincoln	40.3
St. Bernard	5.5	Madison	60.9
St. Charles	27.5	Morehouse	42.5
St. James	47.1	Natchitoches	37.3
St. John	46.2	Ouachita	27.7
St. Martin	34.8	Pointe Coupee	50.4
St. Mary	28.6	Rapides	28.2
St. Tammany	19.5	Red River	42.2
Tangipahoa	31.9	Richland	40.9
Terrebonne	17.9	Sabine	20.0
Vermilion	13.9	St. Helena	56.7
West Baton Rouge	42.9	St. Landry	41.4
Acadia	19.9	Tensas	59.6
Allen	24.1	Union	33.7
Avoyelles	27.8	Vernon	11.7
Beauregard	18.8	Washington	32.7
Bienville	47.0	Webster	31.2
Bossier	20.0	West Carroll	19.5
Caddo	36.7	West Feliciana	66.2
Caldwell	26.6	Winn	30.4

to consider only $B_{1,j,k,t}$. Suppose that $B_{i,j,k,t}$ is the age-race-sex specific birth rate which holds in period t-1 to t; that is, $B_{i,j,k,t}$ is the number of births in race j and sex k born per mother in age i within the time interval t-1 to t. Hence, assuming k = 2 for females,

$$B_{1,j,k,t} = \sum_{i=1}^{n} b_{i,j,k,t} \left(P_{i-1,j,2,t-1} + M_{i,j,2,t} - D_{i,j,2,t}\right) \qquad (2)$$

where there are n age groups of women. Of course, $b_{i,j,k,t}$ can be expected to be zero for the very young or the older age groups. $M_{i,j,2,t}$ is the number of females (net) in age and group i and j, respectively, who migrated into (or out of) the area in time interval t-1 to t, and $D_{k,j,2,t}$ is the number of females who died. This method assumes that women who migrated into or out of the area have had babies at the same rate as others but that women who died had no babies during that period. If it is assumed that deaths (and births) occur evenly throughout the period,

then, instead of $D_{i,j,2,t}$, we can substitute $(D_{i,j,2,t})/2$ into the equation to allow for births before the death of the mother.

Assuming that $D_{i,j,k,t}$ is the age-race-sex specific death rate for the area, then

$$D_{i,j,k,t} = d_{i,j,k,t} \left(P_{i-1,j,k,t-1} + M_{i,j,k,t}\right) \tag{3}$$

for all ages except the first age group. For the first age group, the age-race-sex specific death rate for the area is

$$D_{1,j,k,t} = d_{1,j,k,t} \left(B_{1,j,k,t}\right)$$

Finally, assuming $m_{i,j,k,t}$ to be the migration rate,

$$M_{i,j,k,t} = m_{i,j,k,t} \left(P_{i-1,j,k,t-1} + B_{i,j,k,t} - D_{i,j,k,t}\right) \tag{4}$$

Looking now at the population at time t and taking into account each component of change, we have

$$P_{1,j,k,t} = \sum_{i=1}^{n} (b_{i,j,k,t}) \left(P_{i-1,j,2,t-1}\right) \left(1-d_{i,j,2,t}\right) \left(1 + m_{i,j,2,t}\right) \left(1-d_{1,j,k,t}\right) \tag{5}$$

for the number of people in the youngest age group by race and sex; and for all other age groups we have

$$P_{i,j,k,t} = P_{i-1,j,k,t-1} \left(1-d_{i,j,k,t}\right) \left(1 + m_{i,j,k,t}\right) \tag{6}$$

The first of these equations (5) indicates that the number of people in the youngest age group is given by the surviving $(1-d_{1,j,k,t})$ babies born during the period t-1 to t to women in the area by age and race in time t-1 plus the women migrating in and minus the women who died during this period. This assumes that women who died during the period had no babies. This formulation could be modified slightly to allow for the possibility that some women might have given birth during the period before they died. If it is assumed that the probability of giving birth is the same for all women in a given age and race group, regardless of subsequent death, and if it is assumed that the deaths take place uniformly throughout the time period, then the factor

$(1 - 0.5d_{i,j,2,t})$ can be substituted into (5) in place of $(1 - d_{i,j,2,t})$. Equation (6) should be reasonably self-explanatory. Equations (5) and (6) are the basic equations for the cohort-survival method. The results for each parish are summarized in Table 18.

TABLE 18

COHORT-SURVIVAL POPULATION PROJECTIONS FOR LOUISIANA COASTAL PARISHES

	Year 1980	Year 1990	Year 2000
Ascension	49,242	67,394	91,048
Assumption	21,370	23,438	25,530
Calcasieu	154,864	164,904	171,882
Cameron	9,955	12,235	15,819
East Baton Rouge	362,048	460,312	574,432
Iberia	64,187	73,092	81,597
Iberville	31,962	33,508	34,421
Jefferson	555,833	954,434	1,565,072
Lafayette	146,453	197,005	260,641
Lafourche	84,829	105,371	128,238
Livingston	48,492	65,352	85,813
Orleans	614,342	643,659	672,787
Plaquemines	28,747	33,003	37,140
St. Bernard	80,676	132,004	204,099
St. Charles	41,386	59,657	83,054
St. James	21,058	22,888	24,526
St. John	30,028	39,740	52,090
St. Martin	36,018	40,534	45,209
St. Mary	73,953	92,407	113,049
St. Tammany	102,418	175,944	297,041
Tangipahoa	74,299	83,442	92,070
Terrebonne	95,347	121,167	149,452
Vermilion	47,707	53,546	59,166
West Baton Rouge	19,518	23,123	27,109
TOTAL	2,794,732	3,678,149	4,891,285

The projections in this table assume migration rates to remain identical to the rates prevailing in the decade 1960-1970. Projections based on migration rates of 0.25, 0.50, 0.75, and 1.25 of 1960-1970 migration are available upon request. Projections based on age, race, and sex group for each period are also available upon request.

CHAPTER VI

INVESTMENT IN REAL AND HUMAN CAPITAL

Real Capital Accumulation

In dissecting the United States growth record in recent decades, it has been roughly estimated that increased output can be attributed proportionally to inputs as follows: Expansion in the size and improvement in the quality of the labor force accounts for about 1/2, increased productivity for about 1/3, and the enlarged stock of capital for the remainder (Shapiro, 1966). In the National Income Accounts compiled by the Department of Commerce, private domestic investment--the means by which we change our stock of capital--includes basically three things: (1) all final purchases of machinery, equipment, and tools by business enterprises; (2) all construction; and (3) changes in inventories. Perhaps the second item needs some explanation. It is clear that the building of a new factory or a warehouse is a form of investment. Residential construction is included in the investment statistic because apartment buildings are clearly investment goods on the basis of their income-earning potential; furthermore, owner-occupied houses could be rented to yield a money income return, even though the owner does not choose to do so (McConnell, 1969). The data on housing units constructed in Louisiana show that, of the total dating from January 1959 through March 1960, 60.1 percent were located in the coastal region. In 1965, total expenditures for new plantsand equipment in the State represented 1.9 percent of the United States total, compared to 2.4 percent for Alabama, 0.7 percent for Mississippi, and 6.2 percent for Texas.

Financial institutions such as commercial banks, mutual savings banks, investment companies, savings and loan associations, credit unions, etc., are the intermediaries for many investment funds, i.e., they allow saving and investment functions to be performed separately by those economic units best equipped to do so. In 1969, 2.1 percent of all domestic insured commercial banks, domestic life insurance companies, insured savings and loan associations, and active credit unions were located in Louisiana. This percentage is compared with 1.8 percent in Alabama, 2.9 percent in Florida, 2.2 percent in Georgia, 1.1 percent in Mississippi, and 2.1 percent in Tennessee. Within Louisiana, 40.2 percent of all commercial banks, as of June 30, 1966, were located in the coastal region; yet, of the total amount of dollar deposits in the State, 68.3 percent were in banks in the coastal zone. As for savings and loan associations, there were 103 statewide on September 30, 1967. Of this total, 67 (65.0 percent) were located in the coastal area; and, of the savings capital available through these associations, 76.0 percent was of coastal zone origin.

Investment in Human Capital

The contemporary interest in the economics of education, and more broadly in the economics of all processes which augment knowledge, represents an approach to a number of diversified problems, including such matters as the economic value of education and the contribution of education to past economic development in advanced countries (Schultz, 1962).

The treatment of currently or potentially productive human beings as capital deviates from the more traditional concept of capital, which is defined as that portion of the non-human, material, manmade stock of wealth which is utilized directly in further production (Shaffer, 1968). The application of the capital concept to man is not without its critics. T. W. Schultz (1961), in his 1960 presidential address to the American Economic Association, points out some of the more salient arguments. Among these are the moral and philosophical issues--the accepted mores proclaiming free men to be first and foremost the end to be served by economic endeavor, not property or marketable assets. However, he concludes that "knowledge and skill are in great part the product of investment and, combined with other human investment predominantly account for the productive superiority of the technically advanced countries. To omit them in studying economic growth is like trying to explain Soviet ideology without Marx" (Schultz, 1961, p. 3).

The model. In empirical studies of human capital, the concern and the theory have centered on the disparity in human investment as an explanation of the skewed distribution of incomes within geographical boundaries (Chiswick, 1968). In most capital markets the amount invested is not the same for everyone nor rigidly fixed for any given person but depends in part on the rate of return. Persons receiving a high marginal rate of return would have more incentive to invest (Becker, 1964). The total earnings of any person after he has invested in human capital can be said to equal the sum of the returns on his investment and the earnings from his original human capital (Becker and Chiswick, 1966). To illustrate, we can designate Y_n as the perpetual annual earnings after N years of training and Y_o the perpetual earnings if there had been no training. A person without training would earn Y_o every year, as is shown in row 1 of Table 19. A person who invested for 1 year is assumed to have foregone Y_o; that is, he received no net earnings during that year.[1] This is shown by the zero in the second row of the first column. If a rate of return of r were received on his investment, he would earn $Y_1 = Y_o + rY_o$ (1+r) in year two and all subsequent years, where rY_o is the perpetual return on the investment Y_o. This is shown in the second row of Table 19. If the rate of return were the same for all years of training, a person with 2 years of training would have received no earnings during years one and two and after that an amount equal to:

---

[1]This point is not entirely viable because people who invest in a year of schooling do not usually complete the year without some net earnings, e.g., summer work, GI Bill, etc.

TABLE 19

ANNUAL EARNINGS DURING AND AFTER TRAINING

Years of Training	Year 1	2	3	...	N-1	N	N+1	...
0	Y_o	Y_o	Y_o	...	Y_o	Y_o	Y_o	...
1	0	$Y_o(1+r)$	$Y_o(1+4)$	...	$Y_o(1+r)$	$Y_o(1+r)$	$Y_o(1+r)$	...
2	0		$Y_o(1+r)^2$	...	$Y_o(1+r)^2$	$Y_o(1+r)^2$	$Y_o(1+r)^2$	...
...				...				...
N	0	0	0	...	0	0	$Y_1(1+r)^N$	...

$$Y_2 = Y_o + r\ (Y_o) + r\ (Y_o + rY_o) = Y_o\ (1 + r)\ (1 + r) = Y_o\ (1 + r)^2$$

A person with N years of education would receive nothing during the first N years and

$$Y_N = Y_o + r\ (Y_o) + rY_o\ (1 + r) + \ .\ .\ .\ + rY_o\ (1 + r)^{N-1}$$

or

$$Y_N = Y_o\ (1 + r)^N$$

after the investment period (Chiswick, 1967).

This is a basic, simplified model, illustrating the concept of investment in human capital. Variations of this theme and format could include the following: the rate of return not being the same for all years of training; relaxing the assumption of no earnings during the period of investment; distinguishing among the various types of training (on-the-job training, formal schooling, etc.); and recognizing the effects of differences in health, discrimination, and luck.

Data on money investments in human capital are scarce. They are particularly scarce for formal on-the-job training programs and the amount of learning through experience (see Mincer, 1962). There is, however, considerable information on the number of years of schooling, and this is used in the subsequent analysis. Limiting the analysis to years of schooling results in the sacrifice of much precision to obtain an adequate supply of data. Furthermore, the empirical application below draws upon 1960 Census data owing to the nonavailability of the 1970 figures, and therefore the contemporary interpretation suffers. However, the method and the model are presented here for 1960 to provide a benchmark for comparison and a framework for 1970 empirical subjection.

If years of schooling were the only explanatory variable pertaining to income inequality, the relevant earnings equation would be approximately

$$\text{Ln } (Ys, i) = \text{Ln } \overline{Y}_o + r_i \, S_i + U_i \tag{7}$$

where Ys, i is income after S_i years of investment in schooling for the ith person, $\overline{Y}_o$ is the average zero schooling level of income, r_i is the adjusted rate of return from schooling,[2] and U_i is the residual (Chiswick, 1967).

There exist scattered Louisiana data on earnings cross classified by years of schooling for which a regression of the form of equation (7) could be calculated. Then,

$$\text{Ln } Ys, i = (\text{Ln } \overline{Y}_o) + r \, S_i + U_i \tag{8}$$

where r and (Ln Y) are the ordinary least-squares linear regression estimates of the average adjusted rate of return from schooling and the zero schooling level of earnings, respectively, and U is the residual whose squared deviation from the regression line is minimized.[3] The residual contains the effects of differences in luck, tastes, ability, investments in human capital other than schooling, wealth, etc.

Empirical analysis. The regression estimate of the internal rate of return from schooling for Louisiana in 1960 is 0.11. The internal rate of return is defined implicitly as the rate of discount equating the present value of returns to the present value of costs (Lutz and Lutz, 1951). The Louisiana rate is very similar to that of other Southern states, which as a rule are higher than their non-Southern counterparts. At the present, data are not available for intrastate estimates of rates of return from schooling. However, in studies relating average rates of return from schooling to income inequality, it has been found that a positive, significant relationship exists between the two variables, i.e., a larger rate of return correlates in direct phase with a greater degree of income inequality (Chiswick, 1968). For Louisiana, the distribution of incomes within parishes for 1960 is available.[4] The calculations show that the

---

[2]For each individual, r_i is the average rate of return from his investment in schooling adjusted for the fraction of earnings foregone during the period of investment. See Becker, G. S., and B. R. Chiswick, 1966, Education and the Distribution of Earnings. The Am. Econ. Rev., 56:363-364.

[3]For an explanation of ordinary least-squares see Johnston, J., 1963, Econometric Methods. New York (McGraw-Hill), pp. 106-115.

[4]It is generally agreed that the best single measure of income

coastal region exhibited a greater degree of income equality than the rest of the State. This array is manifested by the fact that, of the 10 parishes with the greatest degree of income inequality, not one is included in the 24-parish coastal region. Furthermore, of the 10 parishes with the greatest degree of income equality, 8 are in the coastal zone.

If the linear functional relationships between income inequality and rates of return from schooling apply across parishes in a fashion similar to the interstate form, it can be concluded that the rates of return from schooling are not as great in the coastal zone as in the rest of the State. This conclusion is consistent with other socio-economic factors relating to human capital theory, e.g., it has been found that lower levels of income tend to increase the rate of return from schooling, which, in light of the per capita income pattern in Louisiana, corroborates the above conclusion.

Research pertaining to investment in man is noticeably incomplete. The scarcity of regional theory and empirical applications of the human capital approach is particularly acute for intrastate demarcations. Thus, it is proposed that data collection for such purposes--an absolute requisite in evaluating one of our most important resources, human capital--be undertaken.

Migration as Investment

An economic model of migration. The hypothesis that geographical mobility of workers is primarily a response to economic incentives has been tested and verified in recent empirical studies (Bowles, 1970). The purpose of this section is to provide a model of interparish migration as an economic process using data on net migration for 1950-1960. This period is chosen to test the hypothesis because the variables included in the model require the breadth of knowledge found only in completed census accounts.

The basic model concentrates on net migration as a response to income differentials. It is probably more meaningful to consider the present value of the expected income gain from moving rather than the conventional income measures; but, for the simplified model presented here, median income values are used. Further, the level of schooling appears to increase the effect of income gain on the probability of moving, and age appears to reduce it. Significant racial differences also apparently influence migration patterns (Bowles, 1970).

In addition to the monetary benefits of moving, a more pleasant social or physical environment may influence the changes. However, such subjective and micro-considerations will not be attempted in this model. Furthermore, there are costs involved in moving, such as direct expenses and the psychic

---

inequality is the Gini coefficient. For a brief explanation of this measure see: Verway, David J., 1966, A Ranking of States by Inequality Using Census and Tax Data. The Review of Economics and Statistics, 48:314-321.

costs resulting from breaking old ties. Also, assuming that risk aversion is a general phenomenon, further costs may arise from the uncertainty of a move (Bowles, 1970). However, because specification of these dimensions is tenuous at best, the present model deals only with the readily quantifiable concepts. The hypotheses can be spelled out succinctly as follows:

1. The migration rate is expected to be positively associated with the income differences between origin and destination.

2. The effects of schooling increase the responsiveness of individuals to economic incentives and hence provide more active migration patterns.

3. It is expected that the income gains from moving are greater for younger workers.

4. It is possible that blacks and whites respond to the income incentive in different ways. We might expect to find socially induced differences in subjective attitudes such as risk aversion and time preference arising from the objective social and economic environment (Bowles, 1970). There is scattered evidence that blacks are more risk-averse and have higher rates of time preference than whites (Lefcourt, 1965). Although the psychological studies yielding this evidence are based on experiments and game situations, the results are plausible and are consistent with some observed market behavior (Bowles, 1970). Thus the fourth hypothesis is that blacks exhibit a lower migration response to income incentives.

Empirical analysis. The models for testing the various migration hypotheses are composed of structural equations which show the relationship between the dependent variable, migration rates (Y), and the various variables (X_1, X_2 . . . , X_n) in the form

$$Y = a + b_1X_1 + b_2X_2 + \ldots + b_nX_n$$

The statistical technique of ordinary least-squares is used to estimate the parameters (see Johnston, 1963). The final empirical models are selected on theoretical and statistical grounds. Theoretically, the model must conform with *a priori* considerations; statistically, the coefficients must be significantly different from zero, i.e., the variable must significantly explain variations in the dependent variable. The test used for ascertaining statistical significance employs Student's t distribution. If the computed t value exceeds that corresponding to a prespecified level of significance, it is concluded that the coefficient differs from zero. Several combinations of variables in the multiple linear form are possible. The results of the various formulations often differ, even when much the same group of variables is included, owing to interacting effects

between highly correlated variables. Hence it becomes difficult to separate and estimate their relative effects. In the jargon of econometrics, this malady is called "multicollinearity."

Acronyms for the variables used in the analysis are as follows:

MIGRAT = Net migration rate, 1950-1960
MEDY59 = Median income, 1959
EDUC = Median school years completed for individuals 25 years old and older, 1960
PCNW60 = Percentage nonwhite, 1960
PC4050 = Percentage of population 40 years old and older, 1950

The simple correlation matrix for cross-sectional parish data is as follows:

	MIGRAT	MEDY59	EDUC	PCNW60	PC4050
MIGRAT	1.0000	0.8131	0.5095	-0.3937	-0.3002
MEDY59		1.0000	0.5481	-0.5469	-0.3582
EDUC			1.0000	-0.3401	-0.0675
PCNW60				1.0000	-0.2910
PC4050					1.0000

This matrix shows migration rates to be positively related to median income, i.e., the higher the median income, the greater the net in-migration. Also, the educational index, median school years completed, is positively related to net migration rates. Percentage of nonwhite and percentage 40 years old and older are inversely correlated with migration rates. This indicates that for the 1950-1960 decade, parishes predominantly nonwhite and/or characterized by an older population base had a smaller net migration pattern. The one-variable linear equation of each of these variables is as follows (the value in parentheses is the value for each parameter):

1. $$\text{MIGRAT} = \underset{(-11.52)}{-68.319} + \underset{(11.00)}{0.0211}\ \text{MEDY59} \qquad R^2 = 0.66 \qquad (9)$$

2. $$\text{MIGRAT} = \underset{(-4.99)}{-85.922} + \underset{(4.66)}{9.910}\ \text{EDUC} \qquad R^2 = 0.26 \qquad (10)$$

3. $$\text{MIGRAT} = \underset{(2.26)}{18.011} - \underset{(-3.37)}{0.716}\ \text{PCNW60} \qquad R^2 = 0.16 \qquad (11)$$

4. $$\text{MIGRAT} = \underset{(2.25)}{72.224} - \underset{(-2.48)}{2.650}\ \text{PC4050} \qquad R^2 = 0.09 \qquad (12)$$

Each equation shows that the respective independent variable is statistically significant at the 95 percent confidence level. The explanatory ability of the respective equations decreases as one reads down the list from "median income" as the independent variable to "percentage of the population 40 years old and older" as the explanatory index (note the R^2

values). The coefficients, given that the 1950-1960 socio-economic-cultural environment persists, imply the following conclusions: (1) a $100 increase in median income leads to a 2.1 percent increase in the net migration rate; (2) one additional year of education, evaluated at the median, quite substantially influences net migration rates; (3) an increase of 5 percent in the value "percentage of population nonwhite" decreases the net migration rate across parishes by 3.6 percent; and (4) a shift in the age distribution of a parish explains a small proportion, 9 percent, of the differences in net migration rates.

In the equations with more than one explanatory variable, median income dominates the correlated variation to the point of rendering the other variables statistically insignificant. For example, note the following formulation:

$$\text{MIGRAT} = \underset{(-\,6.74\,)}{-78.713} + \underset{(8.64\,)}{0.020}\ \text{MEDY59} + \underset{(1.03\,)}{1.776}\ \text{EDUC} \qquad R^2 = 0.67 \qquad (13)$$

The dominancy of median income, which explains 66 percent of the differences in net migration according to equation (9) above, produces an overwhelming percentage of explanatory ability within this specification, even to the extent of showing median school years (EDUC) insignificant at the 95 percent confidence level. A test of the model using all the designated variables, excluding median income, renders signs consistent with a priori reasoning but explains only 36 percent of the total variability in net migration rates. These results tend to corroborate previous empirical studies in their contention that geographical mobility is in fact primarily a response to pecuniary incentives.

CHAPTER VII

CONCLUSIONS FROM ANALYSIS OF ECONOMIC AGGREGATES IN COASTAL LOUISIANA

Much of the economic environment, both past and present, portrays the resources and the trends which will guide the State throughout the next decade. An inventory of these various demands must be taken to assure that Louisiana allocates wisely and chooses the path of greatest efficiency.

Many of our current decisions have future implications. Decision making can become better or worse, depending on the quality of the forecasts which underlie the decision-making process. Quantitative economics has made noticeable progress toward developing a scientific approach to economic prediction, one which is not purely mechanical nor devoid of judgment but which does present a framework of objectivity. However, the methods of forecasting cannot stand alone; inputs must be adequate. The absolute prerequisite of forecasting is germane data, temporally appropriate and aggregated to the specified degree. The lack of such information is a substantial drawback for the economic planning of the Louisiana coastal region. The 1970 Census data provide the most complete compilation available, yet the infrequency of such information makes time series analysis often spurious. For proper planning, more complete and frequent data must be made available.

Probably the most thorough set of projections of consumer demand for the first half of the present decade has been published by Professors H. S. Houthakker and Lester D. Taylor (1970). The study projects that owner-occupied housing will increase at an annual rate of 3.2 percent between 1970 and 1975, gas as a household utility at a 4.5 percent rate, and gasoline and oil at a 2.7 percent rate. These values seemingly have much relevance for the Louisiana economy and especially for the coastal region, with its concentration of mining and contract construction. However, there is something naive about adhering to these projections. The early benchmark year (1964) of the Houthakker-Taylor study is temporally removed to a significant degree from the take-off point (1970), particularly within the framework of our volatile economy. Therefore, with this constraint, general directions of course seem to be the most judicious approach to planning for the coastal region, at least until adequate contemporary data are available.

Recently the Council for a Better Louisiana (CABL) provided an "Agenda for Louisiana for the Seventies."[1] Among the suggestions, each of which

---

[1]The Agenda for Louisiana was published in a series of articles appearing in the Baton Rouge, Louisiana, Morning Advocate beginning June 16, 1971.

seems appropriate in the context of this study, are policies to assure confidence among investors, such as the stability of governmental policies, equity of taxes, and a cooperative governmental attitude in solving problems which affect industry. In addition, Louisiana's economic growth can be enhanced by specific efforts to make cities more attractive to industry, e.g., by dealing with congestion (Baton Rouge, Louisiana, Morning Advocate, June 17, 1971). The "city of the future" portends the megalopolis, the city which stretches between polar concentrations of activity. Within the Louisiana coastal region, Baton Rouge-New Orleans connection appears imminent.

Public concern about the environment creates vast uncertainties about the next decade. It is in this area that the most visible expansion of government's role occurs, for no one can buy his share of clean air or water in the open market. The Gulf Coast and the Mississippi River are particularly urgent points of consternation. Attention must be immediately directed toward the environs of these water resources.

An underlying conclusion for the coastal region's economy is the need for intervention, even exhortation. The Louisiana economy can grow, and grow at a rate comparable to national trends; however, to expect the natural order to provide adequate guidance is ludicrous. The 1970's are obviously dominated by uncertainty. For example, will the Federal government intervene sufficiently to attain goals of simultaneous full employment and price stability? Depending on the direction of national priorities, the Louisiana economy must remain reasonably flexible and able to cater to new demands without immoderate lags.

PART II

ANALYSIS OF MAJOR COASTAL INDUSTRIES

CHAPTER VIII

LOUISIANA COMMERCIAL FISHERIES

Introduction

This chapter begins with a general overview of the fishing industry in the United States. Particular attention will be directed toward foreign trade, supply, per capita consumption and utilization, prices, and principal species. The importance of the Gulf region in general and of Louisiana in particular will receive special note. Various portions will focus on the general characteristics of the Louisiana fishing industry and the principal species.

An Overview of the United States Fishing Industry

United States fishermen caught 4,292 million pounds of fish and shellfish in 1969. This was the largest catch since 1966. Of the 1969 total, 2,246 million pounds were used for human consumption and 2,046 million pounds were used for industrial purposes. The 1969 catch sold for $518 million, which was 31 percent higher than the previous 10-year average and the highest dollar value in our history (U.S. Department of the Interior, Bureau of Commercial Fisheries, 1970a).

The rising importance of the Gulf region to United States commercial fishing is indicated in Table 20. Most of the gain is due to the growth of the menhaden and shrimp industries. By volume, the Gulf region in 1969 accounted for 38 percent of the total United States catch--or 1,622 million pounds. Of these, 1,013 million pounds were landed by Louisiana fishermen. Louisiana led all 50 states in volume of catch in 1968, 1969, and 1970 and accounted for 24 percent of the total domestic catch in 1969. Louisiana's 1969 catch represents the second highest catch for any state in the history of the United States fishing industry. It is surpassed only by California's outstanding 1936 catch of 1,760 million pounds (U.S. Department of the Interior, Bureau of Commercial Fisheries, 1970a).

By dollar value, the Gulf catch in 1969 was $152.5 million, or 29 percent of the total value of the United States catch. Of this, Louisiana landings accounted for $56.2 million. Louisiana moved from fifth place in 1968 to third in 1969 in the ranking of states by dollar value of catch. Texas ranked fourth with $46.9 million (U.S. Department of the Interior, Bureau of Commercial Fisheries, 1970a).

Foreign trade. The United States fishing industry ranks fifth in world production, behind Japan, Peru, Russia, and China. In 1969

TABLE 20

QUANTITY AND VALUE OF GULF REGION CATCH,
VARIOUS YEARS, 1940-1969
(Millions of pounds, millions of dollars)

	1940	1950	1960	1968	1969
Quantity	250	571	1,266	1,275	1,622
Percentage*	6	12	26	31	38
Value	10.6	50.4	85.5	125.4	152.5
Percentage*	11	15	24	27	29

*Percentage of United States total

Source: U.S. Department of the Interior, Bureau of Commercial Fisheries, 1970, Fisheries of the United States, 1969. Pp. 10-12.

foreign trade in fishery products for the United States was worth a record $948.8 million. This represents an increase of $58.4 million over the 1968 value. Imports for 1969 were valued at a record $844.3 million, as compared to $822.7 for 1968. In 1969 the United States imported 1.7 billion pounds of edible fishery products. Exports of domestic fishery products were valued at a record $104.5 million in 1969, an increase of $36.8 million over the 1968 value of $67.7 million. Principal causes for the increased dollar value can be traced to increases in the export of salmon, shrimp, and menhaden oil. The export of domestic fresh and frozen shrimp more than doubled from 12 million pounds in 1968 to 25.2 million pounds in 1969; a substantial part of this increase is directly attributable to the excellent brown shrimp season in Louisiana. In spite of the large increase in fishery exports, however, the United States suffered a balance of payments deficit in the fishery industry of $739.8 million in 1969 (U.S. Department of the Interior, Bureau of Commercial Fisheries, 1970a).

Domestic supply. The National Marine Fisheries Service defines the domestic supply of fishery products as the domestic catch plus imports. In 1969 the domestic catch was 4,292 million pounds, and imports amounted to 7,510 million pounds; the total domestic supply of both edible and industrial fishery products was 11,802 million pounds. This represents a substantial decline from the 1968 figure of 17,337 million pounds, but the quantity of edible fishery products actually increased from 5,528 million pounds in 1968 to a record 5,599 million pounds in 1969. The supply of industrial fishery products accounted for the entire decline, falling from a record 11,809 million pounds in 1968 to 6,203 million pounds in 1969. Despite this abnormal decline, however, the total domestic supply of both edible and industrial fishery products has increased 40 percent since 1959.

The changing structure of the United States supply of fishery products is also of interest. In 1959 the total supply consisted of 39 percent imports and 61 percent domestic catch. In 1969 the figures were

64 percent imports and 36 percent domestic catch (U.S. Department of the Interior, Bureau of Commercial Fisheries, 1970a). These figures give some indication of the reasons some observers have referred to United States commercial fishing as a declining industry. It is also questionable as to whether imports will be sufficient to meet the rising demand for fishery products in the future.

Per capita consumption. Per capita utilization is the total supply of fishery products (as defined above), both edible and industrial, divided by the total population as of July 1 in any year. Per capita consumption figures are derived from the total edible quantity available per period. Per capita consumption figures take into account beginning and ending stocks, as well as exports. In 1969 the per capita consumption of commercially caught fish and shellfish was 11.1 pounds. Historically, the United States per capita consumption figure has been between 10 and 12 pounds, but the 1969 figure is the highest since 1954. Compared with foreign consumers, the United States consumer is not an avid purchaser of fish products. For example, Japan was the leading country in per capita consumption of fishery products with 67.7 pounds, followed by Portugal with 47.5 pounds, Denmark with 46.7 pounds, Sweden with 45.1 pounds, and the Philippines with 36.2 pounds (U.S. Department of the Interior, Bureau of Commercial Fisheries, 1970a).

Of particular interest to the Gulf region and Louisiana is the growth in per capita consumption of shrimp. Table 21 shows the dramatic increase in per capita shrimp consumption from 1936 through 1969. Per capita consumption of shrimp increased 400 percent in 33 years (U.S. Department of the Interior, Bureau of Commercial Fisheries, 1970a).

Prices. Prices for fishery products in 1969 were generally higher on all levels of trade, including exvessel, wholesale, and retail. Fishermen received a record high average of 12.08 cents per pound in 1969 as compared to 11.46 cents in 1968 and 10.84 cents in 1967. As measured by the indexes of exvessel prices, the average prices paid to fishermen in 1969 were 13 percent above the 1968 level. Prices paid for finfish and shellfish were up 14 percent in 1969, and shrimp prices were up 9 percent (U.S. Department of the Interior, Bureau of Commercial Fisheries, 1970a).

Principal species. The 1969 menhaden catch of 1,548 million pounds accounted for 36 percent of the total domestic catch of all species. The 1969 catch was 12 percent above the 1968 catch and the largest since 1965. Gulf fishermen landed a record catch of 1,155 million pounds, surpassing the previous record, set in 1962, of 1,057 million pounds. The Gulf catch in 1969 was 40 percent above the 1968 catch. Gulf fishermen accounted for 75 percent of the total United States menhaden catch. Despite the adverse effects of Hurricane Camille, Louisiana fishermen produced a record 856 million pounds, or 55 percent of the total domestic menhaden catch (U.S. Department of Commerce and Louisiana Wild Life and Fisheries Commission, 1970). Menhaden is a key industrial species, used for meal, oil, and solubles. The excellent menhaden season had a very favorable effect on United States exports of domestic fish oils, which totaled 196.1 million pounds in 1969--a 201 percent increase over the 1968 figure (U.S. Department of the Interior, Bureau of Commercial Fisheries, 1970a).

TABLE 21

UNITED STATES PER CAPITA CONSUMPTION OF SHRIMP, 1936-1969

Year	Pounds	Year	Pounds
1936	0.35	1955	0.95
1937	0.45	1956	0.90
1938	0.45	1957	0.81
1939	0.48	1958	0.87
1940	0.52	1959	1.05
1946	0.76	1960	1.09
1947	0.69	1961	1.05
1948	0.69	1962	1.04
1949	0.71	1963	1.16
1950	0.72	1964	1.18
1951	0.84	1965	1.27
1952	0.89	1966	1.25
1953	0.89	1967	1.35
1954	0.91	1968	1.43
		1969	1.40

Source: U.S. Department of Interior, Bureau of Commercial Fisheries, 1970, Fisheries of the United States, 1969. P. 65.

The domestic shrimp industry is the most valuable fishery in the United States. It accounted for 24 percent of the total United States exvessel value for all species in 1969. A record 195.5 million pounds of shrimp (heads off) were landed in the United States in 1969. Fishermen were paid a record $122.9 million for their 1969 catch. These figures represent a 9 percent increase by weight and an 8 percent increase by value over the 1968 shrimp catch. Table 22 shows Gulf region shrimp landings by state for the period 1964 through 1969. Although Gulf region shrimp landings were somewhat lower in 1969 than in 1968, the Gulf region accounted for 66 percent of the total United States shrimp landings. Louisiana led the nation in shrimp landings with 52.8 million pounds. Louisiana shrimp landings in 1969 accounted for 40 percent of the Gulf region shrimp landings and 27 percent of the total United States shrimp landings (U.S. Department of the Interior, Bureau of Commercial Fisheries, 1970a).

An Overview of Louisiana Commercial Fishing

This section will provide a general overview of the Louisiana commercial fishing industry. It will consist of a brief geographic sketch, an examination of the principal landing locations, fish processing firms, vessels, and employment, and general catch specifications. The menhaden and shrimp industries will receive only cursory attention here, as they will be more rigorously examined in a later section.

Geography. The Gulfward margin of Louisiana's coastal region is a flat, treeless expanse dotted by thousands of small, shallow salt-water lakes and lagoons. The land is covered with sedge grass, rushes, and other marsh vegetation. The land meets the sea in a highly irregular and ragged shoreline of small bays, inlets, and coves. Because of this irregularity, the Louisiana shoreline is estimated to be approximately 1,500 miles, whereas the coastline is only about 400 miles.

TABLE 22

GULF SHRIMP LANDINGS BY STATE, 1964-1969
Heads-off Weight (Millions of Pounds)

State	1964	1965	1966	1967	1968	1969
Florida	27.9	27.1	21.3	17.8	20.2	17.6
Alabama	4.6	6.0	6.6	9.0	9.6	9.4
Mississippi	4.0	5.2	4.7	6.0	6.3	5.5
Louisiana	38.1	39.8	39.6	47.5	42.8	52.8
Texas	41.6	48.3	43.8	64.2	52.3	44.5
TOTAL	116.2	126.4	116.0	114.5	131.2	129.8

Source: U.S. Department of Interior, Bureau of Commercial Fisheries, 1970, Shellfish Situation and Outlook. P. 9.

The many shallow inlets and estuaries on the Louisiana coast provide essential grounds for the post-larval development of shrimp. These areas offer food and shelter for the young shrimp before they move out into the deeper waters of the Gulf of Mexico.

Principal landing locations. In the listing of the ten most active United States commercial fishing ports, Louisiana appears four times. Table 23 shows the volume and value of landings at these ten ports. Louisiana's four main ports are at Cameron, Dulac-Chauvin, Morgan City, and Empire, which in 1969 accounted for 742.4 million pounds of fish and shellfish valued at $31.6 million. These figures represent 73 percent of all Louisiana landings by volume and 56 percent by value. Figure 10 shows the location of these key Louisiana ports (U.S. Department of Commerce and Louisiana Wild Life and Fisheries Commission, 1970).

The general catch. Louisiana fishermen landed 1,013 million pounds of fish and shellfish valued at $56.2 million in 1969. This placed Louisiana first in the state rankings by volume (for the third consecutive year) and third in the rankings by value. Preliminary figures for 1970 indicated that Louisiana landings were 1,084 million pounds valued at $61.2 million. These figures represent a gain of 7 percent in volume and 9 percent in value over the 1969 figures. Table 24 shows the volume and value of Louisiana fish and shellfish for 1969 and 1970 by species (U.S. Department of Commerce and Louisiana Wild Life and Fisheries Commission, 1970).

The menhaden catch consistently constitutes the greatest share of Louisiana landings by volume, and the shrimp catch accounts for most of the value. The economic impact of the shrimp and menhaden fisheries will be examined in a later section.

The oyster industry is the third most valuable fishery in Louisiana. Oyster landings for 1969 amounted to 9.2 million pounds of meats valued at $4.0 million. These figures were down 30 percent by volume and 25 percent by value from the large 1968 oyster catch. This is in part attributable to the heavy damage inflicted in August 1969 by Hurricane

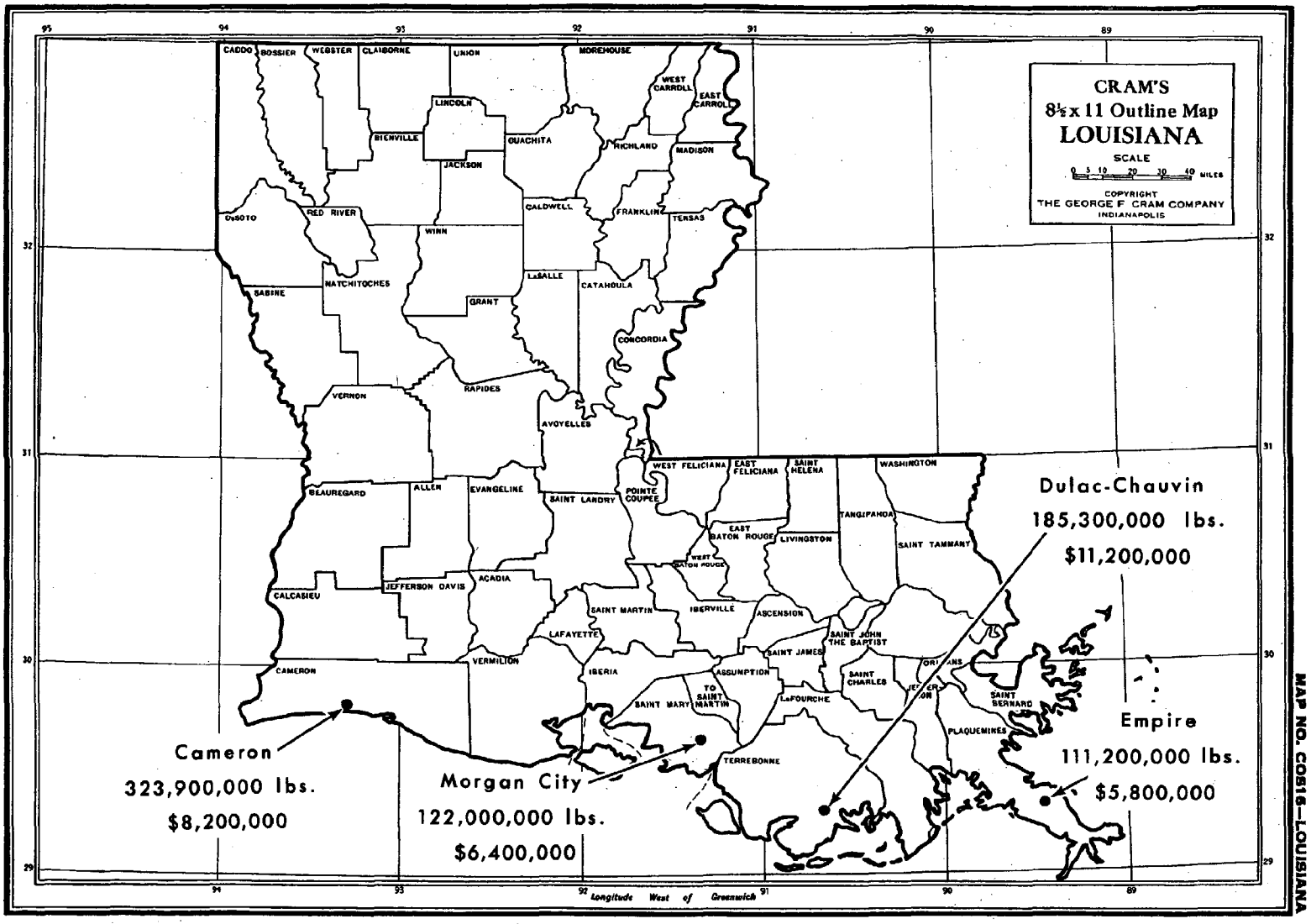


Fig. 10. Landings at selected Louisiana ports, 1969 (pounds/value). Source: U.S. Department of the Interior, Bureau of Commercial Fisheries, 1970, Fisheries of the United States, 1969.

TABLE 23

VOLUME AND VALUE OF LANDINGS AT CERTAIN U.S. PORTS, 1969

	Thousand Pounds	Thousand Dollars
San Pedro, California	406,900	40,500
Cameron, Louisiana	323,900	8,200
Pascagoula-Moss Point, Mississippi	256,000	6,600
Dulac-Chauvin, Louisiana	185,300	11,200
Kodiak, Alaska	140,300	18,000
Reedville, Virginia	124,200	1,900
Morgan City, Louisiana	122,000	6,400
Beaufort-Morehead City, North Carolina	118,100	2,400
Empire, Louisiana	111,200	5,800
New Bedford, Massachusetts	107,800	17,400

Source: U.S. Department of Interior, Bureau of Commercial Fisheries, 1970, Fisheries of the United States, 1969. P. 9.

Camille. Substantial damage was reported in both private and State-owned oyster beds east of the Mississippi River. The Louisiana Wild Life and Fisheries Commission received a grant of $176,388 to be used for restoration of the damaged oyster reefs (U.S. Department of Commerce and Louisiana Wild Life and Fisheries Commission, 1971).

The Louisiana oyster industry employed 1,111 fishermen in 1967. Oysters are harvested by dredges, tongs, or by hand. Dredging operations account for all but a fraction of the total catch. In 1967 some 225 large vessels and 191 smaller motor boats were engaged in oyster dredging operations (U.S. Department of the Interior, Bureau of Commercial Fisheries, 1969).

Hard crab landings for 1969 amounted to 11.6 million pounds valued at $1.1 million. This production represents a gain of 21 percent in volume and 33 percent in value over the 1968 catch. At just over 9 cents per pound, the prices received by fishermen were well above those of previous years. Preliminary figures for 1970 indicate a decline of 32 percent in volume and 30 percent in value from the 1969 crab catch (U.S. Department of Commerce and Louisiana Wild Life and Fisheries Commission, 1971).

Fish processing plants. More plants producing canned and industrial fishery products are located in Louisiana than in any of the other seven South Atlantic and Gulf states. The Louisiana Directory of Manufacturers for 1972 lists 35 firms dealing in fresh or frozen packaged fish and seafoods, 27 in canned and cured fish and seafoods, and 6 in animal and marine fats and oils. Table 25 lists the locations and number of firms involved in each category. Figure 11 shows their locational dispersion (Louisiana Department of Commerce and Industry, 1972; U.S. Department of the Interior, Bureau of Commercial Fisheries, 1970a).

Canned fishery products. There are 27 plants producing canned fishery products in Louisiana. This figure compares favorably with those of other Gulf states inasmuch as Mississippi has 10, Florida 3, and Texas 2 plants. The value of Louisiana canned fishery production in 1970 was

TABLE 24

LOUISIANA LANDINGS BY SPECIES, 1969-1970

(Preliminary)

Species	Total			
	1970		1969	
Fresh-water Fish	Pounds	Value	Pounds	Value
Bowfin	56,096	$ 3,105	68,100	$ 3,527
Buffalofish	2,784,900	379,916	2,834,300	372,936
Carp	168,325	5,977	200,800	6,979
Catfish	5,021,391	1,448,429	5,437,000	1,532,169
Garfish	765,454	61,028	1,057,500	83,168
Paddlefish (Spoonbill)	16,572	1,169	17,600	880
Sheepshead (Gaspergou)	816,670	91,795	1,083,600	105,311
Total Fresh-water Fish	9,629,408	1,991,419	10,698,900	2,104,970
Salt-water Fish				
Bluefish	138	7	100	8
Cabio	14,409	961	2,400	191
Croaker	368,150	54,959	427,200	85,602
Drum: Black	416,139	32,051	478,300	32,317
Red (Redfish)	768,495	124,725	782,100	114,297
Flounders	438,641	73,667	306,800	49,527
Groupers	2,807	192	3,600	428
Jewfish	6,468	459	2,900	322
King Whiting (Black Mullet)	407,482	22,220	433,500	35,939
Menhaden	959,809,840	18,930,641	856,250,600	12,764,098
Mullet (Popeye)	38,076	1,864	87,800	2,870
Pompano	4,381	3,748	6,400	4,006
Sawfish	1,538	94	2,900	176
Sea Catfish	101,170	7,073	101,800	9,379
Sea Trout or Weakfish:				
Spotted	775,211	215,694	719,600	215,049
White	136,490	9,572	100,600	10,264
Sharks	5,510	274	3,000	247
Sheepshead	221,533	12,115	312,600	19,825
Snapper, Red	239,079	67,005	129,600	35,284
Spanish Mackerel	29,261	2,353	70,400	5,863
Spot	38,699	2,071	14,100	822
Tripletail	5,550	380	1,400	154
Warsaw	-	-	400	63
Unclassified	889,943	24,817	30,645,400	477,570
Total Salt-water Fish	964,719,010	19,586,942	890,883,500	13,864,301
Total Fish	974,348,418	21,578,361	901,582,400	15,969,271
Shellfish, Etc.				
Crabs, Blue: Hard	7,852,169	715,742	11,601,900	1,072,031
Soft and Peeler	53,536	47,471	196,600	161,236
Crawfish, Fresh-water	2,676,703	799,657	7,892,200	1,550,041
Shrimp (Heads on):				
Fresh-water	7,908	1,456	8,500	2,864
Salt-water	90,717,262	34,582,832	82,880,600	33,355,964
Oyster Meats	8,077,601	3,449,220	9,178,900	3,968,341
Squid	1,382	79	2,100	217
Terrapin	115	43	300	120
Turtles: "Baby" (Green)	505	5,637	1,200	15,200
Fresh-water	30,977	8,382	61,500	20,045
Sea	1,487	351	1,700	369
Frogs	37,228	22,728	76,700	54,576
Total Shellfish, Etc.	109,456,873	39,633,598	111,902,200	40,201,004
GRAND TOTAL	1,083,805,291	$61,211,959	1,013,484,600	$56,170,275

Source: U.S. Department of Commerce and Louisiana Wild Life and Fisheries Commission, 1970, Louisiana Landings. P. 4.

TABLE 25

LOUISIANA FISH PROCESSING FIRMS, 1971

Canned and Cured Fish and Seafoods (S.I.C. 2031)		Fresh or Frozen Packaged Fish and Seafoods (S.I.C. 2036)		Animal and Marine Fats and Oils (S.I.C. 2094)	
Location	Number	Location	Number	Location	Number
New Orleans	4	New Orleans	4	Cameron	2
Dulac	4	Amite	3	Empire	1
Houma	4	Golden Meadow	3	Dulac	1
Amite	2	Patterson	3	Intracoastal City	1
Westwego	2	Chauvin	2	Amelia	1
Chauvin	2	Westwego	2		
Algiers	1	Morgan City	2		
Barataria	1	Cameron	2		
Lafitte	1	Algiers	1		
Denham Springs	1	DeRidder	1		
Slidell	1	Breaux Bridge	1		
Franklin	1	Gretna	1		
Harvey	1	Houma	1		
Cameron	1	Barataria	1		
Violet	1	Shreveport	1		
		Dulac	1		
		Leeville	1		
		Slidell	1		
		Opelousas	1		
		Metairie	1		
		Berwick	1		
		Harvey	1		
TOTAL	27	TOTAL	35	TOTAL	6

$26.5 million. Most of the canning activity in Louisiana centers around shrimp. Louisiana has 13 plants engaged in shrimp canning and 10 plants engaged in the canning of specialty items such as gumbo, bisque, oyster stew, crawfish, and various sauces. Louisiana is also active in oyster and animal-food canning (U.S. Department of Commerce, 1971a).

Industrial fishery production. In 1970 there were 127 plants in the United States producing industrial fishery products worth $100 million. Louisiana had 30 plants engaged in industrial fishery production in 1970. The value of Louisiana's industrial fishery production was $30.1 million, or 30 percent of the national total. Louisiana's large-scale industrial fishery activity is primarily attributable to its substantial menhaden catch. Menhaden, the nation's chief industrial species, accounts for 67 percent of all fish meal production, 77 percent of all fish soluble production, and 90 percent of all fish oil production (U.S. Department of Commerce, 1971b).

Vessels and employment. Table 26 shows the fluctuation in employment and fishing craft utilization in the United States from 1930 to 1967. Since 1950 both employment and craft utilization have declined.

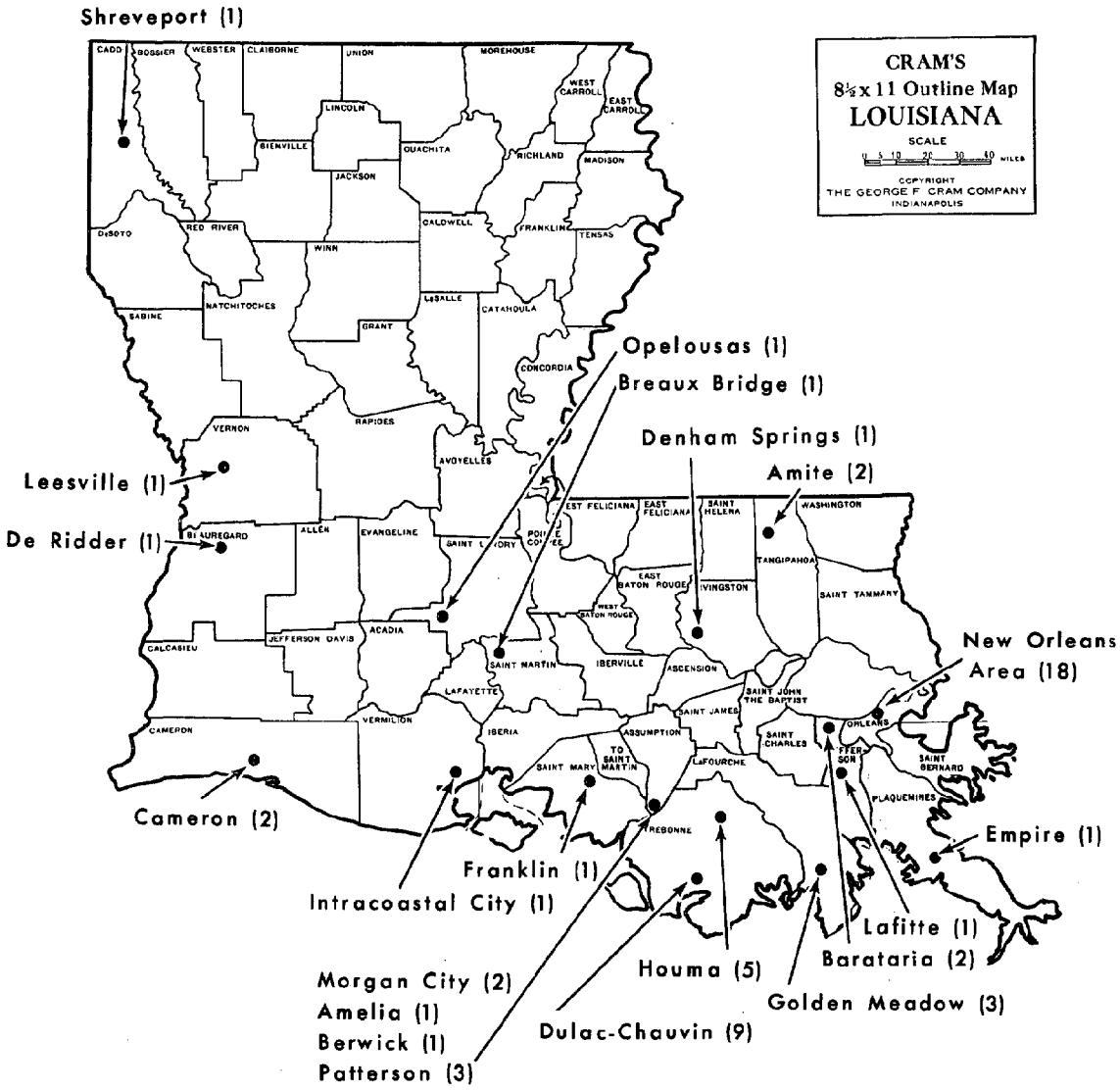


Fig. 11. Locations of Louisiana fish processing firms, 1972 (city and number of firms). Source: Louisiana Department of Commerce and Industry, 1972, Louisiana Directory of Manufacturers.

TABLE 26

EMPLOYMENT AND FISHING CRAFT UTILIZATION
IN THE UNITED STATES, 1930-1967

	1930	1940	1950	1960	1967
Persons Employed					
Fishermen	119,716	124,795	161,463	130,431	131,752
Shoreworkers	78,996	90,215	102,015	93,625	88,624
TOTAL	198,712	215,010	263,478	224,056	220,376
Craft Utilized					
Vessels*	4,374	5,562	11,496	12,018	12,874
Boats	73,398	66,248	80,814	65,039	68,454
TOTAL	77,772	71,810	92,310	77,057	81,328

*5 net tons and over

Source: U.S. Department of Interior, Bureau of Commercial Fisheries, 1970, Fisheries of the United States, 1969. P. 69.

In 1967 there were 131,752 fishermen in the United States. Table 27 disaggregates these figures for the Gulf region and shows that there were 37,029 fishermen in the Gulf states in 1967. Of these, 12,529 were employed in Louisiana. Louisiana employed 9.4 percent of all United States fishermen and ranked second only to Alaska in total employment of fishermen. The United States fishing industry employed 88,624 shoreworkers in 1967. The Gulf region averaged 21,099 shoreworkers for the season and 14,944 for the year, or 23 percent of the national total. Of these, 5,664 were employed in Louisiana (U.S. Department of the Interior, Bureau of Commercial Fisheries, 1969 and 1970a).

Table 26 shows the growth in the number of large fishing vessels (5 net tons and over) in the period from 1930 to 1967. There were 12,874 large fishing vessels in the United States in 1967. Of these, 6,034 (47 percent of the national total) were employed in the Gulf region. Louisiana had 1,698 large vessels in 1967 and ranked fourth in total number of vessels, behind Alaska, California, and Texas. Of the 856 large fishing vessels added to the United States fishing fleet in 1968, 419 (or 48 percent) were added to the Gulf fleet. Most of these vessels were in the 300 to 399 horsepower range. All but a fraction of the large fishing vessels employed in Louisiana are utilized in the shrimp, menhaden, and oyster fisheries (U.S. Department of the Interior, Bureau of Commercial Fisheries, 1969 and 1970a).

The Louisiana fishing fleet also employed some 6,133 smaller boats in 1967. The shrimp fishery utilized 3,765 of these. The remainder were variously used in the crab, oyster, menhaden, catfish, and crawfish industries (U.S. Department of the Interior, Bureau of Commercial Fisheries, 1969).

TABLE 27

EMPLOYMENT AND FISHING CRAFT UTILIZATION IN THE GULF STATES, 1967

State	Vessels	Boats	Fishermen	Shoreworkers*
Alabama	418	3,662	2,623	1,747
Florida	1,579	5,195	11,041	5,583
Louisiana	1,698	6,133	12,529	5,664
Mississippi	545	1,858	3,801	1,770
Texas	1,794	1,383	7,035	6,335
TOTAL	6,034	18,231	37,029	21,099

*Average for the season

Source: U.S. Department of Interior, Bureau of Commercial Fisheries, 1969, Fishery Statistics of the United States, 1967. P. 13.

Principal Species of Louisiana Fisheries

Analysis of the Louisiana commercial fishing industry is essentially an analysis of the shrimp and menhaden fisheries. The two species together accounted for 93 percent of all Louisiana landings by volume and 82 percent of all landings by value in 1969. The shrimp and menhaden fisheries employed about 90 percent of all Louisiana fishermen, about 89 percent of all larger vessels, and about 83 percent of the smaller boats in 1967 (U.S. Department of Commerce and Louisiana Wild Life and Fisheries Commission, 1971; U.S. Department of the Interior, Bureau of Commercial Fisheries, 1969).

The menhaden fishery. Table 28 shows the substantial growth of the menhaden fishery in Louisiana over the period from 1966 to 1970. Over the past 5 years, both the volume and the value of the menhaden catch have increased significantly: a 73 percent gain in volume and a 97 percent gain in value of the menhaden catch from 1966 to 1970. In 1966 the Louisiana menhaden catch, valued at $9.6 million, accounted for 24 percent of the value of total Louisiana landings; the 1970 menhaden catch, valued at $18.9 million, accounted for about 30 percent of the value of the total Louisiana catch. By volume, the relative share of the menhaden catch increased from 85 percent in 1966 to 89 percent in 1970 (U.S. Department of Commerce and Louisiana Wild Life and Fisheries Commission, 1966-1970).

In spite of the very large menhaden catch off the Louisiana coast, biologists report that the present rate of menhaden harvesting is consistent with sound economic and ecological resource utilization. Orville M. Allen, supervisory fishery reporting specialist from New Orleans, writes: "Based on research findings by the Beaufort Biological Laboratory, 93 percent of the Gulf menhaden catch consisted of fish in the one and two-year-old groups. Due to the short life span and high natural mortality rate of menhaden, the harvesting of these age groups was considered by biologists as being ideal in obtaining the optimum yield in the Gulf area" (U.S. Department of Commerce and Louisiana Wild Life and Fisheries Commission, 1971).

TABLE 28

LOUISIANA MENHADEN CATCH, 1966-1970

Year	Volume (Pounds)	Value (Dollars)
1966	555,852,100	$ 9,557,646
1967	510,414,000	6,134,338
1968	622,291,300	7,739,602
1969	856,250,600	12,764,098
1970 (Preliminary)	959,809,840	18,930,641

Source: U.S. Department of Commerce and Louisiana Wild Life and Fisheries Commission, 1966-1970, Louisiana Landings.

The menhaden season normally runs from April to October, and the heaviest fishing occurs in June, July, and August. Table 29 shows menhaden landings by month from 1967 through 1969. During these years, there were no menhaden landings in January, February, March, November, or December. It is not uncommon for Louisiana menhaden vessels to travel to Florida at the end of the menhaden season in order to participate in the thread herring fishery (U.S. Department of Commerce and Louisiana Wild Life and Fisheries Commission, 1967-1969).

Menhaden are gathered in purse seines, which are large nets with floats along the top and weights on the bottom. The purse seine is strung in a large circle, enclosing the fish. In 1967 the Louisiana menhaden industry utilized 60 large vessels (5 tons and over), 120 smaller motor boats, and 60 purse seines. In the same year, 1,051 fishermen were directly employed in the Louisiana menhaden industry (U.S. Department of the Interior, Bureau of Commercial Fisheries, 1969).

Although the menhaden industry employs only about 10 percent of Louisiana's fishermen, it accounts for a substantial portion of the employment in Louisiana's fish-processing firms. The Louisiana menhaden industry is by far the largest in the nation, supplying 55 percent of the total domestic supply (U.S. Department of the Interior, Bureau of Commercial Fisheries, 1969 and 1970a).

The Louisiana shrimp industry. Table 30 shows the pounds and value of the Louisiana shrimp catch over the years from 1966 to 1970. Also shown in Table 30 is the value of the Louisiana shrimp catch as a percentage of the total value of the Louisiana catch. Although the shrimp catch increased 45 percent in volume and 42 percent in value in the 5 years from 1966 to 1970, its relative share of the total value of the Louisiana catch declined somewhat. This is largely attributable to the growth of the menhaden fishery during the same time period. The shrimping industry is, however, the largest fishery in the State, consistently accounting for over half the total value of the Louisiana catch (U.S. Department of Commerce and Louisiana Wild Life and Fisheries Commission, 1966-1970).

TABLE 29

LOUISIANA MONTHLY MENHADEN LANDINGS, 1967-1969
(Millions of Pounds)

Year	March	April	May	June	July	August	September	October
1967	0.7	6.9	58.7	115.2	138.9	122.9	59.0	7.8
1968	--	7.9	68.3	116.8	160.9	132.4	100.9	34.9
1969*	--	21.7	138.7	164.9	186.5	145.5	171.6	27.2

*Preliminary

Source: U.S. Department of Commerce and Louisiana Wild Life and Fisheries Commission, 1967-1969, Louisiana Landings.

TABLE 30

LOUISIANA SHRIMP CATCH, 1966-1970
POUNDS, VALUE, AND PERCENTAGE OF TOTAL CATCH

Year	Pounds (Heads On)	Dollars	Percentage of Total Catch, By Dollar Value
1966	62,284,100	$24,391,715	61.4
1967	75,328,700	24,576,130	64.9
1968	67,769,000	25,623,000	58.7
1969	82,889,100	33,358,828	59.4
1970*	90,725,170	34,584,288	56.6

*Preliminary

Source: U.S. Department of Commerce and Louisiana Wild Life and Fisheries Commission, 1966-1970, Louisiana Landings.

The Louisiana shrimp industry employed 8,875 fishermen in 1967. This figure represented about 80 percent of all Louisiana fishermen in 1967. Most of the shrimp were harvested by means of otter trawls, which are large, baglike nets that are dragged along the sea bottom by the shrimping craft. The otter trawl technique generally accounts for about 90 percent of the shrimp harvest. There were 8,148 Louisiana fishermen working on otter trawls in 1967; this figure represented about 92 percent of all Louisiana shrimp fishermen. Of these, 3,782 fishermen worked on large vessels, of which there were 1,421. Another 4,366 worked on the 3,402 smaller motor boats utilizing the otter trawl technique (U.S. Department of the Interior, Bureau of Commercial Fisheries, 1969). The remainder of the shrimp were harvested by means of butterfly nets, pots, and traps. Of these three methods, butterfly net shrimping was by far the most significant, employing 726 fishermen on 22 vessels and 363 motor boats in 1967 (U.S. Department of the Interior, Bureau of Commercial Fisheries, 1969).

Table 31 shows the fluctuation in landings of salt-water shrimp by months from 1967 to 1969. The heaviest landings are normally in the months from May to November, but, unlike the menhaden fishery, shrimping activity goes on year-round (U.S. Department of Commerce and Louisiana Wild Life and Fisheries Commission, 1967-1969).

The shrimp industry is the most valuable fishery in the United States; in 1969 it accounted for 24 percent of the value of all United States landings. Louisiana is a principal shrimp supplier, providing, in 1969, 27 percent of the total domestic shrimp supply (U.S. Department of the Interior, Bureau of Commercial Fisheries, 1969 and 1970a). These figures reveal the importance of the Louisiana shrimp industry both to Louisiana and to the nation as a whole.

Summary and Conclusions

The Louisiana commercial fishing industry is among the largest in the United States. Louisiana leads all 50 states in volume of catch and ranks third in value of catch. Louisiana accounts for 55 percent of the domestic menhaden catch, 30 percent of the industrial fishery production, and 27 percent of the domestic shrimp catch. Preliminary figures for 1970 indicated that the dockside value of the Louisiana catch was $61.2 million. Figures for 1967 show that the Louisiana commercial fishing industry employed 12,529 fishermen (the second highest number in the nation), 5,664 shoreworkers, 1,698 large vessels, and 6,133 smaller boats.

The fishing industry in Louisiana is a vital component of the national fishing industry and of the Louisiana economy.

TABLE 31

SALT-WATER SHRIMP LANDINGS BY MONTH, 1967-1969
(Millions of Pounds, Heads on)

Month	1967	1968	1969
January	1.6	1.8	1.9
February	1.0	1.2	1.1
March	0.7	1.0	1.0
April	0.9	0.7	1.0
May	15.0	9.7	9.0
June	20.0	15.6	16.7
July	9.1	8.8	9.4
August	7.2	6.5	5.0
September	5.0	5.6	7.3
October	7.0	8.3	13.0
November	5.1	5.5	12.0
December	2.4	3.1	5.6
TOTAL	75.3	67.7	82.9

Source: U.S. Department of Commerce and Louisiana Wild Life and Fisheries Commission, 1967-1969, Louisiana Landings.

CHAPTER IX

MINERAL INDUSTRIES IN COASTAL LOUISIANA

Introduction

For many years the production of crude oil and natural gas has been a major industry in Louisiana. Oil and gas have provided the State with many benefits, not only directly in the form of severance taxes and lease royalties, but indirectly through the provision of the livelihoods of many of the State's people. The production of oil and gas has also attracted allied industries such as refining and chemicals, all of which contribute greatly to the welfare of the State and its people.

During the last several years a change has appeared in the geographical pattern of the oil and gas industry within the State. The production of crude oil has been diminishing in the older fields of north Louisiana and increasing in coastal Louisiana. Indeed, oil and gas production has not stopped at the shoreline but has been extended outward into the offshore regions.

This chapter will attempt to give a picture of the recent past of this industry and make some projections for the future. The change in the geographical distribution of the industry has a number of implications of profound importance for the State as a whole and for the coastal parishes in particular. For this reason the effects of the change will be emphasized in several of the following sections.

The sulfur industry, the second most important extractive mineral industry, is confined to the Gulf Coast region and represents a much smaller portion of the State's revenues and employment. Accordingly, sulfur is given brief treatment.

The Oil and Gas Industry of Louisiana

Geography

The Louisiana Oil and Gas Commission has divided the State into two regions--North Louisiana and South Louisiana. South Louisiana is depicted in Figure 12. Much of the data which are available are tabulated according to this division. In many cases this paper will refer to the coastal parishes. These parishes include most but not all of the area included in South Louisiana. Unless otherwise specified, the data which follow include the offshore area as part of South Louisiana or as part of the parish adjacent to the particular offshore area.

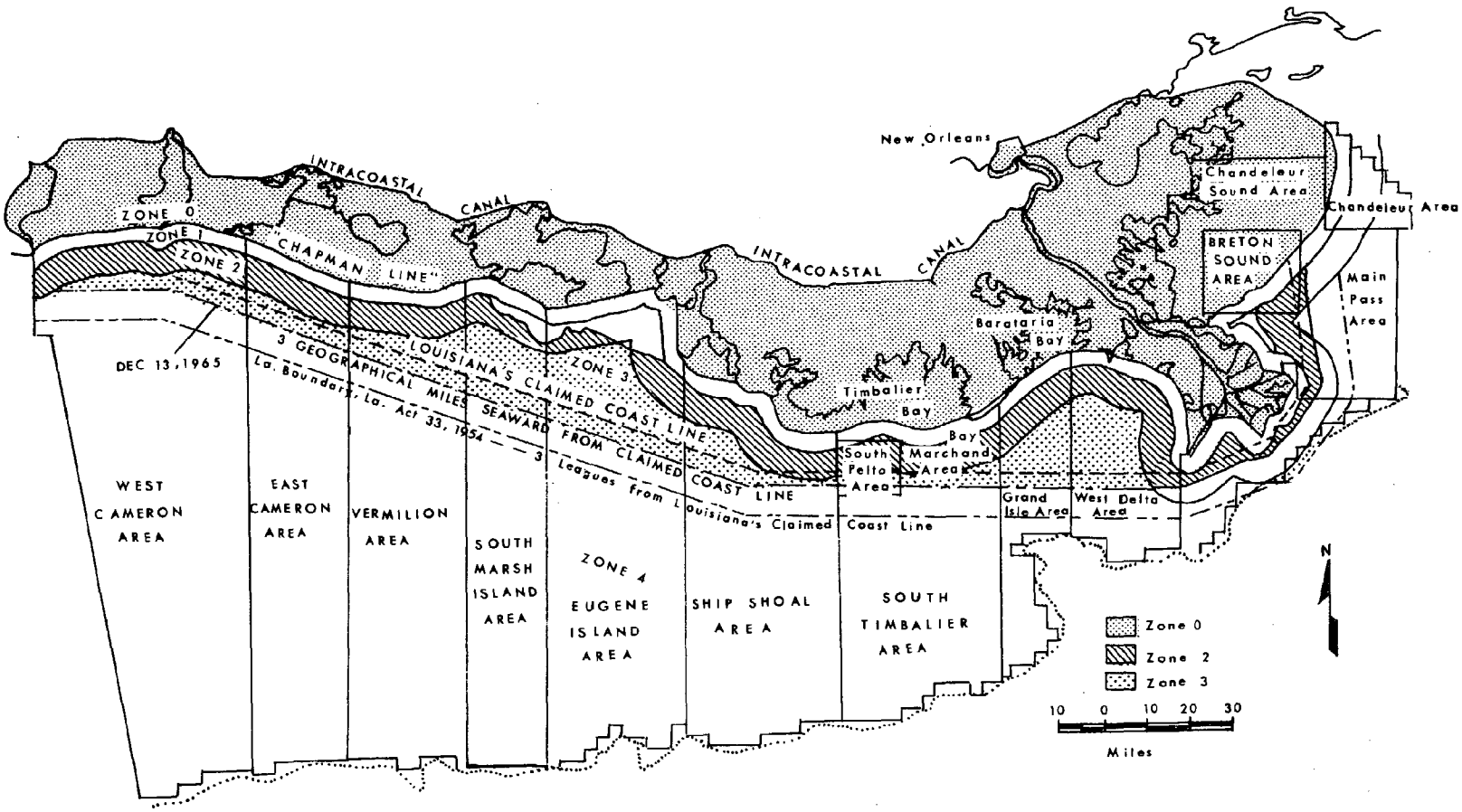


Fig. 12. Location of Intracoastal Canal, the Chapman Line, and Zones 0, 1, 2, 3, and 4, offshore Louisiana. Source: Weaver, L. K., C. J. Jirik, and H. F. Pierce, 1969, Impact of Petroleum Development for the Gulf of Mexico. U.S. Department of the Interior, Bureau of Mines, Information Circular 6408, p. 12.

Another complication arises from the prolonged litigation between the State and Federal governments over the right to ownership and control over the offshore areas. At present the State has won control of zones 0 and 1, the Federal government of zone 4, and zones 2 and 3 are still disputed. The entire dispute centers on the location of the seaward boundary of the State and is too complex to be described herein.

Drilling

The drilling of new oil and gas wells is best expressed in terms of well completions in a given period because these figures indicate the actual numbers of new wells coming into actual or potential production. The revenues which the State derives from mineral leasing are found under the section on production, below.

Oil well completions. Table 32 and Figure 13 show the trends in drilling since 1960. The most prominent trend is the large decrease in the number of new wells since 1965. This results largely from the movement of the drilling industry out of North Louisiana. The drilling rate for the South Louisiana onshore area has also shown a decrease over the period, but the offshore drilling rate is fairly constant. These figures show only the number of wells being drilled and not their depth or potential productive capacity. The new wells in South Louisiana and offshore tend to be more productive than the ones in North Louisiana. Nevertheless, the figures do indicate that the future of the oil production industry in Louisiana is to be found in South Louisiana. If the present trends continue, more oil wells will be completed offshore than onshore in South Louisiana. This means that the coastal parishes should enjoy an increasing proportion of the economic benefits of oil production in Louisiana for the near future. The question of whether this increased proportion will be of a smaller pie will be explored more fully under the discussion of reserves, below.

Gas well completions. The number of new gas wells completed per year in Louisiana has been quite stable through time. Table 32 and Figure 14 show that a decrease in North Louisiana has been matched by an increase in the offshore region. The onshore part of South Louisiana was remarkably stable from 1965 to 1969.

As with oil, the trends in new gas wells indicate that South Louisiana, and especially the coastal and offshore regions, will gain the majority of new wells and reap the economic benefits therefrom.

Economics of offshore drilling. The economics of drilling offshore from the Louisiana coast are such as to indicate that the economic returns of development of an offshore oil or gas field are heavily dependent on the size of the field and the production rate which can be realized from the field (Wilson, 1969). These two factors combine to limit the development of offshore deposits to large fields

TABLE 32

LOUISIANA WELL COMPLETIONS, 1960-1969

Area	Type	Year					
		1960	1965	1966	1967	1968	1969
North Louisiana	Oil	596	1,220	572	424	310	346
	Gas	241	300	213	186	173	136
	Dry	603	1,120	888	678	539	520
	Abandoned	--	86	99	51	26	68
South Louisiana Onshore	Oil	771	918	838	664	688	506
	Gas	285	236	236	238	258	262
	Dry	646	715	622	564	591	664
	Abandoned	--	--	--	125	97	110
Offshore Louisiana	Oil	274	500	532	638	601	501
	Gas	79	76	93	193	204	187
	Dry	132	277	350	402	370	310
	Abandoned	--	--	--	152	160	160
Total Louisiana	Oil	1,641	2,638	1,942	1,726	1,599	1,353
	Gas	605	612	542	617	635	585
	Dry	1,381	2,112	1,860	1,644	1,500	1,494
	Abandoned	--	--	--	191	283	338

Source: Ira Rinehart's Oil and Gas Yearbook, Drilling Summaries, 1970, 1967, 1961. Rinehart Oil News Company, Dallas.

with productive wells. The marginal producers are never developed at all. This means that on the average the new offshore well is more productive than the older onshore well.

Reserves

The reserves of crude oil, natural gas, and natural gas liquids are summarized every year by the American Petroleum Institute and the American Gas Association.

Crude oil and natural gas liquids. Louisiana possesses substantial reserves of crude oil and natural gas liquids. At the end of 1969, Louisiana accounted for about one-sixth of the total U.S. reserves of crude oil and almost one-third of the total U.S. reserves of natural gas liquids. Table 33 and Figure 15 show how this reserve picture has changed over the last few years. While total reserves for the U.S. have dropped rapidly since 1967, Louisiana's reserves of crude oil have remained on a slow increase since 1950, and the rate of increase seems almost constant in recent years. Reserves of natural gas liquids in both the U.S. and Louisiana have fallen off somewhat since 1968,

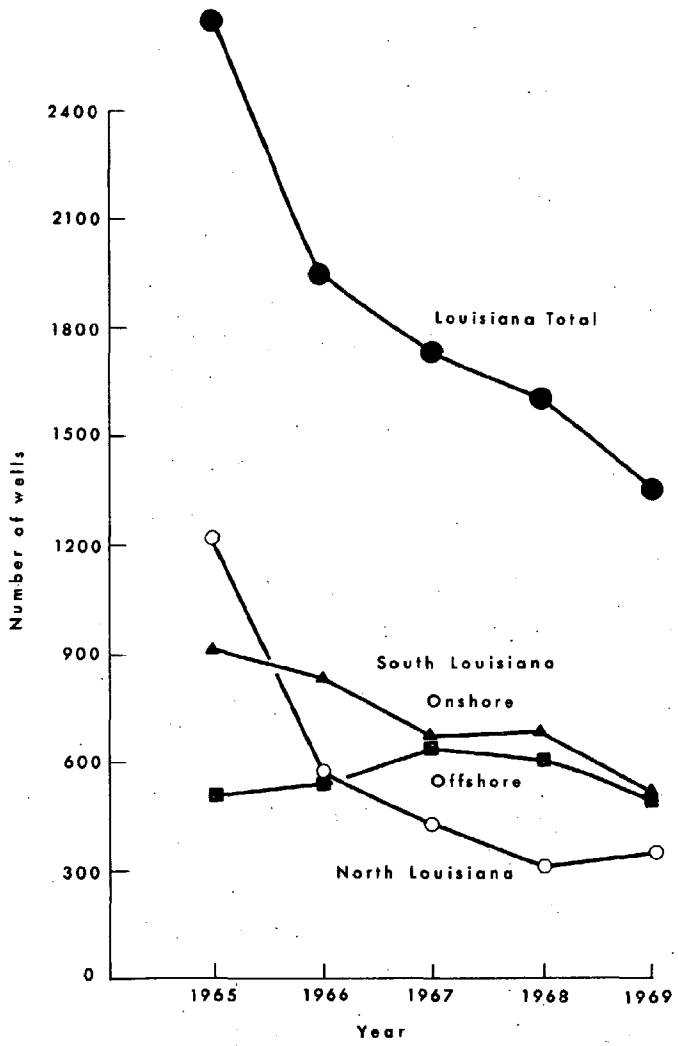


Fig. 13. Oil well completions in Louisiana 1965-1969.

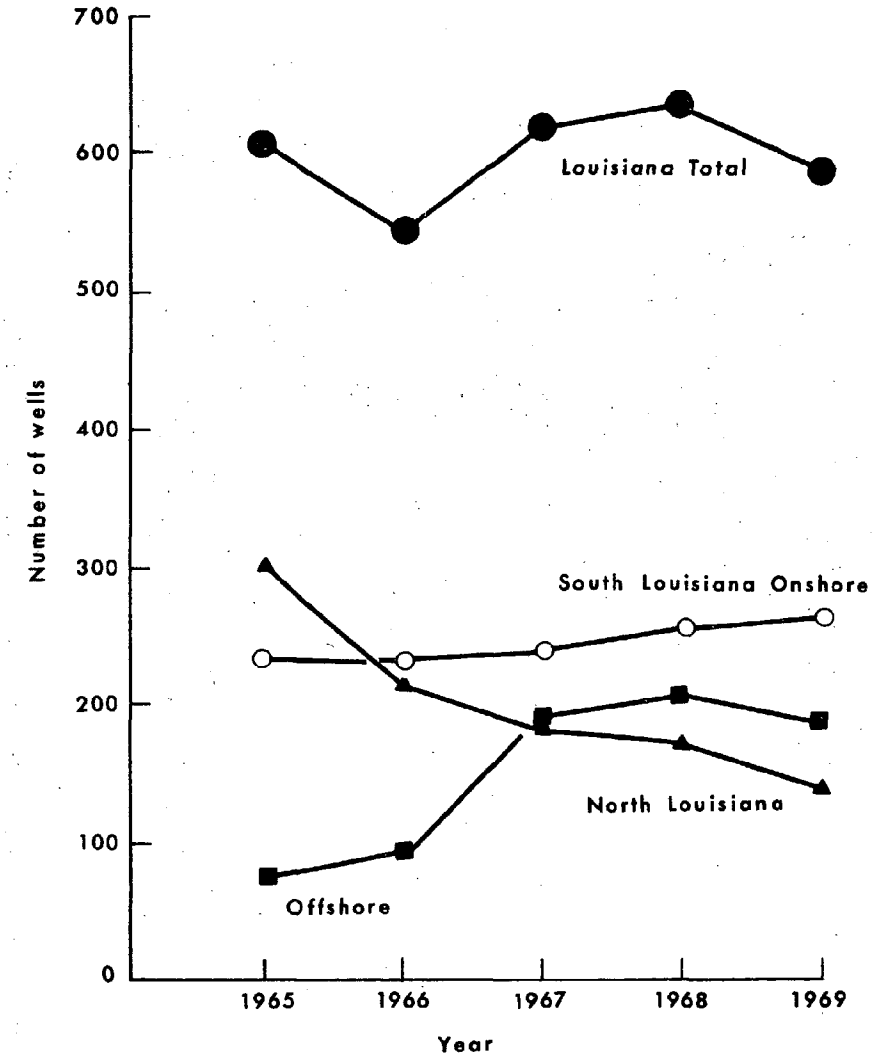


Fig. 14. Gas well completions in Louisiana, 1965-1969.

TABLE 33

GAS AND CRUDE OIL RESERVES

	1950	1955	1960	1965	1966	1967	1968	1969
				Crude Oil (1,000 Barrels)*				
U.S. Total	25,268,398	30,012,170	31,613,211	31,352,391	31,452,127	31,376,670	30,707,117	29,631,862
Louisiana Total	2,185,137	3,255,287	4,785,380	5,245,839	5,408,429	5,455,946	5,608,156	5,689,150
North Louisiana	441,695	391,738	431,744	435,440	416,226	393,038	360,595	333,184
South Louisiana	1,743,442	2,863,549	4,353,636	4,810,399	4,922,203	5,062,908	5,247,561	5,355,966
END OF 1969 TOTAL OFFSHORE CRUDE OIL FOR TEXAS AND LOUISIANA = 2,767,557,000 Barrels								
				Natural Gas Liquids (1,000 Barrels)				
U.S. Total	4,267,663	5,438,565	6,816,059	8,023,534	8,328,966	8,614,231	8,598,108	8,143,174
Louisiana Total	643,512	935,950	1,432,975	2,168,802	2,282,394	2,607,188	2,667,520	2,570,298
North Louisiana	170,884	206,266	106,516	117,784	148,268	139,470	136,058	119,787
South Louisiana	472,268	729,684	1,326,459	2,051,018	2,134,126	2,467,718	2,531,462	2,450,511
				Natural Gas MCF 60°F 14.73 PSIA				
U.S. Total	184,584,745	222,482,544	262,326,326	286,468,923	289,322,805	292,907,703	287,349,852	275,108,835
Louisiana Total	28,378,301	42,205,124	63,041,891	82,811,157	83,684,092	86,290,009	88,015,624	85,056,639
North Louisiana	5,983,851	5,827,533	5,315,798	5,141,353	5,070,784	4,866,490	4,622,735	4,287,202
South Louisiana	22,394,450	36,377,591	57,726,093	77,669,804	78,613,308	81,423,519	83,392,889	80,769,437

*One barrel equals 42 gallons

Source: American Petroleum Institute, 1970, Reserves of Crude Oil, Natural Gas Liquids, and Natural Gas in the United States and Canada and United States Productive Capacity as of December 31, 1969. Vol. 24.

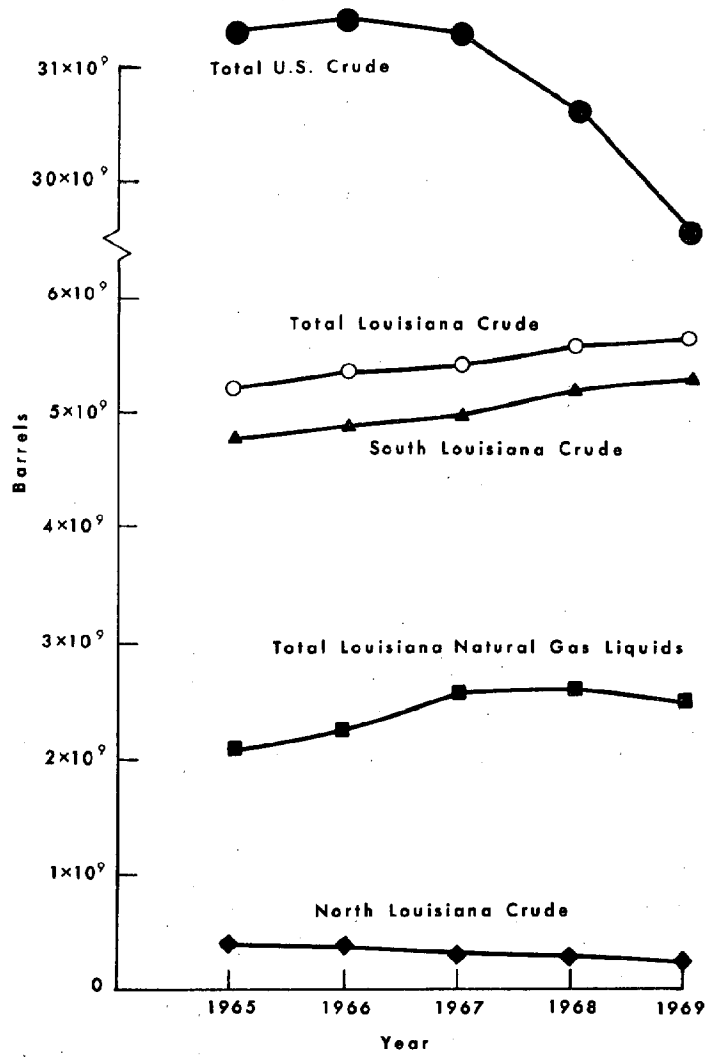


Fig. 15. Reserves of crude oil and natural gas liquids at end of years 1965-1969.

but the rate of decrease seems small. When the geographical distribution of these reserves is considered, it is seen that the reserves of both crude oil and natural gas liquids in North Louisiana are small and almost stable.

South Louisiana, including the coastal region, has 95 percent of the State's reserves of natural gas liquids and over 90 percent of the crude oil reserves. While the figures given in Table 33 and Figure 15 are not broken down into the offshore and onshore areas, it is apparent that the new reserves being discovered are increasingly offshore. This

conclusion comes from the data from the drilling and production sections of this report where data are shown for the offshore region.

The State government appears to be very pleased with the crude oil reserve position. The Annual Oil and Gas Report for 1969 states (Louisiana Department of Conservation, 1969, p. 11):

> It can be surmised that Louisiana is still enjoying a greater reserve producing capacity of crude oil than at any time in the past. In summary, it may be safely stated that Louisiana's oil and gas reserves will continue to increase although only slightly. Indications are that the oil and gas industry will continue to develop our natural mineral resources at a favorable rate.

This statement is true for the State as a whole, but some qualifications may be in order for specific areas as the geographic distribution of the industry changes. Specifically, as the reserves move farther and farther offshore the State will reap a decreasing share of the revenue from production and leasing. In addition, the economic benefits of oil exploration and production will be increasingly concentrated in those areas which service the offshore industry.

Natural gas reserves. The natural gas reserves shown in Table 33 and Figure 16 appear to be dropping off about as rapidly for the U.S. as a whole as the reserves of crude oil. For Louisiana the total reserves of natural gas have been fairly stable since 1965, but a slight dropoff was observed in 1969. Since Louisiana has almost one-third of the total U.S. reserves, this decrease may be significant for the nation as a whole unless it is reversed. As was found for the crude oil reserves, the amount found in North Louisiana is small and decreasing very slowly. Within the South Louisiana area the offshore reserves are a major part of the total; and, while figures are not available, it is expected that these are increasing as the onshore reserves are falling off to maintain the relatively stable reserve position for the State as a whole. This conclusion results from the drilling and production data found in those sections of this report. As with the oil reserves, the movement of an increasing proportion of the reserves offshore means that the economic benefits of their exploitation will increasingly accrue to the Federal government and to those areas in which bases for offshore industry are located.

Production and State Revenues

Production of crude oil and condensate. Louisiana has held a major role in the production of crude oil and condensate for many years. This production expanded very rapidly from a total of 215 million barrels in 1950 to almost 850 million barrels in 1969. Expansion was particularly rapid from 1965 to 1967. Since 1967 the increase has been more modest and appears to be falling off. This raises questions about the continued

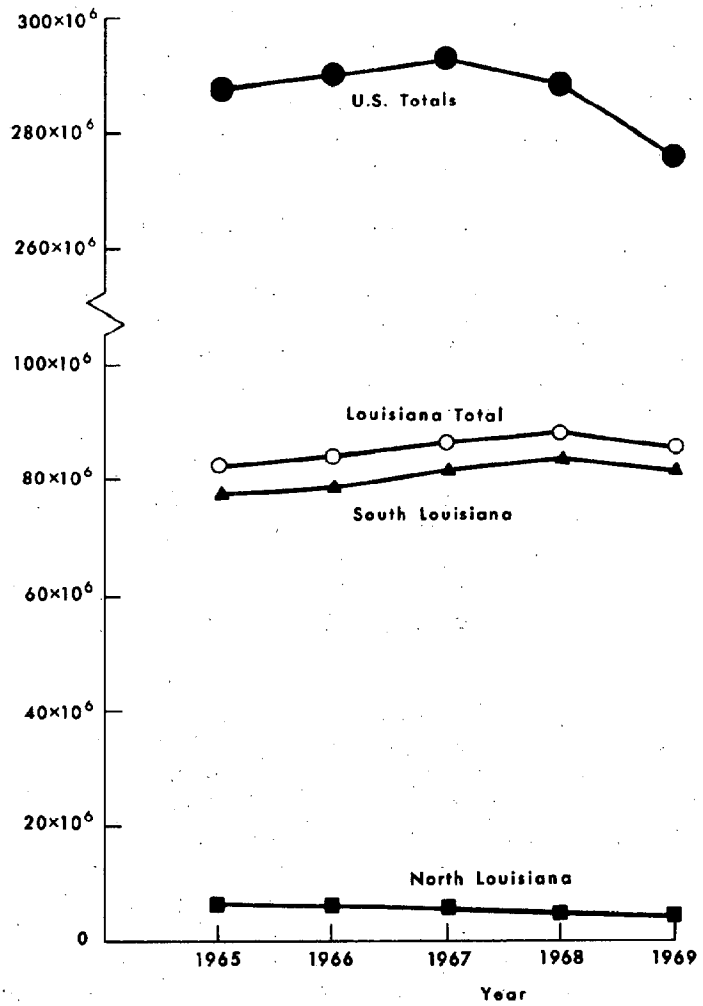


Fig. 16. Reserves of natural gas at end of years 1965-1969 (MCF 60°F 14.73 PSIA).

growth of this industry and its future contribution to the welfare of the State and its citizens.

The geographical breakdown of the crude and condensate production reveals drastic changes in the pattern of production over time. Tables 34 and 35 and Figures 17 and 18 show that in 1969 South Louisiana contributed almost 94 percent of the crude and condensate production and North Louisiana contributed only 6 percent. The coastal parishes contributed 90 percent of the total, and of that almost half was offshore. The production in the northern portions of Louisiana has remained almost static at near 50,000,000 barrels per year for 20 years. By contrast, the production in South Louisiana, and especially that of the coastal

TABLE 34

LOUISIANA CRUDE OIL AND CONDENSATE PRODUCTION

	1950	1955	1960	1965	1966	1967	1968	1969
Louisiana Total	215,195,428	278,558,320	404,380,362	603,960,771	682,321,053	776,783,067	824,895,717	849,531,265
Coastal Parish Total	137,750,319	197,302,493	320,934,987	509,490,309	588,621,362	683,120,901	734,847,763	763,884,956
North Louisiana Total	47,767,504	50,506,292	47,445,589	59,941,450	58,846,127	59,490,147	55,653,374	52,701,736
South Louisiana Total	167,427,924	228,052,028	356,932,813	544,019,321	623,474,926	717,292,920	769,242,343	796,829,529
Onshore Total			268,810,672	344,696,457	380,230,374	429,258,990	439,216,379	431,162,476
Dry Land						125,389,411	130,762,770	105,014,644
Intermediate						303,869,579	308,453,609	326,147,832
Offshore Total			88,122,141	199,322,864	243,244,552	288,033,930	330,025,964	365,667,053
Zones 0 and 1			40,984,985	51,794,398	56,833,391	65,039,511	66,551,228	67,160,354
Zones 2 and 3			41,012,951	132,404,490	146,578,509	161,629,049	180,365,156	191,646,572
Zone 4			4,774,846	15,123,976	39,832,652	61,365,370	83,109,580	106,860,127
Unspecified Offshore			1,349,359					

Louisiana Department of Conservation, Annual Oil and Gas Report, respective years.

TABLE 35

AREA DISTRIBUTION OF CRUDE OIL AND CONDENSATE PRODUCTION
(As Percentages of Total Louisiana Production and of Offshore Production)

	1950	1955	1960	1965	1966	1967	1968	1969
Coastal Parish % of La.	64.0117	70.8299	79.3646	84.3581	86.2675	87.9423	89.0837	89.9184
North Louisiana % of La.	22.1973	18.1313	11.7329	9.9247	8.6244	7.6585	6.7467	6.2036
South Louisiana % of La.	77.8027	81.8687	88.2666	90.0753	91.3756	92.3415	93.2533	93.7964
Onshore Total % of La.			66.4747	57.0727	55.7260	55.2611	53.2450	50.7530
Dry Land % of La.						16.1421	15.8520	12.3615
Intermediate % of La.						39.1190	37.3930	38.3915
Offshore Total % of La.			21.7919	33.0026	35.6496	37.0804	40.0082	43.0434
Zones 0 and 1								
% of Offshore			46.5093	25.9852	23.3647	22.5805	20.1655	18.3665
% of Louisiana			10.1353	8.5757	8.3294	8.3729	8.0678	7.9056
Zones 2 and 3								
% of Offshore			46.5410	66.4271	60.2597	56.1146	54.6518	52.4101
% of Louisiana			10.1422	21.9227	21.4823	20.8075	21.8652	22.5591
Zone 4								
% of Offshore			5.4184	7.5877	16.3756	21.3049	25.1827	29.2233
% of Louisiana			1.1808	2.5041	5.8378	7.8999	10.0752	12.5787
Unspecified Offshore			1.5313					

Source: Louisiana Department of Conservation, Annual Oil and Gas Report, respective years.

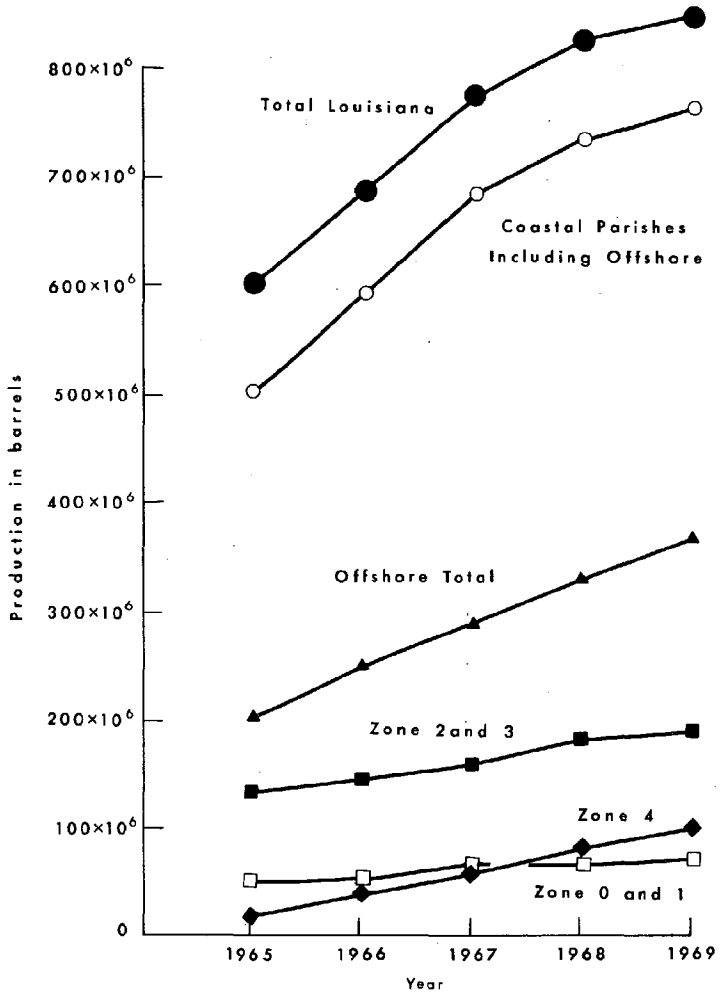


Fig. 17. Louisiana crude oil and condensate production, 1965-1969.

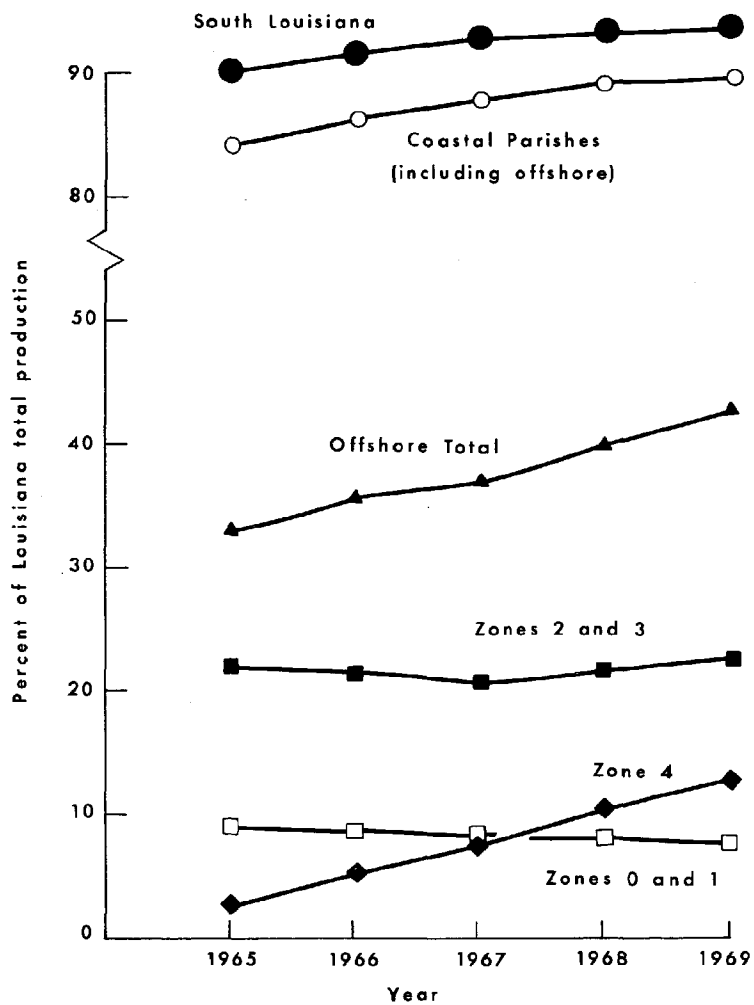


Fig. 18. Percentages of Louisiana crude and condensate production from various areas, 1965-1969.

parishes, has expanded continuously. Offshore production has been responsible for most of the increase in production since 1967. Prior to that time the increase was about equal for both onshore and offshore. The offshore picture is complicated by the continuing legal battles between Louisiana and the Federal government over the rights to royalties and taxes on the offshore oil fields.

The offshore area is divided into five zones (see Fig. 12). In zones 0 and 1 the State has obtained jurisdiction, and in zone 4 the Federal government has established its authority. The remaining zones, 2 and 3, are still the subject of litigation. Consequently, the receipts from those areas are being held in escrow until a final decision is rendered.

While the ownership controversy may not affect such things as employment in and purchases for the offshore oil fields, it has a profound effect on the finances of the State government inasmuch as severance taxes are a vital part of State revenues. Since 1965 the major part of the increase in offshore production has occurred in zone 4. Production in zones 0, 1, 2, and 3 is essentially static. This leads to the conclusion that unless there is an alteration in current trends the State government can expect no increase in revenues from oil production offshore and, as reserves are depleted, it seems likely that a decrease will develop in the next few years.

Production of natural and casinghead gas. The production of gas in Louisiana appears to be expanding at a rapid rate. Tables 36 and 37 and Figure 19 show that the rate of expansion of gas production has probably increased in the last year or two. The geographical pattern of the increase shows the same characteristics as did the expansion of oil. The production from North Louisiana, the State-controlled offshore zones 0 and 1, and the disputed zones 2 and 3 is almost static. The major increases are in the Federal offshore zone 4 and the onshore and intermediate zones of South Louisiana. This pattern, while similar to that in crude oil and condensate, reflects a prospect for the expansion of State revenues from gas production for some time.

Oil and gas production and State revenues. An analysis of the revenues of the government of the State of Louisiana derived from severance taxes on mineral production and from mineral leases is shown in Table 38 and Figure 20. For the 6-year period from 1964 to 1970 the State received about 27 percent of its total revenues from these two sources. In absolute terms the revenue has risen from near $300,000,000 in 1964-1965 to near $400,000,000 in 1969-1970. The yearly severance taxes had been rapidly increasing up to 1967-1968, but the rate of increase since then has been minimal, reflecting the changing industry pattern. Severance taxes on gas surpassed those for oil in 1968-1969. If current trends continue, the oil revenue may be expected to decrease gradually over the next few years as production moves farther offshore and out of State jurisdiction. The revenues from gas production should increase slightly to hold the overall figure nearly constant.

TABLE 36

LOUISIANA NATURAL AND CASINGHEAD GAS PRODUCTION
(In Millions of Cubic Feet)

	1950	1955	1960	1965	1966	1967	1968	1969
Louisiana Total	1,140,693	1,722,901	2,994,861	4,491,752	5,148,167	5,793,015	6,492,729	7,267,900
Coastal Parish Total	364,122	941,143	1,994,351	3,378,380	4,036,442	4,683,757	5,384,816	6,183,912
North Louisiana Total	592,084	486,103	540,786	558,708	546,144	516,041	493,189	486,254
South Louisiana Total	548,609	1,236,798	2,454,075	3,933,043	4,602,043	5,276,974	5,999,539	6,781,645
Onshore Total			2,045,688	2,956,019	3,308,181	3,654,249	3,982,641	4,351,567
Dry Land						1,799,084	1,973,885	1,587,661
Intermediate						1,855,165	2,008,756	2,763,906
Offshore Total			408,387	977,024	1,293,842	1,622,725	2,016,898	2,430,078
Zones 0 and 1			115,332	225,535	300,511	395,148	491,135	555,426
Zones 2 and 3			244,007	651,449	794,896	884,502	985,286	995,031
Zone 4			43,436	100,041	198,435	343,073	540,477	879,621

Source: Louisiana Department of Conservation, Annual Oil and Gas Report, respective years.

TABLE 37

AREA DISTRIBUTION OF NATURAL AND CASINGHEAD GAS PRODUCTION
(As Percentages of Total Louisiana Production and of Offshore Production)

	1950	1955	1960	1965	1966	1967	1968	1969
Coastal Parish % of La.	31.92	54.63	66.59	75.21	78.41	80.85	82.94	85.09
North Louisiana % of La.	51.91	28.21	18.06	12.44	10.61	8.91	7.60	6.69
South Louisiana % of La.	48.09	71.79	81.94	87.56	89.39	91.09	92.40	93.31
Onshore Total % of La.			68.31	65.81	64.26	63.08	61.34	59.87
Dry Land % of La.						31.06	30.40	21.84
Intermediate % of La.						32.02	30.94	38.03
Offshore Total % of La.			13.64	21.75	25.13	28.01	31.06	33.44
Zones 0 and 1								
% of Offshore			28.24	23.08	23.22	24.35	24.35	22.86
% of Louisiana			3.85	5.02	5.84	6.82	7.56	7.64
Zones 2 and 3								
% of Offshore			59.75	66.68	61.44	54.51	48.85	40.95
% of Louisiana			8.15	14.50	15.44	15.27	15.18	13.69
Zone 4								
% of Offshore			10.63	10.24	15.34	21.14	26.80	36.20
% of Louisiana			1.45	2.23	3.85	5.92	8.32	12.10

Source: Louisiana Department of Conservation, Annual Oil and Gas Report, respective years.

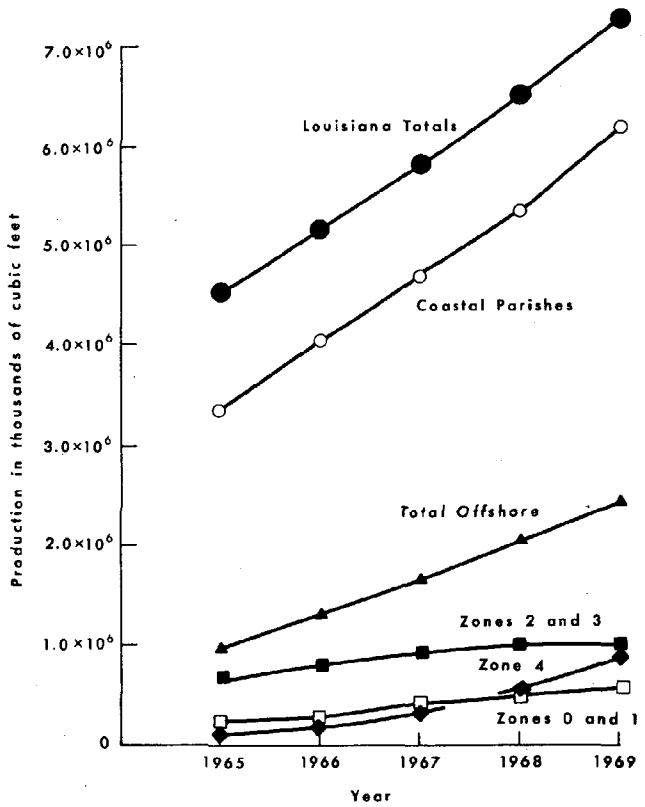


Fig. 19. Louisiana natural gas production by areas, 1965-1969.

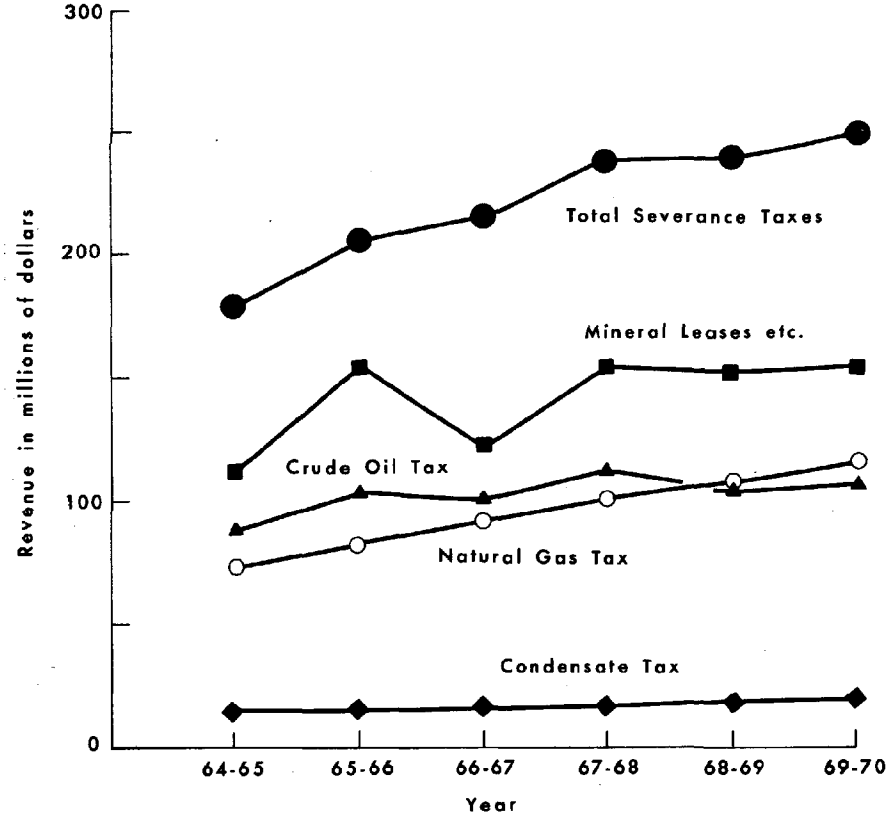


Fig. 20. Revenue from mineral production severance taxes and mineral leases, State of Louisiana.
Source: State of Louisiana, Annual Report of the Department of Revenue and Financial Statements.

TABLE 38

REVENUE FROM MINERAL PRODUCTION
STATE OF LOUISIANA

	Fiscal Year 1964-1965	1965-1966	1966-1967	1967-1968	1968-1969	1969-1970
Mineral			Severance Taxes			
Oil	$ 87,039,509	$ 103,421,123	$ 100,380,512	$ 113,389,900	$ 107,078,600	$ 107,574,587
Gas	73,772,705	81,978,190	92,155,135	101,291,844	108,484,015	116,518,444
Distillate	13,245,235	14,435,738	15,867,063	17,837,771	18,381,376	19,032,963
Sulfur	2,320,178	2,714,645	2,718,511	2,674,252	2,840,284	2,545,672
TOTAL	178,587,549	204,933,327	213,773,396	237,973,171	239,485,705	249,070,740
Percentage of Total Revenue	17.9	17.3	17.6	17.7	16.8	16.7
			Mineral Leases, Etc.			
Lease Revenue	113,609,005	154,908,248	122,257,525	154,601,388	153,512,296	154,751,968
Percentage of Total Revenue	11.3	13.1	10.1	11.5	10.8	10.3
			Total State Revenue			
Severance Taxes and Leases	292,196,554	359,841,575	336,030,921	392,574,559	392,998,001	403,822,708
Percentage of Total Revenue	29.2	30.4	27.7	29.2	29.6	27.0
TOTAL LOUISIANA REVENUE	$1,002,481,248	$1,187,097,891	$1,213,017,060	$1,346,959,985	$1,423,084,357	$1,495,377,608

Source: State of Louisiana, Annual Report of the Department of Revenue and Financial Statements.

The Public Affairs Research Council has released a report stating that total revenues to the State from oil and gas should remain almost constant for the foreseeable future. If true, this study indicates that this cessation of growth will have drastic effects on future Louisiana State budgets (Baton Rouge, Louisiana, Morning Advocate, May 16, 1971, pp. 1A, 6A).

Oil and Gas Pipelines in Louisiana

The oil and gas pipeline system of Louisiana is so widely distributed and so extensive that it is very difficult to describe in words or even on a map of reasonable scale. For that reason only a description of the major corridors will be attempted here (Louisiana Department of Conservation, 1964).

Oil pipelines. The northern areas of Louisiana have relatively few major oil pipelines. There are a number of fairly small lines in and around the oil fields of extreme northwestern Louisiana. The major lines are the 20-inch "Little Inch" crossing northwestern Louisiana and a 22-inch pipeline connecting the northwest field to Baton Rouge. A third large line of 20-inch diameter runs across the extreme north end of the State.

In South Louisiana, including the coastal region, the system of oil pipelines is far more complex. There is a network of major lines extending across the State from the Texas border, west of Lake Charles, to near Lafayette. The corridor then splits. The main branch runs east to Baton Rouge and then northeast out of the State. The secondary branch heads southeast from south of Lafayette along the coast to New Orleans and the delta. Major lines also follow both banks of the Mississippi from Baton Rouge to New Orleans.

Gas pipelines. The distribution of gas pipelines in Louisiana is similar to that of the oil lines except that they are more numerous and more widespread.

In North Louisiana the lines tend to follow a southwest-northeast direction from the Texas border between Many and Shreveport through the major fields north of Monroe and then east or north out of the State. The gas fields of southwestern Louisiana are also connected with the Monroe area.

In South Louisiana, the entire coastal region may be regarded as one giant gas pipeline corridor extending from the Texas border to New Orleans and Baton Rouge. An outline map of the 1968-1969 offshore gas pipeline projects is found in the Oil and Gas Journal, January 20, 1969, p. 51. Another map showing the major offshore lines for both oil and gas is available (U.S. Department of Interior, 1969) and is shown as Figure 21.

Employment and Payrolls from Oil and Gas Production

All data in this section are drawn from U.S. Department of Commerce, Bureau of the Census, 1965-1969, County Business Patterns.

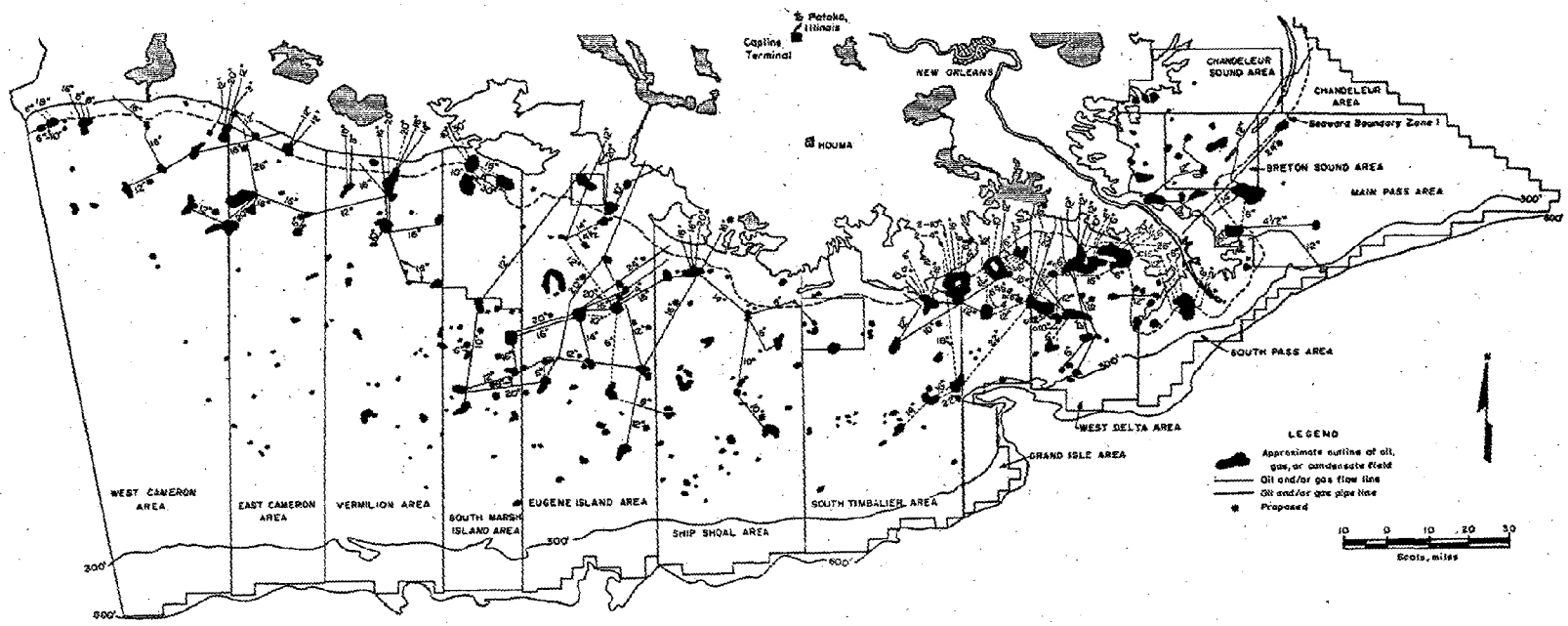


Fig. 21. Approximate locations of the proposed and existing pipeline-flowing system, offshore Louisiana, March 1968. Source: U.S. Department of the Interior, 1969, Petroleum and Sulfor on the U.S. Continental Shelf.

National and State employment. The employment derived directly from the production of oil and gas is found in Standard Employment Classification Series 13. The classifications and the categories which they represent are as follows:

Standard Industrial Classification	Category
13	Crude Petroleum and Natural Gas
131	Crude Petroleum and Natural Gas
132	Natural Gas Liquids
138	Oil and Gas Field Services
1381	Drilling Oil and Gas Wells
1382	Oil and Gas Exploration Services
1389	Oil and Gas Field Services not Elsewhere Classified

Since 1965 the total number of employees in Louisiana in Series 13 has been almost constant. It has been near 39,000, and only minor variations of ±1,000 or so occur. Nationally, the number of employees diminished from the 1965 level of 232,192 to the 1969 level of 223,796. A complete breakdown is shown in Table 39 and Figure 22. The number of Louisiana field service employees in category 138 has been extremely stable, and most of the variation which has existed in category 13 is derived from Number 131, crude oil and gas production.

Coastal parish employment. The totals for the coastal parishes are subject to considerably more variation than the U.S. or Louisiana figures. In part this is because of the deletion of certain values from the individual parish reports in order to maintain the confidential nature of the source data in the County Business Patterns (U.S. Department of Commerce, Bureau of the Census). In addition, there appears to be an upward trend in employment in all categories in the coastal parishes inasmuch as the oil exploration and production activities are more and more concentrated there (see Fig. 22). Surprisingly, the coastal parishes account for only a little more than half of the total employment in the State from this industry, even though the production in the coastal parishes is almost 90 percent of the total. This large discrepancy cannot be easily explained by the omission of values. The fundamental difference seems to be that the production per employee is very much higher in the coastal offshore area than elsewhere. This is explained by the much larger production per well in the coastal area.

Mid-March production payrolls. Although the number of employees engaged in petroleum production in Louisiana remained fairly static between 1965 and 1969, the payrolls did not. Except for a dip in 1968, payrolls in all categories statewide increased gradually over the period.

When only the coastal parishes are considered, a more jagged pattern develops. This irregularity results chiefly from the fact that these figures are summations of individual parish figures. In many cases

TABLE 39

OIL INDUSTRY PRODUCTION EMPLOYEES

	Employees	Standard Industrial Classification Number						
		13	131	132	138	1381	1382	1389
1969 1st Quarter	Total U.S.	223,796	96,613	10,895	116,230	48,224	10,158	57,753
	Louisiana	38,800	13,656	2,019	23,112	9,708	1,575	11,829
	Coastal Parishes	25,014	7,448	220	15,475	4,372	706	8,256
1968 1st Quarter	Total U.S.	221,478	96,124	11,276	114,030	46,173	9,346	57,911
	Louisiana	37,842	12,742	2,118	22,977	9,919	1,782	11,266
	Coastal Parishes	18,097	6,370	110	15,925	5,447	992	8,801
1967 1st Quarter	Total U.S.	223,898	102,958	9,561	111,257	46,190	7,643	56,849
	Louisiana	40,392	15,763	2,131	22,483	10,113	1,624	10,736
	Coastal Parishes	20,815	6,610	Deleted	12,597	5,923	Deleted	6,552
1966	Total U.S.	228,613	106,440	10,211	111,850	49,192	7,523	54,964
	Louisiana	39,950	15,549	2,094	22,305	9,939	1,528	10,828
	Coastal Parishes	15,853	2,509	Deleted	16,889	5,314	557	6,439
1965	Total U.S.	232,192	110,191	11,617	110,121	50,679	8,988	50,344
	Louisiana	39,102	15,500	1,973	21,629	10,601	1,540	9,394
	Coastal Parishes	19,247	4,284	Deleted	11,470	4,960	342	6,736

Source: U.S. Department of Commerce, Bureau of the Census, County Business Patterns, respective years.

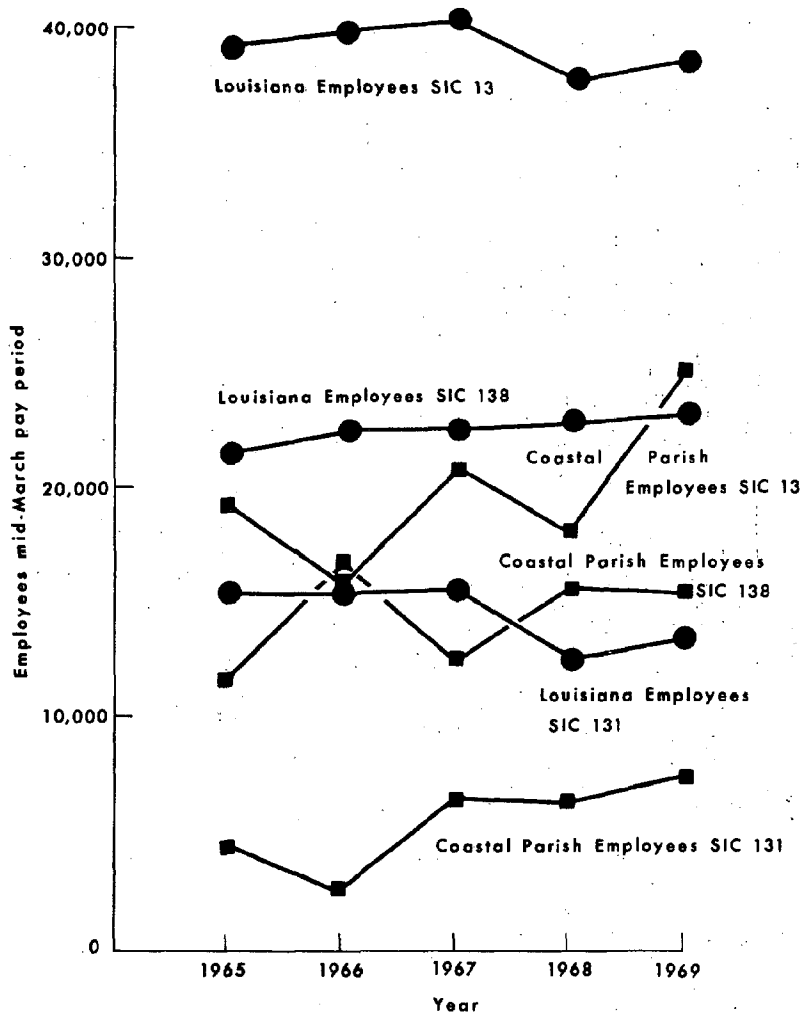


Fig. 22. Employment versus time in the Louisiana oil and gas production industry.

the Census Bureau has deleted values for some of the parishes in some years. Table 40 and Figure 23 show a few places where the data for all of the coastal parishes were deleted in SIC categories 132 and 1382. Deletions were common in all categories for at least some parishes.

The data show that the coastal parishes now receive the major portion of the oil and gas production payroll. Moreover, this proportion is increasing. This is one more confirmation of the movement of the oil industry into South Louisiana and offshore.

Over time it is probable that the employment will localize itself still further into those parishes providing bases from which to service

TABLE 40

OIL INDUSTRY PRODUCTION PAYROLLS, MARCH, 1965-1969
(In Thousands)

	Payroll	Standard Industrial Classification Number						
		13	131	132	138	1381	1382	1389
	U.S.	$433,288	$199,998	$24,161	$209,049	$92,724	$18,591	$97,597
1969	Louisiana	80,494	32,000	4,265	44,203	19,961	2,477	21,764
	Coastal Parishes	54,208	17,853	498	30,170	9,225	1,097	16,340
	U.S.	403,340	187,290	23,713	192,268	84,153	15,668	92,371
1968	Louisiana	75,621	28,701	4,289	42,626	20,318	2,668	19,635
	Coastal Parishes	37,457	15,027	238	30,467	11,777	1,580	16,009
	U.S.	391,795	195,132	19,175	177,299	77,919	12,002	86,609
1967	Louisiana	77,512	33,611	4,238	39,649	19,893	2,494	17,258
	Coastal Parishes	41,692	14,937	Deleted	21,911	12,213	Deleted	11,057
	U.S.	380,370	193,884	19,520	166,831	77,121	11,008	78,387
1966	Louisiana	71,771	32,398	4,024	35,348	17,875	2,122	15,345
	Coastal Parish	30,351	5,362	Deleted	27,810	9,966	720	9,517
	U.S.	365,065	187,474	21,711	155,500	74,651	12,664	68,122
1965	Louisiana	66,494	28,897	3,697	33,900	18,637	2,031	13,183
	Coastal Parish	33,508	8,510	Deleted	18,415	9,132	401	9,897

Source: U.S. Department of Commerce, Bureau of the Census, County Business Patterns, respective years.

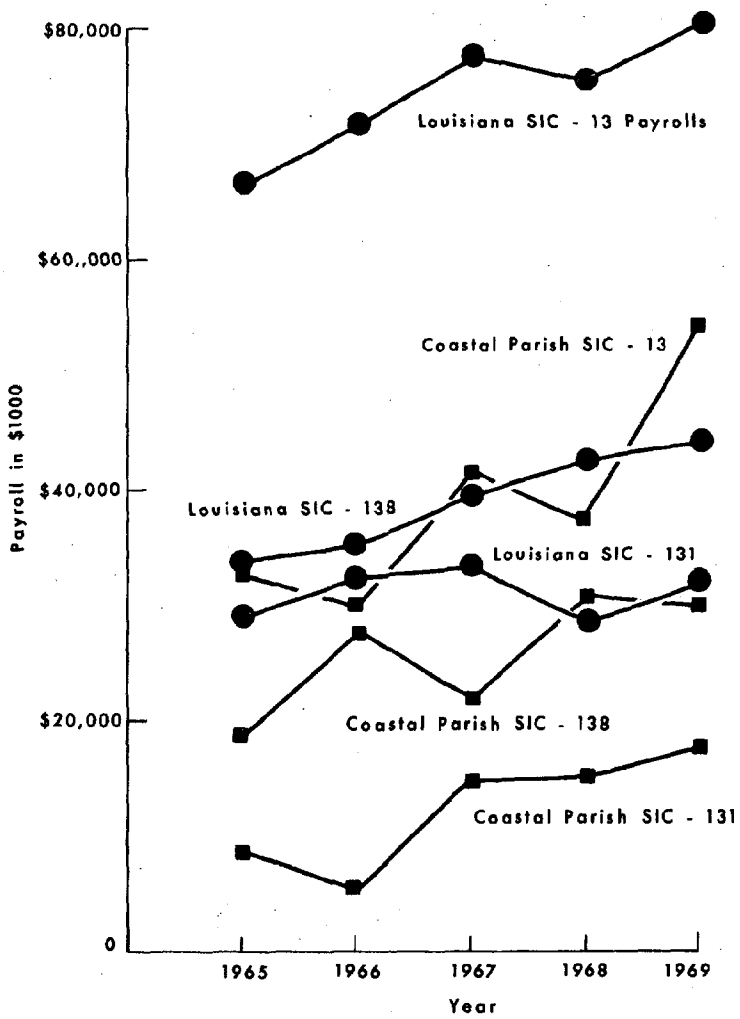


Fig. 23. Oil industry production payrolls for March of the years 1965-1969 (in $1,000).

the offshore fields, since it is apparent that in the future the production of oil and gas will be moving farther and farther offshore. This concentration may have a profound effect on the economics of what might be called the hinterland coastal parishes because they may, over time, lose their shares of the payrolls. These are considerable; in 1969 the payroll in category 13 was $54 million for the March pay period.

Sulfur

The second major mineral resource of the coastal regions of Louisiana is sulfur. Three-quarters of the U.S. production comes from elemental sulfur in Gulf Coast salt domes (U.S. Department of the Interior, 1969). The production has been mainly onshore, but since 1960 two offshore

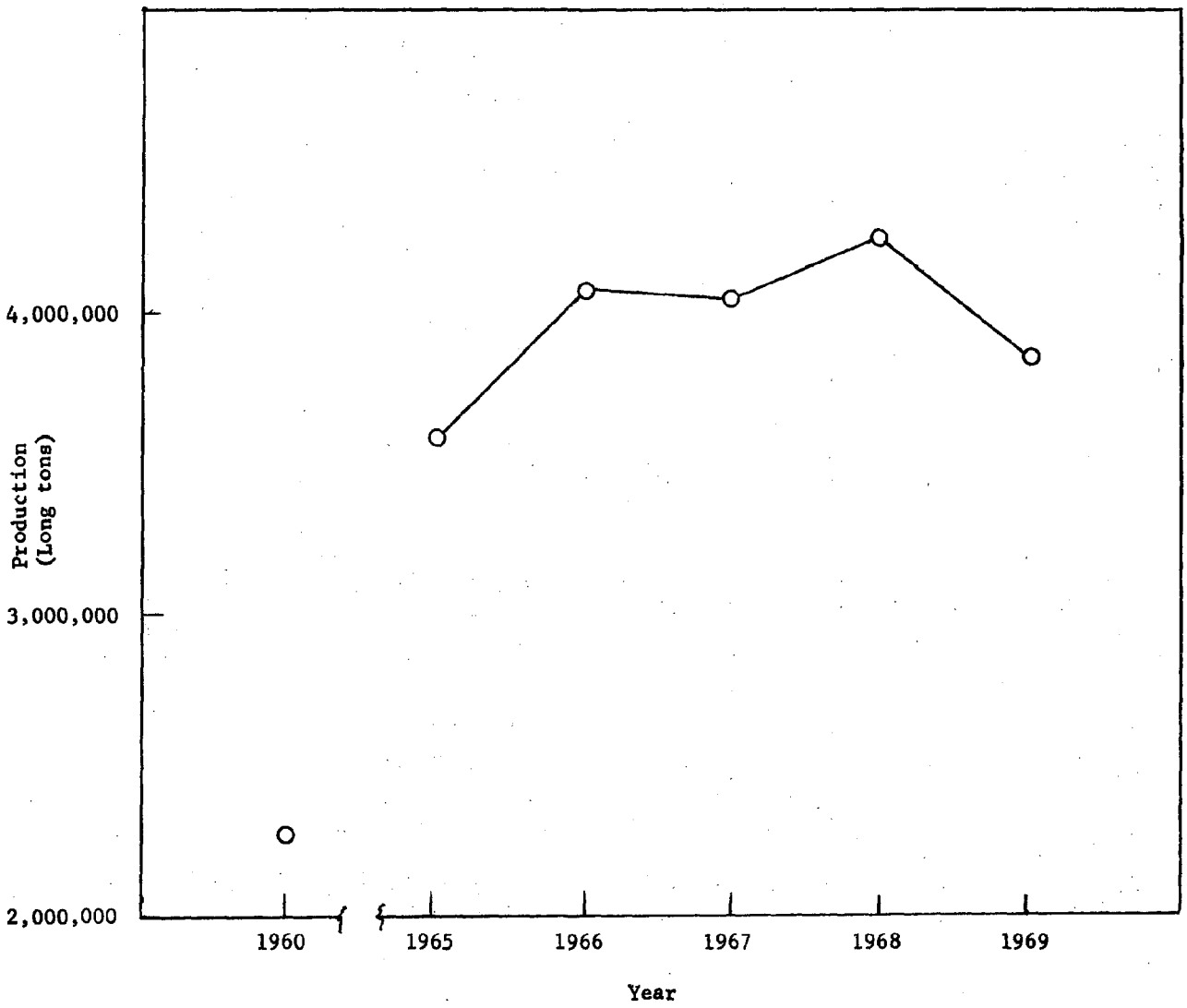


Fig. 24. Louisiana sulfur production.

deposits have been mined by the Frasch process. The major offshore producer, the Grand Isle dome, yields about 1.5 million tons of sulfur per year (U.S. Department of the Interior, 1969).

Table 41 and Figure 24 show the production of sulfur in Louisiana for the year 1960 and for 1965-1969 (Louisiana Department of Conservation, 1960, 1965-1969). A plot of the data in Table 41 shows that the production has been fairly constant over the latter period. The severance tax revenue which the State receives from this production appears in Table 39, in the section on oil and gas production. Since the rate is constant, the revenue has been near $2,600,000/year over the period. The rise in production was considerable between 1960 and 1965.

The largest use of sulfur is for sulfuric acid, which then is used in fertilizer manufacture. Accordingly, sulfur production correlates with the supply and demand structure in the fertilizer industry. At present there seem to be ample reserves, and production depends on the market price.

Environmental Impact of the Extractive Industries

Figure 25 shows some of the structures and byproducts imposed upon the coastal environment by the various extractive industries. This matrix and those in Figures 33 and 34 were designed specifically for the California coastline but have sufficient generality to relate to Louisiana as well.

TABLE 41

SULFUR PRODUCTION IN LOUISIANA
(Long Tons)

	1960	1965	1966	1967	1968	1969
Production	2,264,292	3,582,228	4,084,881	4,057,202	4,253,646	3,856,972

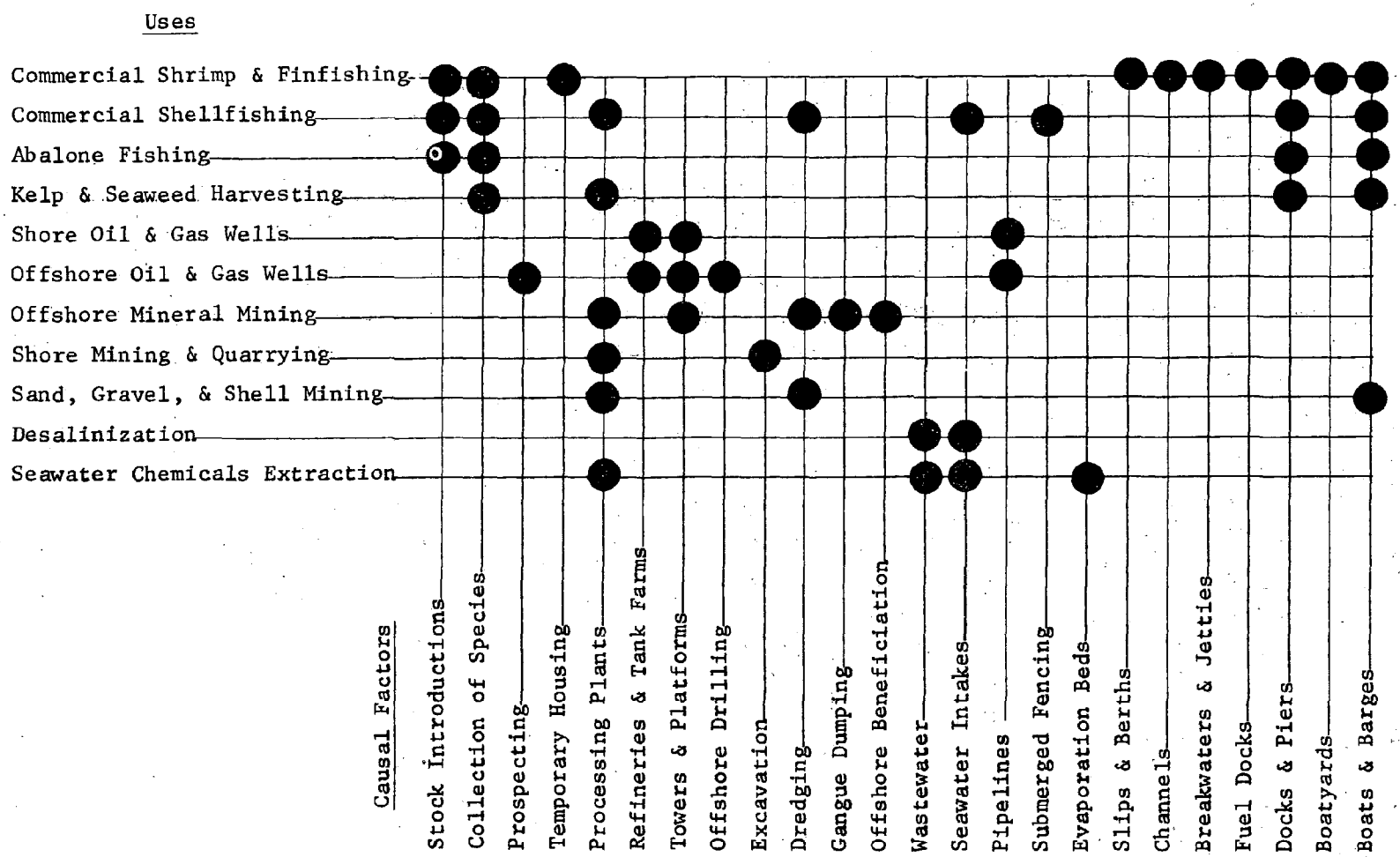


Fig. 25. Environmental impact of extractive activities in California's coastal zone. Source: Sorensen, J. C., 1970, State of California, Department of Navigation and Ocean Development.

CHAPTER X

WATER TRANSPORTATION AND SHIP AND BOAT BUILDING

Introduction

Louisiana has always derived considerable income from water transportation. Since the early days of national history the Port of New Orleans has served as a link between the central interior of the nation and the sea. New Orleans is now, as it has been in the past, one of the great ports of the world. Among United States ports New Orleans is second only to the Port of New York in tonnage handled, and it is the largest port on the Gulf of Mexico. Upstream from New Orleans on the Mississippi River is the Port of Baton Rouge, third among Gulf ports in tonnage handled and the seventh-ranked port in the nation in terms of tonnage. Bulk cargoes, petroleum and petroleum products, grains, and ores give Baton Rouge its high ranking among United States ports, though considerable general cargo flows through the port. Lake Charles, the State's third deepwater port, ranks tenth in tonnage among the Gulf ports and twentieth in the nation. Lake Charles has large bulk cargo operations, consisting primarily of petroleum and its derivative products as well as moderate amounts of general cargo. The top 20 ports in the nation are ranked in Table 42 by tonnage handled in 1969. Figures 26 and 27 illustrate the foreign trade routes between Gulf ports and the world.

Foreign Shipping

In terms of foreign shipping Louisiana ports accounted in 1968 for almost 12 percent of the United States total. Tables 43-47 provide a summary of the total tonnage handled by Louisiana ports from 1959 to 1969. The Port of New Orleans' foreign waterborne commerce is depicted in Figures 28-30 and Table 48. Specific data for the ports of Baton Rouge and Lake Charles are less detailed than those for New Orleans.

In 1970 the Port of New Orleans handled 123.6 million tons of cargo, 10.3 million tons more than in 1969. Baton Rouge tonnage totaled 45.5 million tons in 1970, 4.7 million tons more than in 1969. Lake Charles handled 17.6 million tons in 1970, 1.5 million tons more than in 1969 (U.S. Army Corps of Engineers, New Orleans District Office, 1971).

The Port of Baton Rouge's 1970 tonnage of 45.5 million tons consisted of the following categories: foreign imports, 7.2 million tons; foreign exports, 6.8 million tons; coastwise receipts, 762,000 tons; coastwise shipments, 8.8 million tons; barge receipts, 7.9 million tons; barge shipments, 13.9 million tons; and local traffic, 208,000 tons (U.S. Army Corps of Engineers, New Orleans District Office, 1971).

Gasoline, at 5.3 million tons, was the largest tonnage item in the Baton Rouge port data. Other tonnages in 1970 were corn at 2.9 million

TABLE 42

UNITED STATES PORTS, RANKED BY TONNAGE, 1969

Port	Short Tons
New York, New York	171,244,008
New Orleans, Louisiana	113,426,557
Houston, Texas	55,961,778
Philadelphia, Pennsylvania	50,526,050
Norfolk Harbor, Virginia	45,851,651
Baltimore Harbor, Maryland	43,917,369
Baton Rouge, Louisiana	40,845,124
Tampa Harbor, Florida	27,921,404
Portland Harbor, Maine	27,831,851
Beaumont, Texas	27,086,799
Paulsboro, New Jersey, and Vicinity	26,191,000*
Corpus Christi, Texas	24,960,315
Boston, Massachusetts	24,818,746
Port Arthur, Texas	23,538,604
Los Angeles, California	23,226,760
Mobile Harbor, Alabama	23,162,341
Marcus Hook, Pennsylvania	20,741,390*
Richmond Harbor, Virginia	17,438,107
Texas City, Texas	16,560,040
Lake Charles, Louisiana	16,154,684

*1968 data (1971 World Almanac)

Source: U.S. Army Corps of Engineers, 1969, Waterborne Commerce of the United States. Parts 1-4.

TABLE 43

TOTAL TONNAGE HANDLED BY MAJOR LOUISIANA PORTS, 1955-1969
(In Tons of 2,000 Pounds)

Port	1955	1960	1965	1967	1969
Baton Rouge	16,489,779	26,585,815	31,658,797	37,273,286	40,845,124
Lake Charles	15,396,366	17,433,441	14,469,783	16,697,672	16,154, 84
New Orleans	47,082,734	56,671,652	88,876,872	111,491,062	113,426,557
Three-port Total	78,968,879	100,690,908	135,005,452	165,462,020	170,476,365
U.S. Total	1,016,136,785	1,099,850,431	1,272,896,243	1,336,606,078	1,448,711,541
Louisiana as a Percentage of U.S.	7.67	9.15	10.60	12.38	11.77

Source: U.S. Army Corps of Engineers, Waterborne Commerce of the United States, respective years.

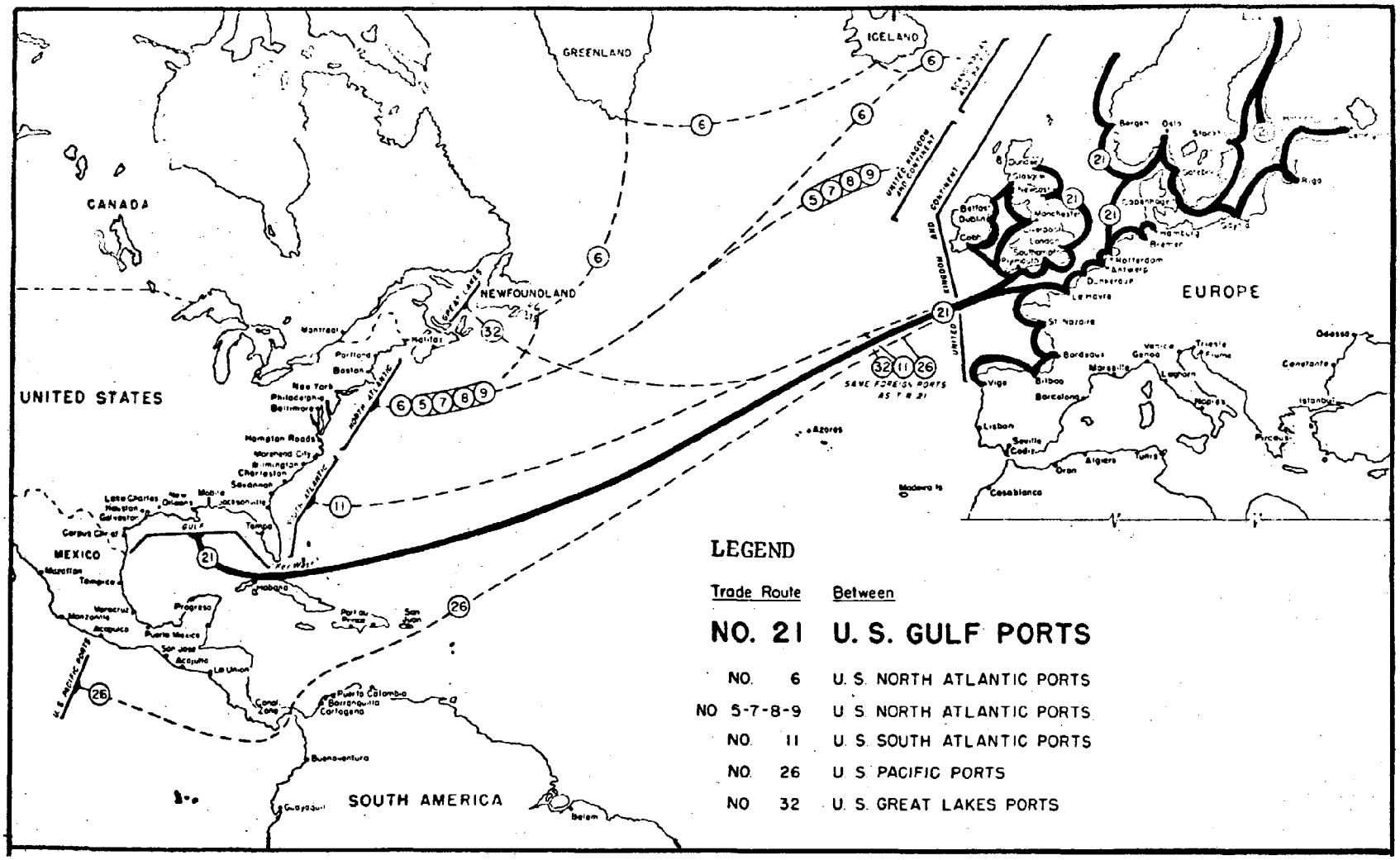


Fig. 26. U.S. foreign trade routes between Gulf ports and Europe. Source: U.S. Department of Commerce, 1969, Essential United States Foreign Trade Routes.

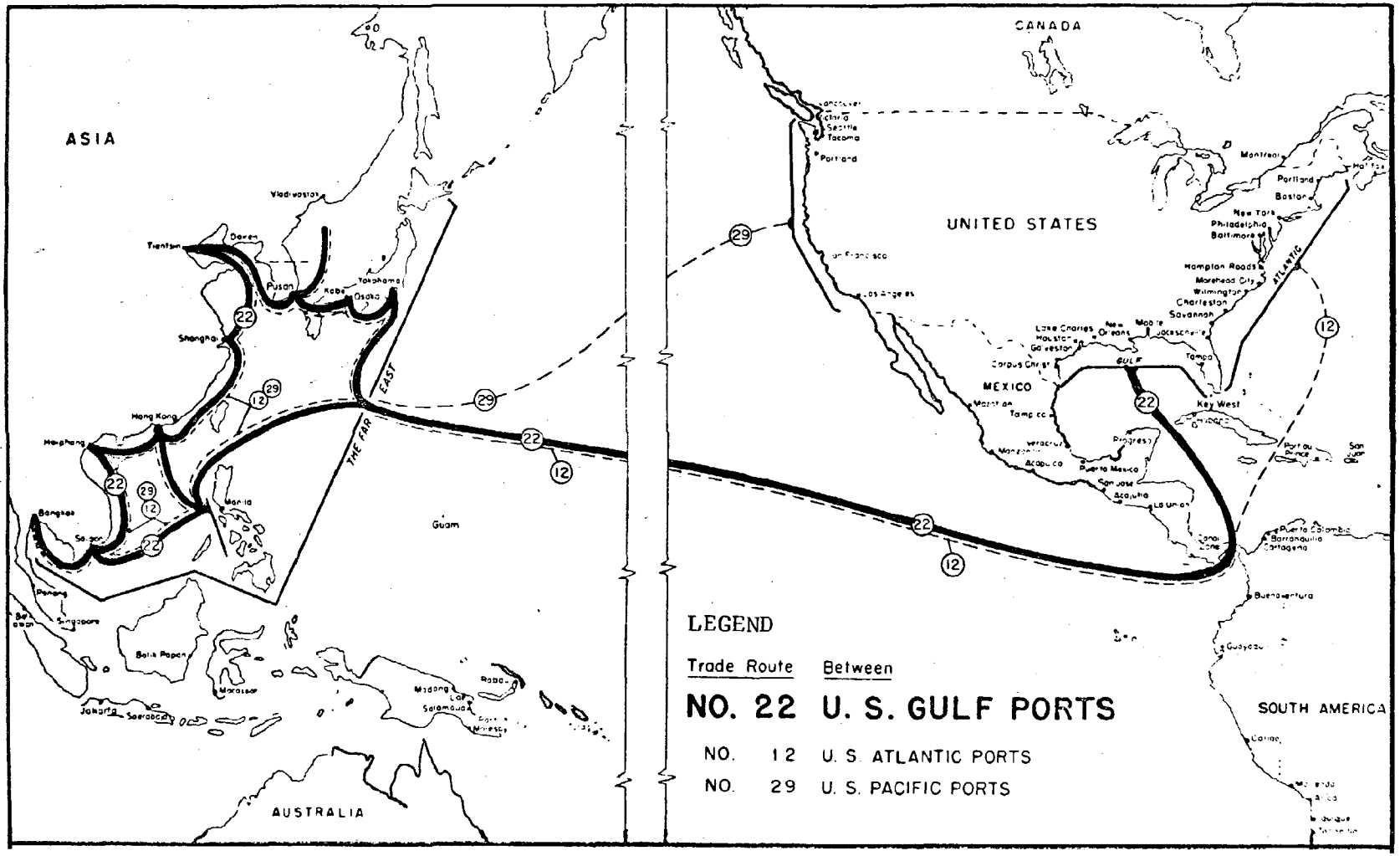


Fig. 27. U.S. foreign trade routes between Gulf ports and the Far East. Source: U.S. Department of Commerce, 1969, Essential United States Foreign Trade Routes.

TABLE 44

INTERNAL AND LOCAL DOMESTIC TONNAGE HANDLED
BY MAJOR LOUISIANA PORTS, 1955-1969
(In Tons of 2,000 Pounds)

Port	1955	1960	1965	1967	1969
Baton Rouge	6,788,505	11,034,606	14,639,518	15,839,560	18,531,734
Lake Charles	7,271,883	7,806,927	8,656,336	11,799,395	11,696,280
New Orleans	26,181,072	28,765,823	44,082,556	53,617,243	58,921,794
Three-port Total	40,241,460	47,607,366	68,378,410	81,256,198	89,149,808
U.S. Total	362,555,910	395,250,101	472,480,483	500,912,733	548,481,358
Louisiana as a Percentage of U.S.	11.10	12.04	14.47	16.22	16.25

Source: U.S. Army Corps of Engineers, Waterborne Commerce of the United States, respective years.

TABLE 45

COASTAL DOMESTIC TONNAGE HANDLED
BY MAJOR LOUISIANA PORTS, 1955-1969
(In Tons of 2,000 Pounds)

Port	1955	1960	1965	1967	1969
Baton Rouge	6,374,593	8,361,740	6,288,469	9,620,582	9,822,258
Lake Charles	7,274,662	8,744,124	3,691,864	3,514,936	2,832,332
New Orleans	9,685,112	13,338,424	21,384,085	30,610,148	27,348,886
Three-port Total	23,334,367	30,444,188	31,374,418	43,745,666	40,003,476
U.S. Total	195,717,548	209,196,823	201,508,107	214,646,527	216,707,773
Louisiana as a Percentage of U.S.	11.92	14.55	15.57	20.38	18.46

Source: U.S. Army Corps of Engineers, Waterborne Commerce of the United States, respective years.

TABLE 46

FOREIGN EXPORTS HANDLED BY MAJOR LOUISIANA PORTS, 1955-1969
(In Tons of 2,000 Pounds)

Port	1955	1960	1965	1967	1969
Baton Rouge	1,053,668	3,422,446	4,276,365	5,155,594	5,454,286
Lake Charles	742,424	719,726	937,578	1,230,660	1,484,040
New Orleans	7,194,040	9,144,075	18,624,612	21,794,423	20,216,367
Three-port Total	8,990,132	13,286,247	23,838,555	28,180,677	27,154,693
U.S. Total	118,145,985	127,960,778	173,891,990	190,007,047	201,019,278
Louisiana as a Percentage of U.S.	7.61	10.39	13.71	14.83	13.44

Source: U.S. Army Corps of Engineers, Waterborne Commerce of the United States, respective years.

TABLE 47

FOREIGN IMPORTS HANDLED BY MAJOR LOUISIANA PORTS, 1955-1969
(In Tons of 2,000 Pounds)

Port	1955	1960	1965	1967	1969
Baton Rouge	2,273,013	3,767,023	6,454,445	6,657,550	7,038,846
Lake Charles	107,397	162,664	184,005	152,681	142,032
New Orleans	4,022,510	5,423,330	4,785,619	5,469,248	6,939,510
Three-port Total	6,402,920	9,353,017	11,424,069	12,279,479	14,120,388
U.S. Total	152,956,947	211,316,497	269,834,819	275,965,191	320,293,084
Louisiana as a Percentage of U.S.	4.18	4.42	4.23	4.45	4.41

Source: U.S. Army Corps of Engineers, Waterborne Commerce of the United States, respective years.

TABLE 48

VESSEL ARRIVALS AT NEW ORLEANS

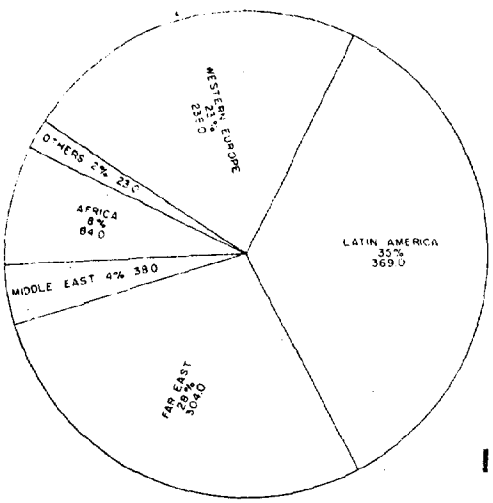
Country of Registry	Arrivals	Country of Registry	Arrivals
GRAND TOTAL	4,669	Philippines, Rep. of	29
UNITED STATES	940	Peru	28
TOTAL FOREIGN	3,729	Pakistan	27
Norway	497	Chile	22
Liberia	478	Poland & Danzig	17
United Kingdom	433	South Africa, Rep. of	17
West Germany	317	Ireland	16
Netherlands	268	Ecuador	14
Greece	248	France	13
Japan	211	Finland	12
Panama	139	Ghana	12
Denmark	121	Turkey	10
Italy	96	Guatemala	8
Sweden	82	Switzerland	8
Spain	57	Nicaragua	7
Venezuela	54	Bulgaria	5
India	52	Cyprus	5
China, Rep. (Taiwan)	47	Lebanon	5
Mexico	46	Indonesia	5
Colombia	45	Thailand	3
Belgium & Luxembourg	45	Canada	2
Yugoslavia	45	Libya	2
Honduras	38	Costa Rica	1
Argentina	38	Portugal	1
Israel	36	Kuwait	1
Korea, Rep. of	34	Signapore	1
Brazil	30	Somali, Rep.	1

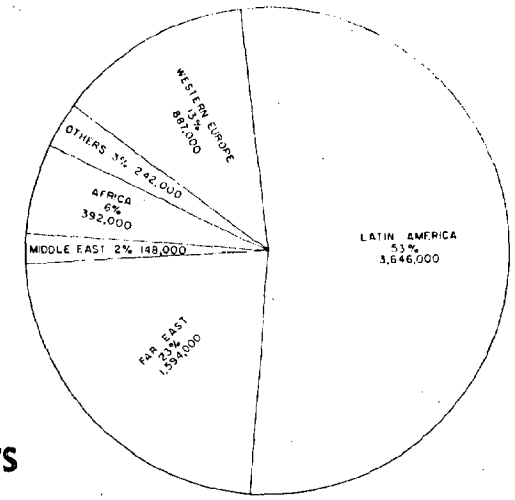
Source: New Orleans Port Authority data, 1969.

tons; soybeans, 2.2 million tons; iron ore and concentrates, 1.1 million tons; aluminum ores and concentrates, 4.5 million tons; manganese ores and concentrates, 1.4 million tons; crude petroleum, 4.6 million tons; distillate fuel oil, 3.9 million tons; residual fuel oil, 1.7 million tons; and asphalt, tar, and pitches, 1.4 million tons (U.S. Army Corps of Engineers, New Orleans District Office, 1971).

The Port of Lake Charles handled 17.7 million tons of cargo in 1970, the overwhelming portion of it consisting of coastwise shipping. The 1970 tonnage was composed of 1.7 million tons of foreign exports; 193,000 tons of foreign imports; coastwise receipts of 32,500 tons; coastwise shipments of 3.4 million tons; barge receipts of 8.6 million tons; barge shipments of 3.6 million tons; and local movements of 225,000 tons (U.S. Army Corps of Engineers, New Orleans District Office, 1971).

Crude petroleum at 8.5 million tons was the largest single item moved through the Port of Lake Charles. Gasoline totaled 1.7 million tons. Rice was the largest foreign export, at 503,000 tons. Coke, petroleum, asphalt, and solvents accounted for 398,000 tons (U.S. Army Corps of Engineers, New Orleans District Office, 1971).





IMPORTS

Millions of Dollars

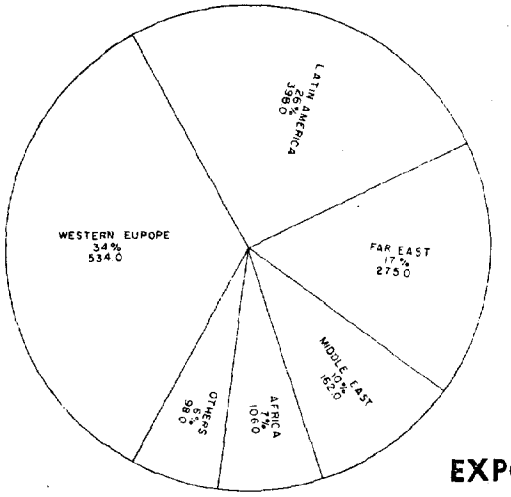
PRINCIPAL COUNTRIES

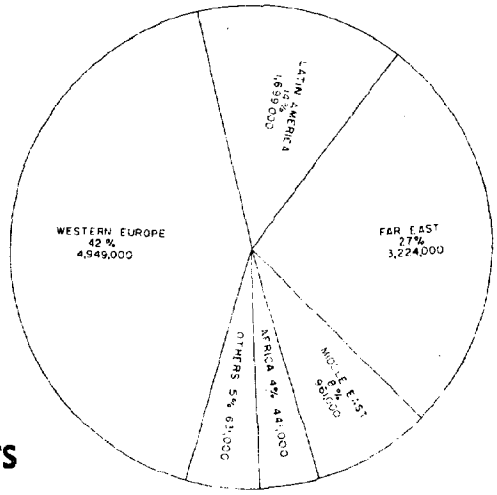
Japan	187	United Kingdom	37
West Germany	88	Belgium	30
Brazil	82	Philippines	27
Mexico	81	Indonesia	26
Peru	40	Argentina	25

Short Tons

PRINCIPAL COUNTRIES

Japan	1,120,000	Guyana	247,000
Venezuela	567,000	West Germany	203,000
Mexico	558,000	Jamaica	197,000
Neth. Antilles	468,000	Peru	187,000
Brazil	429,000	Philippines	183,000





EXPORTS

Millions of Dollars

PRINCIPAL COUNTRIES

Japan	191	United Kingdom	53
Italy	106	Brazil	43
West Germany	105	France	43
Netherlands	88	India	43
Venezuela	77	Australia	42

Short Tons

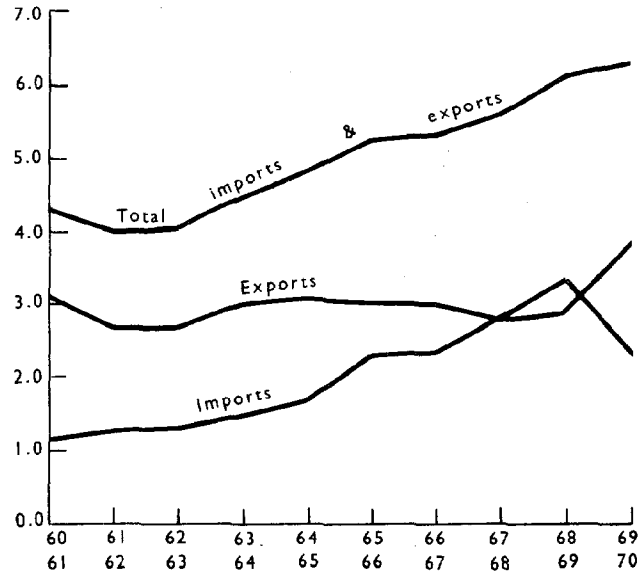
PRINCIPAL COUNTRIES

Japan	2,591,000	Venezuela	390,000
Italy	1,445,000	Belgium	318,000
West Germany	855,000	United Kingdom	303,000
Netherlands	797,000	India	293,000
Spain	482,000	France	256,000

Source: U. S. Department of Commerce

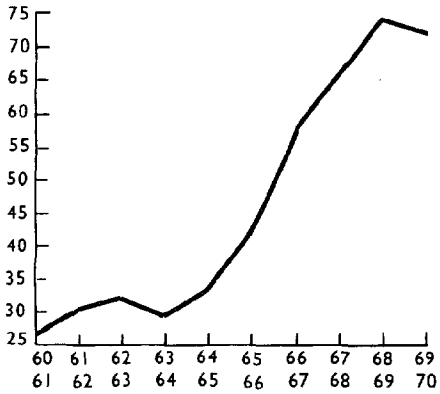
Fig. 28. Port of New Orleans foreign waterborne commerce, calendar year 1969. Source: New Orleans Port Authority.

WATERBORNE COMMERCE - GENERAL CARGO (PUBLIC FACILITIES)
Fiscal 1960-61 thru 1969-70 in millions of tons
Total imports and exports 6,354,000 tons 1969-/70
Imports 2,498,000 tons
Exports 3,856,000 tons



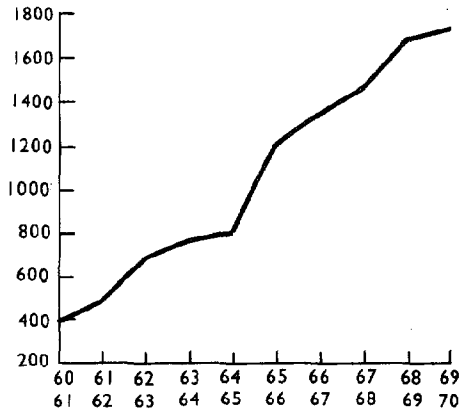
Source: N. O. Port Authority

CUSTOMS COLLECTED
Fiscal 1960-61 thru 1969-70 in millions dollars
$71,972,000 - 1969-/70



Source: U. S. Bureau of Customs

BULK CARGO PASSING OVER PUBLIC FACILITIES (EXCLUDING GRAIN)
Fiscal 1960-61 thru 1969-70 in thousands of tons
1,722,000 tons 1969/70



Source: N. O. Port Authority

Fig. 29. Commerce at the Port of New Orleans, 1960-1961 through 1969-1970. Source: New Orleans Port Authority.

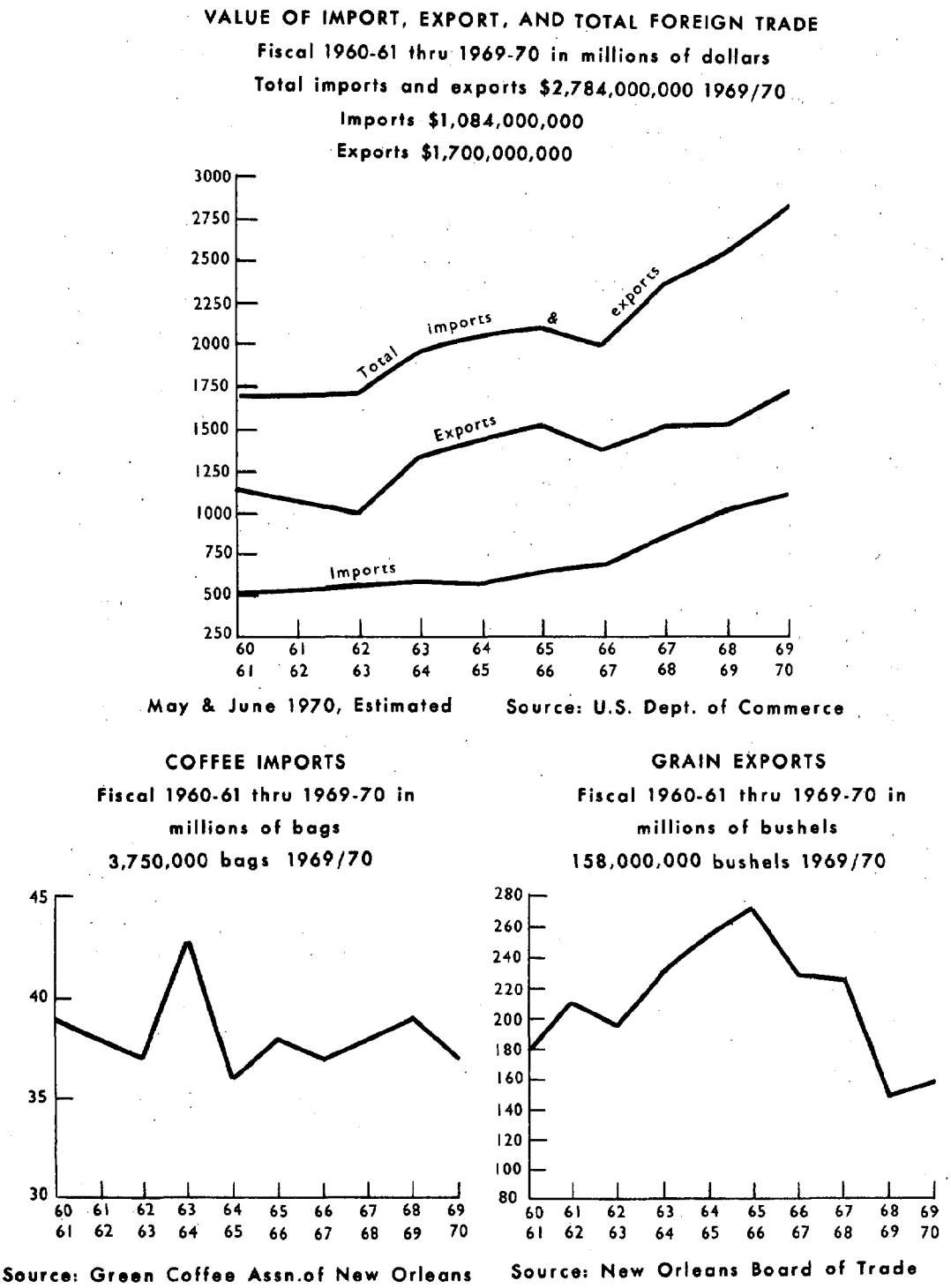


Fig. 30. Value of import, export, and total foreign trade, coffee imports, and grain exports, Port of New Orleans, 1960-1961 through 1969-1970. Source: New Orleans Port Authority.

Intracoastal Shipping

Aside from deep-draft ocean shipping, Louisiana is a key focal point for inland waterway traffic. Inland barge traffic not only links the deepwater ports to the interior of the nation but also provides important support for the industrial structure of coastal Louisiana. Figure 31 shows inland water routes for Louisiana.

In terms of cargo destined for ocean shipping, the principal commodities carried on the inland waterways are petroleum and petroleum products, grains and grain products, aluminum ores, concentrates and scrap, soybeans, and liquid and dry sulfur. The domestic cargo tonnage moved along Louisiana waterways consists primarily of petroleum and petroleum products, grain and grain products, soybeans, sand, gravel, crushed rock, iron and steel products, sulfur, and other chemicals. See Tables 49-52 for tonnage data on the inland waterways to and from Louisiana.

Barge traffic is especially important to the petroleum and chemical industries in Louisiana since it not only supplements pipelines to a considerable extent but also provides low-cost movement of refined petroleum and chemicals to the interior of the nation and to the deepwater ports for transshipment. The existence of barge service is a stimulus for industrial location along waterway routes, as evidenced by the concentration of petrochemical facilities adjacent to water sites in Louisiana.

Table 53 depicts employment and taxable payrolls for the several facets of water transportation in Louisiana in 1969.

Ship and Boat Building

Ship and boat building is a major industrial activity in Louisiana. The huge Avondale yards near New Orleans are a major producer of civilian and military deep-draft vessels. The Avondale yards and other smaller yards specialize in supplying the needs of the offshore oil industry--drilling platforms, tugs, barges, crew boats, and other specialized vessels are constructed in Louisiana. Boats for commercial fishing and pleasure use are built in small yards scattered across the coastal region. Repair yards are numerous. In March 1969, 14,311 workers were employed in ship and boat building and repairing (SIC 373) in 103 firms in coastal Louisiana. Taxable payrolls for the first quarter of 1969 totaled $27,422,000. Assuming that this component is representative of yearly totals, payrolls in this economic activity were approximately $109,688,000 in 1969.

Disaggregation of SIC 373 into its subclassification of ship building and repairing (SIC 3732) illustrates that the former dominates. Ship building and repairing included 12,589 employees in 40 firms, compared with 1,722 employees in 63 boat building and repairing firms. Four ship building and repairing firms had over 500 employees in 1969, five firms had from 250 to 499 employees, and six firms had from 100 to 249 employees. Boat building and repairing had no firms with over 500 employees, though

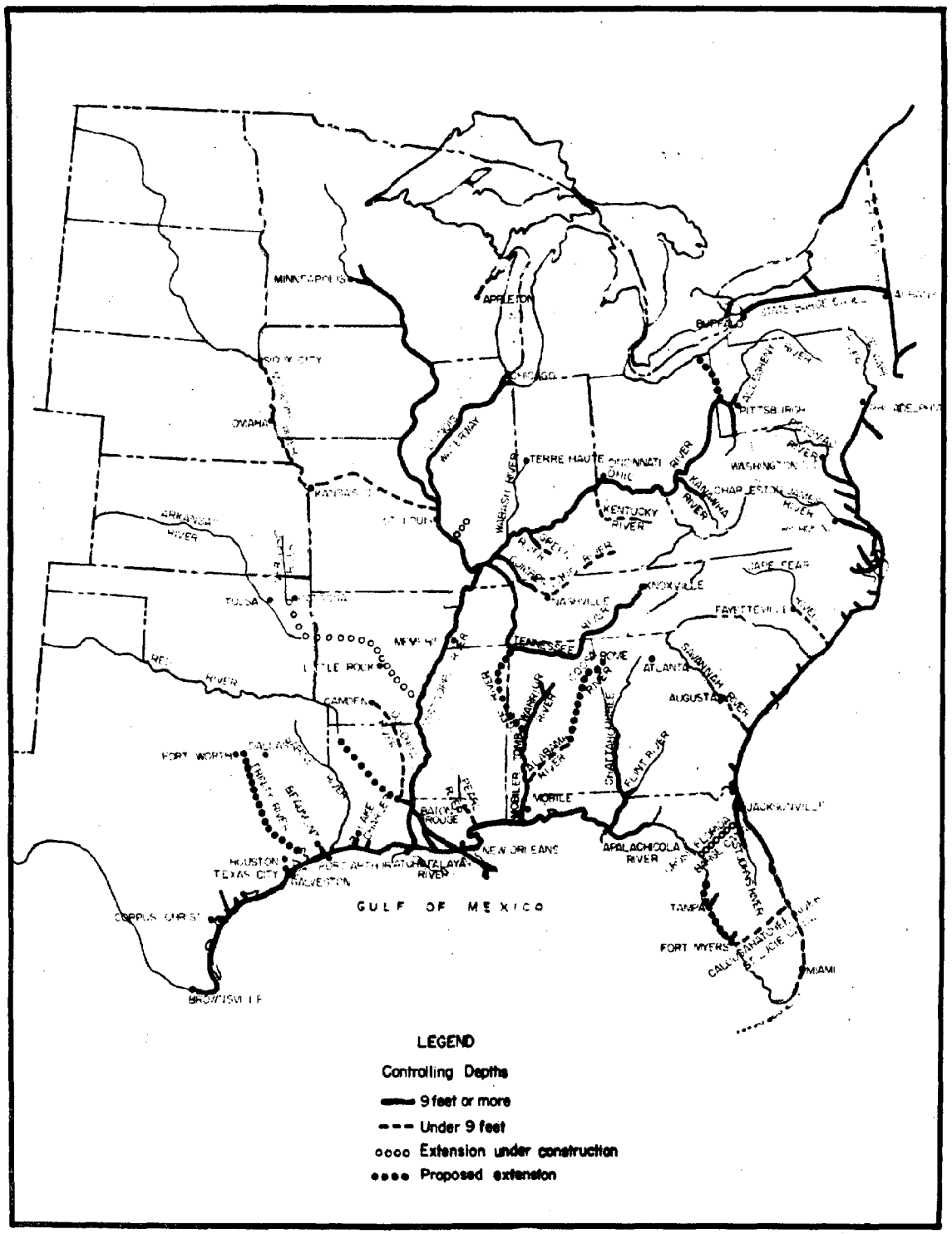


Fig. 31. Inland waterways of the central and eastern United States. Source: U.S. Army Corps of Engineers, New Orleans District, 1968, Navigation Maps of the Gulf Intracoastal Waterway.

TABLE 49

TOTAL TONNAGE ON THE GULF INTRACOASTAL WATERWAY, 1955-1969
(In Tons of 2,000 Pounds)

	1955	1960	1965	1967	1969
Apalachee Bay, Florida, to Mexican Border (Full Length)	41,378,856	54,948,389	78,537,344	87,850,332	100,077,076
Mississippi River to Sabine River (Louisiana Inclusive)	26,763,062	36,263,828	48,071,825	58,722,476	65,515,397
Lake Charles to Gulf of Mexico	14,901,151	17,433,441	14,469,783	16,697,672	16,154,684
Morgan City to Port Allen	2,497,066	2,773,826	9,425,938	13,008,944	16,368,013

Source: U.S. Army Corps of Engineers, Waterborne Commerce of the United States, respective years.

TABLE 50

MAJOR COMMODITIES SHIPPED ON MISSISSIPPI RIVER SYSTEM,
BATON ROUGE - NEW ORLEANS - MOUTH OF RIVER, 1969
(In Tons of 2,000 Pounds)

	Baton Rouge - New Orleans		New Orleans - Mouth of Miss. R.	
Commodity	Internal	Oceangoing	Internal	Oceangoing
Crude Petroleum	12,207,031	2,480,211	19,743,898	18,643,829
Gasoline	9,266,966	2,455,672	5,699,787	3,074,895
Corn	10,002,248	6,603,501		10,139,635
Soybeans	5,284,365	3,318,783		5,555,393
Basic Chemicals	5,049,829	1,568,687		
Alumina		6,547,553		7,090,439
Distillate Fuel Oil		4,860,008		5,528,396
TOTAL	81,148,967	39,432,122	63,603,845	81,827,697

Source: U.S. Army Corps of Engineers, Waterborne Commerce of the United States, respective years.

TABLE 51

TOTAL TONNAGE ON THE MISSISSIPPI RIVER SYSTEM, 1955-1969
(In Tons of 2,000 Pounds)

Segment	1955	1960	1965	1967	1969
Minneapolis to Mouth of Mississippi River	94,041,765	128,347,795	176,152,441	213,104,546	229,479,806
Mouth of Ohio River to Baton Rouge	28,436,166	40,149,540	59,837,435	72,441,499	77,022,291
Baton Rouge to New Orleans	43,986,031	52,354,701	80,778,152	103,054,261	120,581,089
New Orleans to Mouth of Mississippi River	63,353,999	79,813,281	112,011,827	138,171,068	145,431,542

Source: U.S. Army Corps of Engineers, Waterborne Commerce of the United States, respective years.

TABLE 52

MAJOR COMMODITIES SHIPPED ON LOUISIANA SEGMENT
OF GULF INTRACOASTAL WATERWAY (MISSISSIPPI - SABINE RIVERS), 1969
(In Tons of 2,000 Pounds)

Commodities	Tonnage
Total Oceangoing	147,899
Total Internal	65,367,508
Crude Petroleum	27,323,488
Marine Shells	6,142,084
Gasoline	5,157,008
Non-metallic Minerals	4,511,113
Basic Chemicals	3,019,073
Residual Fuel Oil	2,701,327
Distillate Fuel Oil	2,267,733
Lubricating Oils	1,200,290

Source: U.S. Army Corps of Engineers, Waterborne Commerce of the United States, respective years.

TABLE 53

WATER TRANSPORTATION EMPLOYMENT, PAYROLLS, AND NUMBER OF REPORTING UNITS, LOUISIANA, 1969

Industry	Number Employees, Mid-March Pay Period	Taxable Payrolls, January-March ($1,000)	Total Reporting Units
Water Transportation	18,536	$25,605	887
Deep-Sea Foreign Transportation	878	731	9
Transportation on River and Canals	1,099	2,236	18
Local Water Transportation	8,568	13,123	711
Water Transportation Services	7,988	9,510	147
Marine Cargo Handling	6,725	7,677	46
Water Transportation Services, NEC*	Deleted	Deleted	100

*Not elsewhere classified

Source: U.S. Department of Commerce, Bureau of the Census, 1970, County Business Patterns, 1969. P. 8.

two firms had 250 to 499 employees and three had from 100 to 249 employees. On the other end of the scale there were 20 firms with three or fewer employees.

Predictions

The future for Louisiana deepwater ports is excellent. New Orleans already is the major containership port on the Gulf, and certainly one of the major world ports for this type of cargo handling. In fact, the shipping industry is experiencing rapid technological change which will bring increased need for new port facilities and better waterway access to these ports. Inescapably, the thrust for deeper channels, new channels, construction of offshore cargo-handling facilities for supertankers, etc., conflicts with other considerations such as preservation of fishery spawning waters in estuaries, prevention of salt-water intrusion, and destruction of fresh-water marshes. The benefits from expanded shipping operations must be weighed against these considerations if true benefit-cost calculations are to be made. This does not imply that expanded shipping facilities cannot be justified--far from it. What is implied is that construction of such facilities must be accomplished in such fashion as to avoid, or at least minimize, ecological damages. The ecology of the coastal region is a generating force for considerable income in Louisiana. Some impressions of environmental impact of marine transportation can be gained from the matrix in Figure 32, prepared for California's coastal zone.

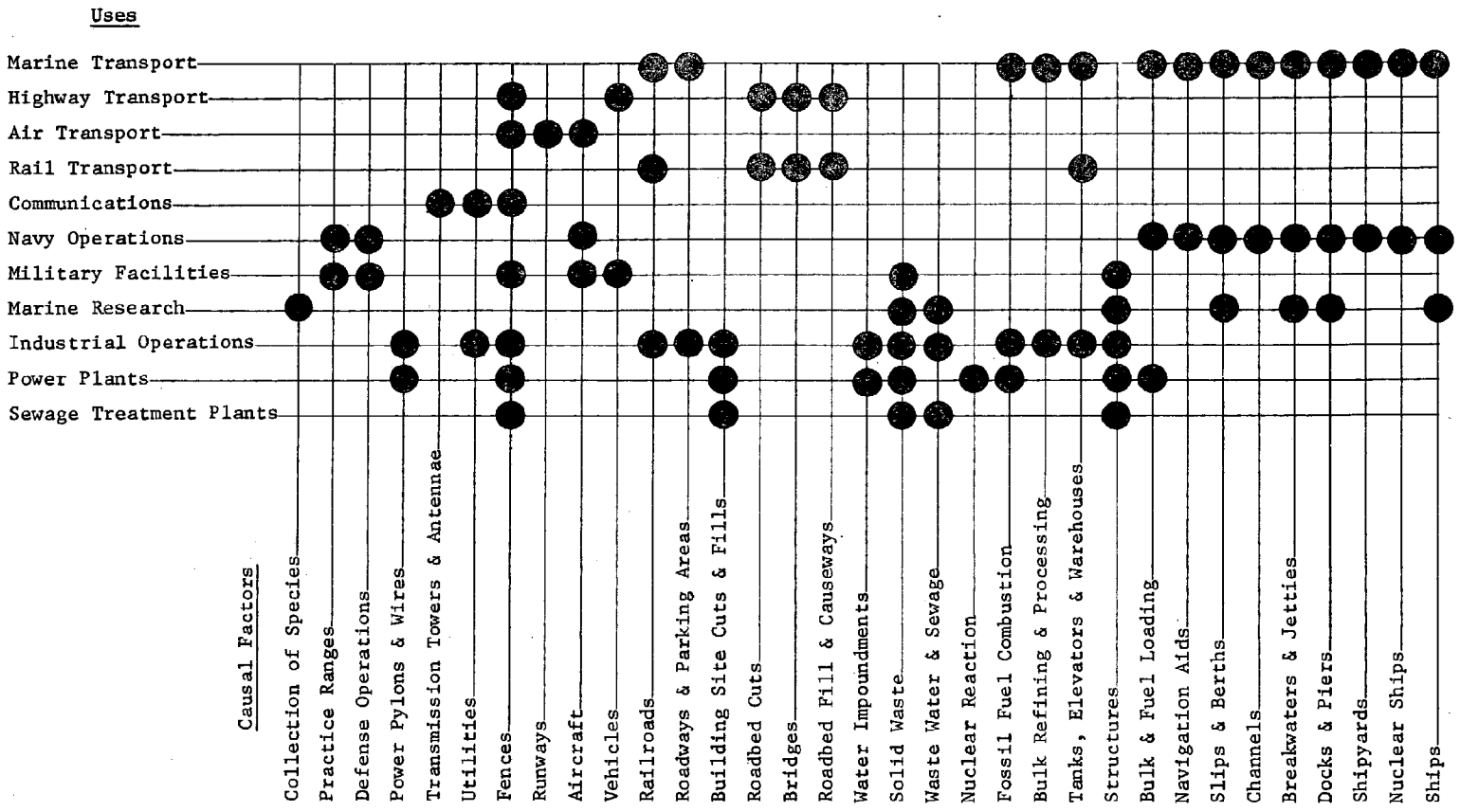


Fig. 32. Environmental impact of industrial and transportation activities in California's coastal zone. Source: Sorensen, J. C., 1970, State of California, Department of Navigation and Ocean Development.

CHAPTER XI

TOURISM AND RECREATION IN COASTAL LOUISIANA

Tourism and recreation are important sources of economic activity in Louisiana. The direct importance of this sector of the Louisiana economy to the coastal region stems from two features: First, more than 50 percent of all recreation activities in the United States are water oriented, and second, east-west movement of tourists along Louisiana coastal routes accounts for approximately 24 percent of all visitors to the State.

New Orleans is, of course, a major tourist attraction, but many other areas of the State derive income from tourists, not only out-of-state but intrastate tourists as well. The Louisiana Travel Promotion Association estimates that 264 million out-of-state visitors entered the State in 1968. Tourist traffic to publicly owned attractions in Louisiana is displayed in Table 54.

Travelers in Louisiana seem to spend in the following proportion: 33.7 percent for food and drink; 26.8 percent for transportation; 13.3 percent for recreation and entertainment; 23.4 percent for lodging; and 2.8 percent for miscellaneous expenditures. Total expenditure for all categories in 1969 was an estimated $580 million, $373 million of which came from out-of-state visitors. The $580 million spent by all travelers is divided as follows: 34.1 percent for personal income to individuals; 50.0 percent for purchases from other industries; 12.2 percent for State and local taxes; and 2.1 percent for other categories. Table 55 illustrates tourist expenditures by category for 1969.[1]

The coastal region clearly dominates the tourist and recreation activity in Louisiana. New Orleans is a great attraction for both in- and out-of-state tourists. Marine-related recreation is heavily concentrated in the coastal region, as exemplified by the fact that 101,084 registered boats over 12 feet in length, with motors exceeding 10 horsepower, existed in the coastal parishes in September 1970 (Louisiana Wild Life and Fisheries Commission, 1970). Commercial vessels are included in this total, but most of the registered boats are for private recreational use. Private marinas dot the coastal area's lakes, rivers, and bays, and there is every reason to think that rising consumer incomes will produce continued expansion of boating activities.

Closely allied to boating activities are waterfowl hunting and fishing. The waterfowl in Louisiana have always been a great attraction to hunters; waterfowl hunters increased from 76,053 in the 1969-1970

---

[1]Louisiana Travel Promotion Association data derived from the report by Lewis C. Coleland, 1968. The Copeland report is an annual study. The Louisiana Travel Promotion Association is a trade group without formal headquarters. Copies of the Copeland report may be obtained from the Louisiana Tourist Development Commission, State of Louisiana, Baton Rouge, Louisiana. However, the Tourist Development Commission does not contribute to the costs of publication of the Copeland reports.

TABLE 54

VISITORS TO SELECTED TOURIST ATTRACTIONS

Site	April 1971	March 1971	April 1970	Percentage Change April 1971-April 1970	Percentage Change April 1971-March 1971
Audubon Memorial State Park	16,070	9,574	15,396	+ 4.4	+67.9
Chemin-A-Haut State Park	19,240	14,100	3,577	+437.9	+36.5
Chicot State Park	56,978	40,228	17,337	+228.6	+41.6
Fort Jesup State Park	2,300	2,376	488	+371.3	- 3.2
Hodges Gardens	U	8,005	U	-	-
Lake Bistineau State Park	27,292	13,992	15,194	+ 79.6	+95.1
Lake Bruin State Park	19,956	11,456	3,000	+565.2	+74.2
Lake D'Arbonne State Park	12,636	9,229	6,761	+ 86.9	+36.9
Mansfield Battle Field	8,674	9,050	7,782	+ 11.5	- 4.2
Marksville Prehistoric Indian State Park	49,787	34,282	12,700	+292.0	+45.2
Shreveport, Louisiana State Exhibit Museum	55,222	51,596	54,103	+ 2.1	+ 7.0
Shreveport, Louisiana State Fairgrounds	29,473	51,995	36,342	- 18.9	-43.3
Coastal Parish Location					
Avery Island	9,048	7,327	6,821	+ 32.6	+23.5
Bogue Falaya Wayside Park	29,657	15,631	4,438	+568.3	+89.7
Edward Douglass White Memorial State Park	1,712	1,674	653	+162.2	+ 2.3
Fairview Riverside State Park	27,218	18,278	10,698	+154.4	+48.9
Fontainebleau State Park	79,984	43,612	52,206	+ 53.2	+83.4
Fort Pike State Park	15,550	14,364	6,405	+142.8	+ 8.3
Longfellow-Evangeline State Park	78,606	65,598	65,000	+ 20.9	+19.8
New Orleans, Louisiana State Exhibit Museum	39,000	27,000	20,201	+ 93.1	+44.4
New Orleans, Sam Houston State Park	64,364	51,348	68,080	- 5.5	+25.3
Tower at State Capitol	17,547	15,641	18,816	- 6.7	+12.2

U = Unavailable

Source: Louisiana State University, 1971, Louisiana Business Review.

season to 97,529 in the 1970-1971 season, a 28.2 percent increase (Louisiana Wild Life and Fisheries Commission, 1970). Both freshwater and salt-water fishing are popular, with the latter being concentrated off Grand Isle, one of the leading deep-sea charter boat ports on the Gulf. In 1968, 293,000 fishing licenses and 422,000 hunting licenses of all types were issued in Louisiana (Louisiana Wild Life and Fisheries Commission, 1970).

Assessing the direct impact of tourism and recreation in the coastal region is difficult. Data are virtually nonexistent, except for scattered surveys of poor quality. However, intuition predicts expansion of marine-oriented tourism and recreation, as well as accompanying developments such as camping, motel, and marina facilities. Personal services to meet the various demands of increased numbers of

TABLE 55

TOURIST SPENDING BY EXPENDITURE CATEGORY, LOUISIANA, 1969

	Total Amount	Percentage of Expenditures
Tourist Travel Expenditures, 1969	$373,000,000	100.0
Personel Income to Individuals	127,200,000	34.1
State and Local Taxes	45,500,000	12.2
State	35,400,000	9.5
Local and Property	10,100,000	2.7
Federal Income and Gasoline Taxes	13,800,000	3.7
Purchases from Other Industries	186,500,000	50.0
Cost of Goods Sold	131,300,000	35.2
Depreciation and Repairs of Facilities	15,300,000	4.1
Utilities, Power, Fuel, Telephone	13,000,000	3.5
Linen and Other Supplies	7,500,000	2.0
Laundry Service	5,200,000	1.4
Advertising and Printing	3,700,000	1.0
Insurance	2,600,000	0.7
Other Expenses	7,900,000	2.1

Source: Louisiana Travel Promotion Association.

visitors to Louisiana will rise. Inevitably there will be pressures on land uses as promoters seek to develop tourist and recreation attractions. In general, there is good reason to suggest that some standards governing types, qualities, and locations of tourist and recreational attractions should be developed by the State. The national government, for example, has recently moved to control discharge of human wastes from private boats. Undoubtedly other standards to control far more serious adverse environmental consequences will soon follow. Similar needs exist at the State level to control, for example, road and canal construction where blockages of water flows are involved.

Tourism and recreation are now very important in the Louisiana coastal economy. That these activities should be recognized as potentially growth oriented is quite proper. However, their growth need not be synonymous with blight and destruction of the natural beauty of the coastal prairies, marshes, and water bodies. Many state and local governments are currently sacrificing tremendous economic benefits, as well as recreational opportunities, by consciously permitting their streams to be used as carriers of inadequately treated industrial and municipal wastes. Louisiana's waterways are too important to suffer this sort of fate. Moreover, the long-run economic costs of neglecting the quality of the waterways will be extraordinarily high if the only harm is to turn away tourists and seekers of recreational outlets.

Figure 33 indicates typical structural and environmental consequences associated with various recreational activities.

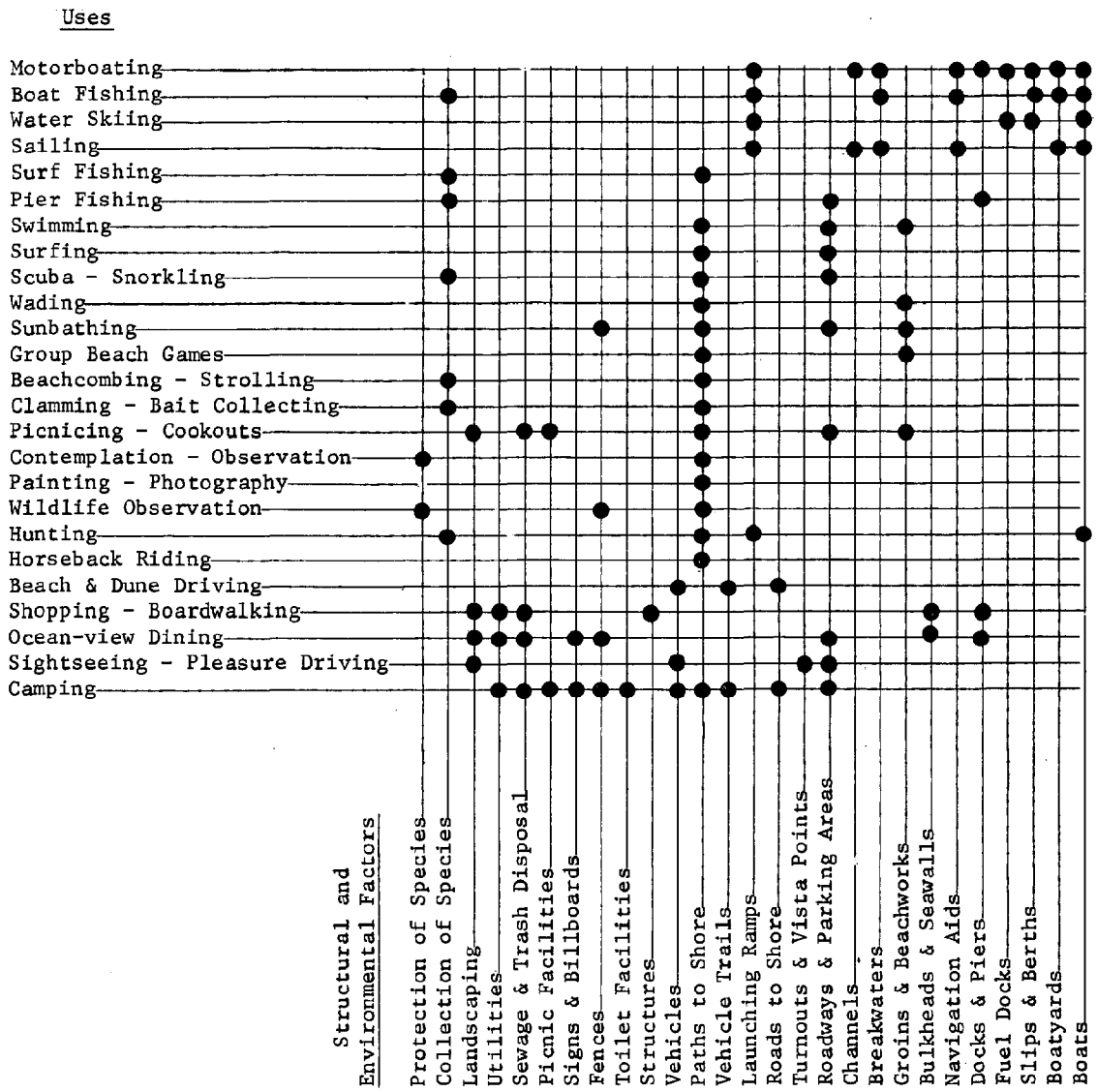


Fig. 33. Potential environmental impact of recreational activities in California's coastal zone. Source: Sorensen, J. C., 1970, State of California, Department of Navigation and Ocean Development.

Exhibit 1 is a newspaper editorial which evaluates the recreational potential of the Atchafalaya Basin. This editorial presents an excellent assessment of the recreational potential of coastal Louisiana watershed areas and provides useful insight for other projects of similar scope.

Exhibit 1

National Recreation Area For Atchafalaya Basin?

Editor's Note: The following fact sheet on the National Recreation Area possibilities of the Atchafalaya Basin was prepared by a former undersecretary of the interior now returned to his post at LSU here.

By DR. LESLIE L. GLASGOW

The Atchafalaya Basin is a major floodway formed by the waters of the Red River and the Mississippi River. The lower Atchafalaya Basin is the largest remaining hardwood forest in the United States, and the most productive fish, wildlife and plant life swamp in the world. The prime ecological area is between the guide levees below Krotz Springs and I-10 to Morgan City.

As eroded soil flows into the Atchafalaya Basin the speed of the water is reduced, causing the silt to drop out and fill up the swamps and lakes of the Basin. As the land becomes high and dry many thousands of acres of timber are being cleared for soy beans and other uses. The U.S. Army Corps of Engineers reported that most of the Basin will fill in by 1978. If steps are not taken now to maintain the swamps and hardwood forests the Atchafalaya Basin will be lost.

New Recreation Concept

1. National Recreation Areas were created by Congress as a new concept to provide recreation to the masses of people.

2. They are administered separate and apart from the National Parks which were established to preserve the scenic wonders of the United States.

3. The activities that can be carried on within a National Recreation Area are determined by the Congressional Act that establishes each individual area.

4. Although boundaries for the Basin NRA have not been determined, the area under serious discussion lies between the east and west guide levees and is bounded on the north by the I-10 crossing and on the south by an indefinite line just above the more heavily settled area north of Morgan City.

5. The Federal Government would purchase an insignificant acreage, perhaps 500 acres for an administration site and visitor center. Any other land purchase would be from a willing seller. The government would take only an easement over the remainder of the land.

Disposition of Camps

6. Persons having camps within the final boundary would be permitted to use them in a normal manner until death. At that time they would be removed.

7. In every locality in which an NRA has been established, it has given the local and state economy a tremendous boost. An Atchafalaya Basin NRA would result in a significant increase in tax revenues to the surrounding parishes and to the State of Louisiana.

8. The major objectives which are very simple are to:

(a) Always keep the Basin in timber.

(b) Always keep the Basin open for public use.

9. Establishment of an NRA would not interfere with the Corps of Engineers flood control program.

No Timber Ban

10. The land owner would continue to harvest timber according to normal timber harvest practices.

11. Mineral rights would be retained by the land owner and exploration for, and production of oil and gas would continue according to normal practices.

12. The harvest of wildlife and fisheries resources would continue under the jurisdiction of the Louisiana Wild Life and Fisheries Commission. Commercial fishing, sport fishing, crayfishing, deer hunting, waterfowl hunting, trapping, etc., would be encouraged.

What's Possible

The plan envisions but is not limited to the following:

1. A mushrooming of tourism business surrounding the Basin.

2. The outlay of 15-20 million dollars to develop the recreation potential of the Basin.

3. Construction of visitor center complete with interpretive services depicting the natural history and phenomena of the area.

4. A gigantic water hyacinth control program.

5. A large increase in the number of boat launching ramps with adequate parking facilities.

6. Marking and maintenance of boat trails (scenic and fishing), throughout the Basin.

7. Marking and maintenance of hiking trails on ridges and levees.

8. Wildlife observation vantage points and towers.

9. Natural history tours conducted by experienced naturalists.

10. Physical improvements that would increase wildlife and fisheries resources of the area.

11. Emergency equipment such as radio communication, and boats and personnel experienced in coping with most accidents.

Source: Baton Rouge Morning Advocate, June 26, 1971, p. 19-A.

CHAPTER XII

MISCELLANEOUS SECTORS

This chapter contains three sections. Section I covers fur trapping in coastal Louisiana, Section II describes the available Standard Industrial Classification listings applicable to coastal Louisiana, and Section III describes the marine-related expenditures of the Federal and State governments in Louisiana.

Section I

Fur Trapping in Coastal Louisiana

The ponds, lakes, and bayous in the broad, flat coastal marshes of Louisiana form an important base for valuable fur-bearing animals such as the mink, muskrat, otter, and nutria. The water areas are used by these animals for travel lanes and as sources of aquatic vegetation for food. The coastal marshes have kept Louisiana first among the states in fur production for most of this century. Moreover, the Louisiana fur industry, valued at $5,000,000 to $10,000,000 annually and involving 25 dealers, 125 buyers, and more than 4,000 trappers, leads the nation with approximately 30 percent of total fur production. The most important wild fur bearers are nutria, which yield approximately 95 percent of the world's supply of fur, and muskrat, which yield approximately 20 percent of the world's supply. Certainly, it is not true that fur trapping is a major industry, but it is one that provides important supplemental winter income for approximately 5,000 individuals in coastal Louisiana. Moreover, in a sense the industry is a symbolic representation of the dependence of man upon wildlife preservation.[1]

The comparative takes and dollar values of fur animals in Louisiana are presented in Table 56, which also contains a section on the meat sales from fur bearers. The meat from fur-bearing animals was formerly sold to commercial growers of mink, but the decline of that industry has led to exclusive sales of the meat as a food supply for the screw worm fly sterilization program. Screw worm flies are raised on meat from fur-bearing animals and are subsequently sterilized by cobalt 90 radiation. The flies then are released over a 200-mile-wide band extending from the Gulf of Mexico to the Pacific Ocean in order to neutralize reproduction of this species of fly, thereby limiting damage to cattle herds.

Section II

SIC Listings

The following list (Table 57) of Standard Industrial Classifications of industries dependent upon or related to the economy of coastal Louisiana

---

[1]Data on fur trapping were supplied by Ted O'Neil, Chief, Fur Division, Louisiana Wild Life and Fisheries Commission.

TABLE 56

COMPARATIVE TAKES OF FUR ANIMALS IN LOUISIANA, 1969-1970 SEASON

	No. of Pelts	Approximate Price to Trapper	Value
Muskrat (Eastern)	432,052	$ 1.00	$ 432,052.00
Muskrat (Western)	800,000	1.35	1,080,000.00
Mink	46,294	5.00	231,470.00
Nutria (Eastern)	704,175	1.60	1,126,680.00
Nutria (Western)	900,000	3.00	2,700,000.00
Raccoon	103,725	2.25	233,381.25
Opossum	7,648	.50	3,824.00
Otter	6,632	23.00	152,536.00
Skunk	108	.50	54.00
Fox	636	3.00	1,908.00
Bobcat	110	5.00	550.00
Beaver	646	5.00	3,230.00
Wolf	3	5.00	15.00
TOTAL PELTS	3,002,043		$5,965,700.25
Meat	Pounds		
Nutria	9,500,000	.08	760,000.00
Muskrat	550,000	.08	44,000.00
Raccoon	380,000	.20	76,000.00
Opossum	50,000	.20	10,000.00
TOTAL MEAT	10,480,000		$ 890,000.00
TOTAL PELTS AND MEAT			$6,855,700.25

NOTE: The number of pelts taken is a function of the demand for particular fur types and does not imply physical limitations on takes.

Source: Louisiana Wild Life and Fisheries Commission, Fur Division, New Orleans, 1971.

is presented to illustrate the total scope of potential economic analysis. The basic problem, however, is that data are available from normal sources for very few of the listed industries. Nevertheless, inclusion of the list aids conceptual evaluation of the Louisiana coastal economy.

Section III

Marine-Related Federal and State Expenditures

Tables 58-60 display marine-related Federal and State expenditures in recent years. The data are not exhaustive, and in some instances the relation to marine activities is indirect. Nevertheless, they reveal substantial involvement on the part of both levels of government in marine-related activities. Present trends indicate greatly expanded Federal outlays to marine-related programs. Although many of these activities do not occur in the coastal zone, they may ultimately affect the quality of the coastal zone.

TABLE 57

STANDARD INDUSTRIAL CLASSIFICATIONS FOR
COASTAL INDUSTRIES IN LOUISIANA

I. Manufacturing Category

S.I.C.	
2031	Canned & Cured Fish & Seafoods
2036	Fresh & Frozen Packaged Fish & Seafoods
2812	Alkalies & Chlorine
2813	Industrial gases
2815	Dyes
2816	Inorganic pigments
2818	Industrial organic chemicals, NEC*
2819	Industrial inorganic chemicals, NEC
2821	Plastics Materials, Synthetic Resins
2851	Paints, Varnishes, Lacquers, Enamels, & Allied Products
2892	Explosives
2899	Chemicals & Chemical Preparations, NEC
2911	Petroleum Refining
2992	Lubricating Oils & Greases
3079	Miscellaneous Plastic Products
3295	Minerals & Earths, Ground or Otherwise Treated
3312	Blast Furnaces, Steel Works & Rolling Mills
3357	Drawing & Insulating of Nonferrous Wire
3362	Brass, Bronze, Copper, Copper Base Alloy Castings
3391	Iron & Steel Forgings
3429	Hardware, NEC
3441	Fabricated Structural Steel
3443	Fabricated Plate Work (Boiler Shops)
3449	Miscellaneous Metal Works
3471	Electroplating, Plating, Polishing, Anodizing & Coloring
3479	Coating, Engraving, & Allied Services, NEC
3491	Metal Shipping Barrels, Drums, Keys, & Pails
3494	Valves & Pipe-fittings, Except Plumbers Brass Goods
3498	Fabricated Pipe & Fabricated Pipe Fittings
3499	Fabricated Metal Products, NEC
3519	Internal Combustion Engines, NEC
3531	Construction Machinery & Equipment
3533	Oil Field Machinery & Equipment
3533	Oil Field Machinery & Equipment
3537	Industrial Trucks, Tractors, Trailers & Stackers
3561	Pumps, Air & Gas Compressors, & Pumping Equipment
3567	Industrial Process Furnace & Ovens
3573	Electronic Computing Equipment
3599	Miscellaneous Machinery, Except Electrical
3673	Transmitting, Industrial, & Special Purpose Electron Tubes
3681	Storage Batteries
3731	Ship Building & Repairing
3732	Boat Building & Repairing
3811	Engineering, Laboratory & Scientific & Research Instruments & Associated Equipment
3821	Mechanical Measuring & Controlling Instruments, Except Automatic Temperature Controls

STANDARD INDUSTRIAL CLASSIFICATIONS FOR
COASTAL INDUSTRIES IN LOUISIANA

II. Non-Manufacturing Category

S.I.C.	
0912	Finfish
0913	Shellfish
0919	Miscellaneous Marine Products
0989	Fish Hatcheries, Farms & Preserves
1311	Crude Petroleum & Natural Gas
1321	Natural Gas Liquids
1381	Drilling Oil & Gas Wells
1382	Oil & Gas Field Exploration Services
1389	Oil & Gas Field Services, NEC
1442	Construction Sand & Gravel
1446	Industrial Sand
1477	Sulfur
1481	Non-metallic Minerals (Except Fuel) Services
1621	Heavy Construction, Except Highway & Street Construction
4011	Railroads, Line Haul Operations
4013	Switching & Terminal Companies
4041	Railway Express Service
4212	Local Trucking & Draying, Without Storage
4213	Trucking, Except Local
4214	Local Trucking & Storage, Including Household Goods
4225	General Warehousing & Storage
4226	Special Warehousing & Storage, NEC
4411	Deep Sea Foreign Transportation
4421	Transportation to & Between Non-contiguous Territories
4422	Coastwise Transportation
4423	Intercoastal Transportation
4441	Transportation on Rivers & Canals
4452	Ferries
4453	Lighterage
4454	Towing & Tugboat Services
4459	Local Water Transportation, NEC
4463	Marine Cargo Handling
4469	Water Transport Services, NEC
4612	Crude Petroleum Pipelines
4712	Freight Forwarding
4721	Arrangement of Transportation
4782	Inspection & Weighing Services Connected with Transportation
4783	Packing & Crating
4789	Services Incidental To Transportation, NEC
4922	Natural Gas Transmission
4923	Natural Gas Transmission & Distribution
4925	Mixed, Mfg. of L.P. Gas Production and/or Distribution
5046	Fish & Seafoods, Wholesale
5063	Electrical Apparatus & Equipment, Wholesale

Non-Manufacturing Category (cont'd)

S.I.C.	
5065	Electronic Parts & Equipment
5082	Construction & Mining Machinery & Equipment
5084	Industrial Machinery & Equipment
5085	Industrial Supplies
5088	Transportation Equipment & Supplies, Except Motor Vehicles
5091	Metals & Minerals, NEC
5092	Petroleum & Petroleum Products
5098	Lumber & Construction Materials, (Sand)
5421	Fish to Seafood Markets
5541	Marine Service Stations (Gasoline Service Stations)
5591	Boat Dealers
5952	Sporting Goods Stores
5982	Fuel & Ice Dealers
6332	Stock Fire, Marine, & Casualty Insurance Company
6333	Mutual Fire, Marine, & Casualty Insurance Company
6339	Fire, Marine & Casualty Carriers, NEC
6792	Oil Royalty Companies
7391	Commercial Research & Development Laboratories
7392	Business, Management, Administrative & Consulting Services
7399	Business Services, NEC
7699	Repair Shops & Related Services
8221	Colleges, Universities & Professional Schools
8911	Engineering & Architectural Services
	Federal Government
9101	Fisheries
9113	Crude Petroleum & Natural Gas
9144	Water Transportation

*NEC-Not Elsewhere Classified

Source: U.S. Bureau of the Budget,1972, Standard Industrial Classification Manual.

TABLE 58

FEDERAL INFORMATION EXCHANGE SYSTEM PROGRAM SUMMARY
FOR LOUISIANA AS OF JUNE 30, 1969

Marine-Related Outlays	Fiscal Year Outlays, 1969
Department of Agriculture Programs	
River Basin Surveys and Investigations	$ 110,755
Watershed Planning	100,376
Watershed Works of Improvement	2,052,231
Department of Commerce Programs	
Geodetic Surveys and Tideland Studies	350
Nautical Charts and Related Data	3,435
River and Flood Forecasting	54,678
Weather and Climate Guidance	1,166,262
Department of Housing and Urban Development Programs	
Basic Water and Sewer Grants	868,000
Open Space Land Program	26,000
Department of the Interior Programs	
Fisheries Assistance	58,425
Anadromous Fish Management, Commercial Fisheries	12,725
Outdoor Recreation Assistance	994,462
Sport Fish Production	72,617
Wildlife Services	43,644
Geological, Mineral & Water Resource Investment & Topographical Mapping	1,697,440
Parks and Forests	80,204
Saline Water Conversion	55,030
Water Resources Research	100,000
Water Supply and Water Pollution Control	1,033,399
Construction Grants for Waste Treatment	2,580,153
Department of Transportation Programs	
Coast Guard Marine, Harbor, and Shore Services	45,461,785
Treasury Department Appropriations	
Supplies and Expenses, Bureau of Customs	3,149,576

Source: U.S. Department of Commerce, Office of Economic Opportunity, Federal Outlays in Louisiana, Fiscal Year 1969.

TABLE 59

FEDERAL INFORMATION EXCHANGE SYSTEM FUNCTIONAL SUMMARY
FOR LOUISIANA AS OF JUNE 30, 1969

	Fiscal Year Outlays, 1969
Agricultural Land and Water Resources	$6,358,255
Water Resources and Power	7,122,913
Land Management	5,753,387
Fish and Wildlife Resources	2,700,776
Recreational Resources	1,079,403
Water Transportation	91,437,624
Science Education and Basic Research	3,679,476

Source: U.S. Department of Commerce, Office of Economic Opportunity, Federal Outlays in Louisiana, Fiscal Year 1969.

TABLE 60

SELECTED MARINE-RELATED APPROPRIATIONS,
STATE OF LOUISIANA, FISCAL YEAR 1971

Purpose	Amount
State Soil and Water Conservation Committee	
District soil conservation, erosion control, drainage, land use and improvement programs	$ 404,127
Louisiana Watershed Program	115,204
Department of Wild Life and Fisheries	
Water Pollution Division	172,322
Enforcement Division	2,613,200
Fur Division	55,591
Fish and Game Division	1,913,000
Oysters, Waterbottoms, & Seafood Division	1,694,313
State Parks and Recreation Division	
Bureau of Outdoor Recreation	117,443
Department of Public Works	
For public improvements, including the construction of dams and highway bridges, irrigation, navigation, flood control, water conservation and drainage facilities, etc.	2,500,000
Sabine River Authority	241,223
Statewide Watershed Projects	1,000,000
Louisiana State University	
Sea Grant Program and Related Activities	125,000
Nicholls State University	
Marine Biology Laboratory	100,000

NOTE: Selections included are arbitrarily designated as marine-oriented expenditures.

Source: State of Louisiana, 1971 Acts of the Legislature, Act No. 12.

REFERENCES

American Petroleum Institute and American Gas Association, 1970, Reserves of Crude Oil, Natural Gas Liquids, and Natural Gas in the United States and Canada and United States Productive Capacity as of December 31, 1969. Vol. 24.

Antoine, J. W., and J. C. Gilmore, 1970, Geology of the Gulf of Mexico. Ocean Industry, 5(5):37.

Becker, G. S., 1964, Human Capital. New York (Columbia Univ. Press, for National Bureau of Economic Research).

_____, and B. R. Chiswick, 1966, Education and the Distribution of Earnings. The Am. Econ. Rev., Vol. 56.

Blizzard, C., and R. L. Burford, 1971, Shift-Share as a Tool for Regional and State Economic Analysis. Louisiana Business Rev., Baton Rouge (College of Business Admin., La. State Univ.), 35:3-4.

Bornhauser, M., 1958, Gulf Coast Tectonics. Bull. Am. Assoc. Petroleum Geologists, 42:340.

Bowles, Samuel, 1970, Migration as Investment: Empirical Tests of the Human Investment Approach to Geographical Mobility. The Review of Economics and Statistics, 52:356-362.

Bretzfelder, R. B., 1970, Geographic Trends in Personal Income in the 1960's. Survey of Current Business, Washington (U.S. Dept. Commerce), August:14-22.

Chaffin, Robert, 1968, Why Firms Do and Do Not Locate in Louisiana. Third Annual Conf. Proc., The Louisiana Economy. College of Business Admin., Nicholls State Univ., Thibodaux, La., March 26, 1968.

Chiswick, B. R., 1967, Human Capital and the Distribution of Personal Income. Unpublished Ph.D. dissertation, Columbia Univ.

_____, 1968, The Average Level of Schooling and the Intra-Regional Inequality of Income: A Clarification. The Am. Econ. Rev., 58:266-267, 495-500.

Cronin, L. E., 1971, The Role of Man in Estuarine Processes. In (T. R. Detwyler, ed.) Man's Impact on Environment. New York (McGraw-Hill), 58:495-500.

Denison, E. F., 1967, Why Growth Rates Differ. The Brookings Institution, Washington, D.C., pp. 9-10.

Dubey, Vinod, 1970, The Definition of Regional Economics. In (D. L. McKee, R. D. Dean, and W. L. Leahy, eds.) Regional Economics: Theory and Practice. New York (The Free Press), p. 7.

Economic Report of the President, 1971.

Fisk, H. N., 1952, Geological Investigations of the Atchafalaya Basin and the Problem of Mississippi River Diversion. U.S. Army Corps of Engrs., Miss. River Comm., Vicksburg, Miss., Vol. 1, 145 pp.

_____, 1956, Nearsurface Sediments of the Continental Shelf off Louisiana. Proc., Eighth Texas Conf. on Soil Mechanics and Foundation Engr., Austin, Texas, Sept. 14-15, 1956, pp. 4-6.

Gould, H. R., and J. P. Morgan, 1962, Coastal Louisiana Swamps and Marshlands. In Geology of the Gulf Coast and Central Texas and Guidebook of Excursions. Houston Geol. Soc., pp. 287-341.

Hoover, E. M., Jr., and J. L. Fischer, 1949, Research in Regional Economic Growth. In Problems in the Study of Economic Growth. National Bureau of Economic Research, New York, pp. 195-203.

Houthakker, H. S., and L. D. Taylor, 1970, Consumer Demand in the United States: Analyses and Projections. Cambridge, Mass. (Harvard Univ. Press).

Johnston, J., 1963, Econometric Methods. New York (McGraw-Hill), pp. 106-115.

Kneese, A. V., 1971, Environmental Pollution: Economics and Policy. The Am. Econ. Rev., 61(2):153-166.

Kolb, C. R., and J. R. Van Lopik, 1958, Geology of the Mississippi River Deltaic Plain, Southeastern Louisiana. U.S. Army Engr. Waterways Experiment Station, Vicksburg, Miss., Tech. Rept. 3-483.

Kuznets, Simon, 1963, Distribution of Income by Size. Economic Development and Cultural Change, 11:44.

Lefcourt, H. M., 1965, Risk Taking in Negro and White Adults. J. Personality and Social Psychology, 2:765-770.

Louisiana Department of Commerce and Industry, 1972, Louisiana Directory of Manufacturers.

Louisiana Department of Conservation, Annual Oil and Gas Report, respective years.

_____, 1964, Oil and Gas Map of Louisiana.

Louisiana Wild Life and Fisheries Commission, 1970-1971, 14th Biennial Report 1970-1971.

Lutz, Friedrich, and Vera Lutz, 1951, The Theory of Investment of the Firm. New York (Greenwood Press), pp. 16-48.

McConnell, C. R., 1969, Economics: Principles, Problems, and Policies. New York (McGraw-Hill).

McDonald, S. L., 1961, On the South's Recent Economic Development. The Southern Economic J., 28:33.

Melton, L. J., Jr., 1969, Some Factors Affecting the Economic Development of Louisiana. In (T. R. Beard, ed.) The Louisiana Economy. Baton Rouge (La. State Univ. Press).

Miller, H. P., 1955, Income of the American People. New York (John Wiley).

Mincer, J., 1962, On-the-Job Training: Costs, Returns, and Some Implications. J. Polit. Econ., Supplement, 70:50-79.

Mishan, E. J., 1970, Technology and Growth. New York (Praeger), p. xvii.

Morgan, J. N., M. H. David, W. J. Cohen, and H. E. Brazer, with the assistance of Norma Meyers and Barbara Baldwin, 1962, Income and Welfare in the United States. New York (McGraw-Hill).

Rice, G. R., 1970, State Differentials in Income Concentration: A Simultaneous Equation Model Explanation. Unpublished Ph.D. dissertation, Univ. Kentucky.

Rodriguez, L. J., 1971, Louisiana's Natural Resources: How Strong an Economic Development Asset. Louisiana Business Review, Baton Rouge (College of Business Admin., La. State Univ.), 35:6-9.

Schultz, T. W., 1961, Investment in Human Capital. The Am. Econ. Rev., 51:1-17.

_____, ed., 1962, Reflections on Investment in Man. J. Polit. Econ., Supplement, 70:1-8.

Schnore, L. F., 1961, The Statistical Measurement of Urbanization and Economic Development. Land Economics, 37:229-245.

Shaffer, H. G., 1968, A Critique of the Concept of Human Capital. In M. Blaug, ed.) Economics of Education. Baltimore (Penguin Books), 1:45.

Shapiro, Edward, 1966, Macroeconomic Analysis. New York (Harcourt, Brace, and World, Inc.).

Shlemon, R. J., 1972, Development of the Atchafalaya Delta, Louisiana. Center for Wetland Resources, La. State Univ., Rept. 13, 51 pp.

Smith, J. W., 1971, Interview reported in Louisiana's Natural Resources: How Strong an Economic Development Asset, by L. J. Rodriguez. Louisiana Business Review, Baton Rouge (College of Business Admin., La. State Univ.), 35:6-9.

U.S. Army Corps of Engineers, New Orleans District Office, 1971, New releases.

U.S. Bureau of the Budget, 1964, Standard Metropolitan Statistical Areas.

_____, 1972, Standard Industrial Classification Manual.

U.S. Department of Commerce, 1969, Essential United States Foreign Trade Routes.

_____, 1971a, Canned Fishery Products--1970.

_____, 1971b, Industrial Fishery Products--1970.

_____, Bureau of the Census, 1965-1970, County Business Patterns.

U.S. Department of Commerce and Louisiana Wild Life and Fisheries Commission, 1966-1971, Louisiana Landings.

U.S. Department of the Interior, 1969, Petroleum and Sulfur on the U.S. Continental Shelf.

_____, Bureau of Commercial Fisheries, 1969, Fishery Statistics of the United States, 1967.

_____, 1970a, Fisheries of the United States, 1969.

_____, 1970b, Shellfish Situation and Outlook.

Verway, D. I., 1966, A Ranking of States by Inequality Using Census and Tax Data. The Review of Economics and Statistics, 48:314-321.

Wilson, J. E., 1969, Economics of Offshore Exploration and Production. Preprint, Offshore Symposium, Am. Assoc. Petrol. Geologists Convention, Dallas, April 15, 1969.

Zimmerman, E. W., 1951, World Resources and Industries. Revised ed., New York (Harper and Row).

APPENDICES

APPENDIX I

INCOME AND POPULATION STATISTICS FOR LOUISIANA IN SELECTED YEARS

Personal Income in Selected Years, 1929-1968
(Thousands of Dollars)

	1929	1940	1950	1959	1962	1965	1968
Louisiana, Total	863,430	852,110	3,021,057	5,343,772	5,893,020	7,405,549	9,811,326
Louisiana, Coastal Region	523,599	518,903	1,861,781	3,543,028	3,878,709	4,969,887	6,527,492
Louisiana, Rest of State	339,831	333,207	1,159,276	1,800,744	2,014,311	2,435,662	3,283,834

Per Capita Personal Income in Selected Years, 1929-1968
(Hundreds of Dollars)

	1929	1940	1950	1959	1962	1965	1968
Louisiana, Total	414	360	1,120	1,666	1,747	2,080	2,645
Louisiana, Coastal Region	507	440	1,270	1,877	1,972	2,328	2,929
Louisiana, Rest of State	323	280	941	1,364	1,432	1,708	2,217
Total United States	705	592	1,496	2,161	2,368	2,760	3,421

Per Capita Personal Income, Percentage of National Average in Selected Years, 1929-1968

	1929	1940	1950	1959	1962	1965	1968
Louisiana, Total	59	61	75	77	74	75	77
Louisiana, Coastal Region	72	74	85	87	83	84	86
Louisiana, Rest of State	46	47	63	63	60	62	65

Earnings by Broad Industrial Sector, 1950, 1959, 1968
Louisiana Coastal Region Compared with Rest of State
(Location Quotient for Non-farm Earnings)

	1950		1959		1968	
	Coastal	Rest of State	Coastal	Rest of State	Coastal	Rest of State
Total Non-farm Earnings	100.00	(100.00)	100.00	(100.00)	100.00	(100.00)
Government Earnings	1.00	(1.36)	0.93	(0.43)	0.75	(1.66)
Total Federal	0.91	(1.21)	0.74	(1.14)	0.47	(1.89)
Federal Civilian	0.95	(0.69)	0.69	(0.74)	0.65	(0.79)
Military	0.85	(2.06)	0.82	(1.72)	0.21	(3.57)
State and Local	1.10	(1.52)	1.10	(1.70)	0.99	(1.49)
Private Non-farm Earnings	0.99	(0.95)	1.01	(0.92)	1.05	(0.86)
Manufacturing	0.66	(0.57)	0.60	(0.54)	0.63	(0.61)
Mining	1.64	(4.75)	5.47	(4.38)	7.23	(3.73)
Contract Construction	1.23	(1.20)	1.22	(1.28)	1.85	(1.21)
Transportation, Communication, and Public Utilities	1.48	(1.03)	1.45	(1.11)	1.45	(0.99)
Wholesale and Retail Trade	1.09	(0.99)	1.09	(1.05)	1.09	(1.00)
Finance, Insurance, and Real Estate	0.97	(0.56)	0.99	(0.70)	0.95	(0.66)
Services	1.09	(1.11)	1.01	(1.03)	0.95	(0.85)
Other	2.14	(2.02)	1.25	(2.37)	1.21	(2.03)

The location quotient is merely a device for comparing a region's percentage share of a particular activity with its percentage share of some basic aggregate; in this table the basic aggregate is non-farm earnings. To borrow an example from Isard's Methods of Regional Analysis, "If Region A accounts for 10 per cent of the national total of say, hat manufacture and the region's total income is 5 per cent of the nation's total, the region's location quotient (with income as base) for hat making would be 2."

Location quotients are rough benchmarks, but precision is not one of their characteristics. Their prime usefulness is to sharpen intuition about the coastal Louisiana economy.

Total Population in Selected Years, 1929-1968,
Adjusted to Bureau of Census State Totals as of July 1

	1929	1940	1950	1959	1962	1965	1968
Louisiana, Total	2,086,000	2,370,000	2,697,000	3,208,000	3,374,000	3,561,000	3,710,000
Louisiana, Coastal Region	1,033,190	1,180,312	1,465,526	1,887,570	1,967,172	2,134,753	2,228,467
Louisiana, Rest of State	1,052,810	1,189,688	1,231,474	1,320,430	1,406,828	1,426,247	1,481,533

Earnings by Broad Industrial Sector, 1950, 1959, 1968
Louisiana Coastal Region
(Percentage of Total Earnings)

	1950	1959	1968
Total Earnings	100.00	100.00	100.00
Farm Earnings	5.54	2.55	1.92
Total Non-farm Earnings	94.46	97.45	98.08
Government Earnings	11.83	13.41	12.98
Total Federal	5.49	5.51	3.49
Civilian	3.57	2.84	2.89
Military	1.93	2.31	0.60
State and Local	6.33	8.26	9.49
Private Non-farm Earnings	82.63	84.04	85.10
Manufacturing	19.89	18.41	18.74
Mining	3.38	8.10	7.31
Contract Construction	7.58	7.66	11.23
Transportation, Communidation, and Public Utilities	12.57	11.37	10.18
Wholesale and Retail Trade	21.44	19.87	18.16
Finance, Insurance, and Real Estate	4.25	5.16	5.02
Services	12.66	13.06	14.12
Other	0.86	0.39	0.34

These date represent percentages within coastal Louisiana. They do not represent comparison with the rest of Louisiana.

Personal Income by Major Sources and Earnings by Broad Industrial Sector, 1950, 1959, 1968
Louisiana Coastal Region Compared with Rest of State
(Percentage of U.S.)

	1950	1959	1968
Total Personal Income	0.82 (0.51)	0.92 (0.47)	0.95 (0.48)
Total Wage and Salary Disbursements	0.80 (0.44)	0.91 (0.41)	0.96 (0.43)
Other Labor Income	0.85 (0.48)	0.93 (0.42)	1.03 (0.32)
Proprietors Income	0.74 (0.71)	0.83 (0.67)	0.85 (0.75)
Property Income	0.86 (0.38)	1.06 (0.43)	1.03 (0.44)
Transfer Payments	1.15 (0.94)	0.91 (0.71)	0.86 (0.64)
Less Personal Contribution for Social Insurance	0.77 (0.45)	0.85 (0.41)	0.93 (0.39)
Total Earnings	0.79 (0.49)	0.90 (0.45)	0.95 (0.47)
Farm Earnings	0.50 (1.03)	0.51 (1.09)	0.57 (1.47)
Total Non-farm Earnings	0.82 (0.44)	0.92 (0.42)	0.96 (0.43)
Government Earnings	0.82 (0.60)	0.86 (0.61)	0.72 (0.72)
Total Federal	0.75 (0.53)	0.69 (0.48)	0.46 (0.82)
Federal Civilian	0.78 (0.30)	0.64 (0.31)	0.63 (0.34)
Military	0.69 (0.91)	0.76 (0.73)	0.20 (1.55)
State and Local	0.90 (0.67)	1.01 (0.72)	0.92 (0.65)
Private Non-farm Earnings	0.82 (0.42)	0.93 (0.39)	1.01 (0.37)
Manufacturing	0.54 (0.25)	0.55 (0.23)	0.61 (0.26)
Mining	1.34 (2.11)	5.05 (1.86)	6.97 (1.62)
Contract Construction	1.00 (0.53)	1.13 (0.54)	1.78 (0.52)
Transportation, Communication, and Public Utilities	1.21 (0.46)	1.33 (0.47)	1.40 (0.43)
Wholesale and Retail Trade	0.89 (0.44)	1.00 (0.45)	1.05 (0.43)
Finance, Insurance, and Real Estate	0.79 (0.24)	0.92 (0.30)	0.91 (0.29)
Services	0.89 (0.49)	0.93 (0.44)	0.92 (0.37)
Other	1.75 (0.90)	1.15 (1.00)	1.14 (0.88)

Data for Rest of Louisiana are in parentheses. For example, total personal income in 1950 as a percentage of the U.S. was 0.82 for coastal Louisiana and (0.51) for the Rest of Louisiana.

APPENDIX II

PARISH EMPLOYMENT AND TAXABLE PAYROLLS BY INDUSTRY FOR 1st QUARTER 1969

Industry	Number of Employees	Taxable Payrolls (Thousands of Dollars)	Total Reporting Units	Number of Reporting Units, by Employment Size Class							
				1-3	4-7	8-19	20-49	50-99	100-249	250-499	500 or more
Ascension Parish											
Agriculture, Forestry, Fisheries	11	7	4	4	-	-	-	-	-	-	-
Mining	(D)	(D)	3	1	-	1	1	-	-	-	-
Contract Construction	1,109	2,423	46	21	9	8	4	1	2	1	-
General Building Contractors	75	193	11	7	1	2	1	-	-	-	-
Heavy Construction Cont.	800	1,845	9	2	-	3	1	-	2	1	-
Manufacturing	2,560	6,096	33	2	2	11	6	4	5	3	-
Chemical & Allied Products	1,922	5,091	13	-	-	2	3	2	3	3	-
Transportation & Other Public Utilities	265	454	18	7	5	3	1	1	1	-	-
Transportation Services	(D)	(D)	1	-	-	-	-	-	1	-	-
Wholesale Trade	231	341	28	10	8	6	4	-	-	-	-
Retail Trade	1,318	1,251	174	87	35	37	14	1	-	-	-
Food Stores	263	215	33	18	5	7	2	1	-	-	-
Auto Dealers and Service Sta.	315	444	41	23	10	3	5	-	-	-	-
Finance, Insurance & Real Estate	340	478	30	14	7	6	2	-	1	-	-
Credit Agencies (Non-bank)	90	112	11	3	4	3	1	-	-	-	-
Services	376	265	80	52	20	4	4	-	-	-	-
Personal Services	60	48	18	11	5	2	-	-	-	-	-
Medical & Other Health	93	55	16	11	3	-	2	-	-	-	-
Educational Services	103	71	7	3	2	-	2	-	-	-	-
Assumption Parish											
Mining	247	583	6	1	1	1	2	-	1	-	-
Oil & Gas Extraction	247	583	6	1	1	1	2	-	1	-	-
Contract Construction	159	243	13	7	2	2	1	1	-	-	-
Heavy Construction Contractors	141	230	6	2	1	1	1	1	-	-	-

D - Deleted

Industry	Number of Employees	Taxable Payrolls (Thousands of Dollars)	Total Reporting Units	Number of Reporting Units, by Employment Size Class							
				1-3	4-7	8-19	20-49	50-99	100-249	250-499	500 or more
Assumption Parish (continued)											
Manufacturing	1,760	3,074	12	2	1	2	3	-	3	-	1
Food & Kindred Products	(D)	(D)	9	-	1	2	3	-	3	-	-
Fabricated Metal	(D)	(D)	1	-	-	-	-	-	-	-	1
Transportation & Other Public Utilities	(D)	(D)	3	2	1	-	-	-	-	-	-
Wholesale Trade	26	26	6	4	1	1	-	-	-	-	-
Retail Trade	349	300	76	52	14	7	3	-	-	-	-
Food Stores	112	83	17	9	5	2	1	-	-	-	-
Auto Dealers & Service Sta.	66	68	14	10	2	1	1	-	-	-	-
Eating & Drinking Places	53	19	20	17	2	1	-	-	-	-	-
Finance, Insurance & Real Estate	72	78	14	8	4	1	1	-	-	-	-
Services	142	117	32	21	7	3	1	-	-	-	-
Calcasieu Parish											
Agricultural, Forestry & Fisheries	105	104	24	14	7	3	-	-	-	-	-
Agricultural Services & Hunting	64	50	15	10	3	2	-	-	-	-	-
Mining	1,344	2,575	51	10	7	12	15	5	2	-	-
Oil & Gas Extraction	1,272	2,447	47	10	5	12	13	5	2	-	-
Contract Construction	5,102	10,422	225	102	57	27	15	17	3	2	2
General Building Contractors	1,423	2,844	45	14	15	5	4	5	-	1	1
Heavy Construction Cont.	2,224	5,012	23	8	3	1	2	5	2	1	1
Manufacturing	8,956	19,875	104	30	21	20	13	5	8	3	4
Food & Kindred Products	667	822	17	3	3	2	6	1	2	-	-
Lumber & Wood Products	124	114	9	2	3	2	1	1	-	-	-
Printing & Publication	376	285	15	6	3	4	-	-	2	-	-
Chemical & Allied Products	2,845	6,265	11	-	1	3	1	1	1	2	2
Petroleum & Coal Products	(D)	(D)	3	-	1	-	-	-	-	-	2
Fabricated Metal	(D)	(D)	7	3	1	2	-	-	1	-	-
Transportation Equipment	(D)	(D)	6	2	2	-	1	-	-	1	-
Transportation & Other Public Utilities	1,877	3,219	88	24	19	27	11	5	-	2	-
Trucking & Warehousing	573	867	41	11	9	12	7	2	-	-	-
Water Transportation	139	321	11	2	3	5	-	1	-	-	-
Water Transportation Serv.	109	284	7	2	1	3	-	1	-	-	-
Communication	566	967	9	-	1	5	1	1	-	1	-
Electrical, Gas & Sanitary	486	879	12	5	2	2	1	1	-	1	-
Wholesale Trade	2,021	3,094	172	49	37	53	30	2	1	-	-

Industry	Number of Employees	Taxable Payrolls (Thousands of Dollars)	Total Reporting Units	Number of Reporting Units, by Employment Size Class							
				1-3	4-7	8-19	20-49	50-99	100-249	250-499	500 or more
Calcasieu Parish (continued)											
Retail Trade	6,712	6,082	816	409	184	159	51	8	4	1	-
General Merchandise	1,229	1,141	54	19	7	16	8	1	2	1	-
Food Stores	1,049	987	87	48	17	14	3	3	2	-	-
Auto Dealers & Service Sta.	1,422	1,507	202	111	43	31	15	2	-	-	-
Furniture	(D)	(D)	45	19	11	13	2	-	-	-	-
Eating & Drinking Places	1,203	578	177	90	44	28	13	2	-	-	-
Finance, Insurance, & Real Estate	1,576	2,143	220	136	39	29	11	4	1	-	-
Banking	449	614	4	-	-	-	-	3	1	-	-
Credit Agencies (Non-bank)	303	401	61	32	19	8	2	-	-	-	-
Real Estate	294	297	68	49	9	7	3	-	-	-	-
Services	5,116	4,540	663	414	112	96	28	9	2	1	1
Hotels, Etc.	318	191	23	10	5	3	3	2	-	-	-
Personal Services	454	383	111	75	17	18	-	1	-	-	-
Miscellaneous Business Serv.	618	666	70	38	13	12	4	3	-	-	-
Auto Repair, Serv. & Garages	296	293	62	40	10	9	3	-	-	-	-
Miscellaneous Repair Services	100	111	24	15	5	3	1	-	-	-	-
Medical & Other Health	1,724	1,455	155	111	25	9	6	2	-	1	1
Legal Services	193	220	51	36	8	7	-	-	-	-	-
Miscellaneous Services	278	366	46	25	9	10	2	-	-	-	-
Cameron Parish											
Agriculture, Forestry, Fisheries	36	43	5	3	1	-	1	-	-	-	-
Mining	1,664	3,419	31	4	6	4	6	6	4	1	-
Oil & Gas Extraction	1,664	3,419	31	4	6	4	6	6	4	1	-
Contract Construction	91	175	6	3	-	1	1	1	-	-	-
Manufacturing	141	191	6	2	1	1	1	1	-	-	-
Food & Kindred Products	(D)	(D)	4	-	1	1	1	1	-	-	-
Transportation & Public Util.	134	216	17	6	4	6	1	-	-	-	-
Water Transportation	81	120	12	5	3	4	-	-	-	-	-
Wholesale Trade	57	76	10	4	1	5	-	-	-	-	-
Retail Trade	149	98	41	30	6	5	-	-	-	-	-
Finance, Insurance, & Real Estate	33	40	4	-	2	2	-	-	-	-	-
Services	188	216	21	10	4	4	2	1	-	-	-

Industry	Number of Employees	Taxable Payrolls (Thousands of Dollars)	Total Reporting Units	Number of Reporting Units, by Employment Size Class							
				1-3	4-7	8-19	20-49	50-99	100-249	250-499	500 or more
East Baton Rouge Parish											
Agriculture, Forestry, Fisheries	259	274	29	11	8	6	4	-	-	-	-
Agriculture & Hunting	189	140	25	10	7	5	3	-	-	-	-
Mining	398	735	20	2	5	8	4	-	1	-	-
Oil & Gas Extraction	251	530	10	2	4	2	1	-	1	-	-
Contract Construction	14,244	26,749	580	204	106	142	71	26	27	1	3
General Building Contractors	(D)	(D)	171	59	36	36	27	8	4	-	1
Heavy Construction Cont.	5,269	9,658	72	20	9	12	8	8	12	1	2
Manufacturing	18,128	41,000	209	42	34	50	34	17	21	3	8
Food & Kindred Products	2,224	3,465	28	2	2	5	9	3	6	-	1
Chemicals & Allied Products	7,875	20,685	24	2	1	2	4	4	4	2	5
Petroleum & Coal Products	(D)	(D)	5	-	1	-	1	-	2	-	1
Stone, Clay, and Glass Prod.	861	1,401	18	3	1	4	4	3	3	-	-
Primary Metals Industries	(D)	(D)	2	-	-	-	-	-	2	-	-
Fabricated Metal Products	913	1,601	22	5	3	6	4	2	1	1	-
Machinery (Not Electrical)	269	422	21	4	5	9	2	1	-	-	-
Transportation Equipment	135	277	6	2	-	3	-	1	-	-	-
Transportation & Other Public Utilities	5,129	9,069	136	39	17	37	25	11	5	-	2
Trucking & Warehousing	1,063	1,669	66	23	7	20	13	1	2	-	-
Water Transportation	330	445	12	3	2	2	2	3	-	-	-
Water Transportation Serv.	142	116	6	2	1	-	2	1	-	-	-
Pipeline Transportation	357	816	4	1	-	-	-	2	1	-	-
Communication	1,616	2,945	14	-	2	4	5	2	-	-	1
Electric, Gas, & Sanitary Service	1,329	2,533	16	5	2	4	2	-	2	-	1
Wholesale Trade	5,970	10,108	437	136	96	117	67	16	5	-	-
Retail Trade	15,563	15,857	1,198	503	277	254	117	23	19	4	1
Building Materials & Farm Equipment	589	862	62	23	15	17	6	1	-	-	-
General Merchandise	3,348	3,297	53	15	7	12	9	1	5	3	1
Food Stores	2,197	2,149	157	74	38	23	16	-	5	1	-
Auto Dealers & Serv. Sta.	2,770	3,600	286	129	78	53	14	7	5	-	-
Furniture	834	1,083	83	30	18	27	6	2	-	-	-
Eating & Drinking Places	2,842	1,907	240	88	55	53	36	7	1	-	-
Finance, Insurance, & Real Estate	6,053	9,422	569	289	134	85	37	15	6	3	-
Banking	1,413	2,203	8	-	-	1	2	-	2	3	-
Credit Agencies (Non-bank)	936	1,411	157	62	64	22	8	1	-	-	-
Security, Commodity Brokers	150	312	10	3	-	4	3	-	-	-	-
Real Estate	1,112	1,230	197	127	37	24	6	2	1	-	-

Industry	Number of Employees	Taxable Payrolls (Thousands of Dollars)	Total Reporting Units	Number of Reporting Units, by Employment Size Class							
				1-3	4-7	8-19	20-49	50-99	100-249	250-499	500 or more
East Baton Rouge Parish (continued)											
Services	15,077	17,051	1,433	778	309	228	78	23	9	5	3
Hotels	872	552	63	28	23	7	2	-	3	-	-
Personal Services	1,920	1,682	220	102	71	34	10	-	1	2	-
Miscellaneous Business Serv.	2,490	2,541	154	74	28	24	13	12	2	1	-
Auto Repair, Serv. & Garages	535	752	97	55	16	22	4	-	-	-	-
Miscellaneous Repair Serv.	826	1,602	80	43	13	14	8	1	1	-	-
Amusement & Recreation	358	340	38	17	7	10	2	2	-	-	-
Medical	3,574	3,808	300	223	44	21	5	4	-	1	2
Legal Services	443	498	106	74	16	14	2	-	-	-	-
Educational Services	549	456	47	18	8	11	10	-	-	-	-
Miscellaneous Services	1,588	2,822	148	72	35	27	9	2	2	1	-
Iberia Parish											
Agriculture, Forestry, Fisheries	32	23	10	9	-	1	-	-	-	-	-
Mining	1,795	3,471	40	7	4	8	11	6	4	-	-
Oil & Gas Extraction	1,108	2,141	37	7	4	8	11	6	1	-	-
Non-metallic Minerals Except Fuels	687	1,330	3	-	-	-	-	-	3	-	-
Contract Construction	779	1,070	92	53	16	16	4	2	1	-	-
General Building	109	109	22	10	8	4	-	-	-	-	-
Heavy Construction Contractors	379	549	13	3	-	4	4	1	1	-	-
Special Trade Contractors	291	412	57	40	8	8	-	1	1	-	-
Manufacturing	1,723	2,346	50	8	4	14	15	4	5	-	-
Food & Kindred Products	701	843	20	2	2	2	10	3	1	-	-
Paper & Allied Products	(D)	(D)	1	-	-	-	-	-	1	-	-
Chemicals & Allied Products	(D)	(D)	3	-	-	1	1	-	1	-	-
Machinery (Non-electrical)	311	487	8	2	-	3	2	-	1	-	-
Transportation Equipment	(D)	(D)	3	-	1	1	-	-	1	-	-
Ship & Boat Building	(D)	(D)	3	-	1	1	-	-	1	-	-
Boat Building & Repair	(D)	(D)	3	-	1	1	-	-	1	-	-
Transportation & Other Public Utilities	1,041	1,674	50	21	11	9	4	2	2	1	-
Trucking & Warehousing	206	230	13	6	3	1	1	2	-	-	-
Water Transportation	171	238	21	11	4	4	2	-	-	-	-
Local Water Transportation	156	214	18	9	4	3	2	-	-	-	-
Communication	141	226	6	1	2	2	-	-	1	-	-
Electric, Gas & Sanitary Serv.	(D)	(D)	3	1	-	-	-	-	1	1	-
Wholesale Trade	667	960	88	36	27	15	9	1	-	-	-

Industry	Number of Employees	Taxable Payrolls (Thousands of Dollars)	Total Reporting Units	Number of Reporting Units, by Employment Size Class							
				1-3	4-7	8-19	20-49	50-99	100-249	250-499	500 or more
Iberia Parish (continued)											
Retail Trade	2,349	2,036	354	188	79	61	23	3	-	-	-
Building Materials & Farm Equipment	190	197	20	7	3	8	2	-	-	-	-
General Merchandise	295	211	27	7	5	10	5	-	-	-	-
Food Stores	418	326	64	47	4	5	7	1	-	-	-
Auto Dealers & Service Sta.	543	632	70	37	17	9	6	1	-	-	-
Furniture	110	116	21	9	8	4	-	-	-	-	-
Eating & Drinking Places	337	156	73	39	21	12	1	-	-	-	-
Finance, Insurance, & Real Estate	452	619	71	41	17	6	7	-	-	-	-
Banking	150	179	6	-	1	1	4	-	-	-	-
Credit Agencies (Non-bank)	111	154	23	12	7	3	1	-	-	-	-
Real Estate	52	44	18	14	3	1	-	-	-	-	-
Services	1,367	1,454	239	149	50	26	11	3	-	-	-
Personal Services	170	118	51	35	9	7	-	-	-	-	-
Miscellaneous Business Serv.	141	188	15	7	5	2	-	1	-	-	-
Auto Repair, Serv. & Garages	88	53	15	12	1	1	-	1	-	-	-
Miscellaneous Repair Services	223	449	26	12	7	4	2	1	-	-	-
Medical & Other Health	252	182	58	40	14	-	4	-	-	-	-
Legal Services	46	38	19	17	1	1	-	-	-	-	-
Iberville Parish											
Agriculture, Forestry, Fisheries	(D)	(D)	4	2	-	1	1	-	-	-	-
Mining	241	539	14	4	3	3	2	2	-	-	-
Oil & Gas Extraction	(D)	(D)	11	3	2	2	2	2	-	-	-
Contract Construction	1,492	2,666	36	16	8	4	3	-	4	1	-
General Building Contractors	(D)	(D)	10	4	3	1	-	-	1	1	-
Heavy Construction Cont.	738	1,575	11	4	1	1	2	-	3	-	-
Manufacturing	1,764	3,641	29	6	8	6	5	1	2	-	1
Food & Kindred Products	234	224	5	-	1	1	2	-	1	-	-
Lumber & Wood Products	(D)	(D)	10	3	3	2	2	-	-	-	-
Chemicals & Allied Products	(D)	(D)	3	-	-	-	1	1	-	-	1
Machinery (Non-electrical)	(D)	(D)	2	-	1	-	-	-	1	-	-
Transportation & Other Public Utilities	191	293	24	13	3	5	3	-	-	-	-
Water Transportation	74	110	11	6	1	3	1	-	-	-	-
Local Water Transportation	(D)	(D)	10	5	1	3	1	-	-	-	-

Industry	Number of Employees	Taxable Payrolls (Thousands of Dollars)	Total Reporting Units	Number of Reporting Units, by Employment Size Class							
				1-3	4-7	8-19	20-49	50-99	100-249	250-499	500 or more
Iberville Parish (continued)											
Wholesale Trade	100	130	15	8	4	2	1	-	-	-	-
Retail Trade	931	784	149	78	36	25	9	1	-	-	-
General Merchandise	68	50	10	4	3	2	1	-	-	-	-
Food Stores	218	167	33	19	8	2	4	-	-	-	-
Auto Dealers & Serv. Stations	214	257	33	21	7	2	3	-	-	-	-
Furniture	58	59	12	5	4	3	-	-	-	-	-
Eating & Drinking Places	200	111	29	13	8	7	-	1	-	-	-
Finance, Insurance, Real Estate	122	177	30	19	6	4	1	-	-	-	-
Real Estate	22	23	12	10	2	-	-	-	-	-	-
Services	413	323	74	43	19	8	3	1	-	-	-
Personal Services	39	26	11	7	3	1	-	-	-	-	-
Medical & Other Health	187	155	17	10	3	1	2	1	-	-	-
Jefferson Parish											
Agriculture, Forestry, Fisheries	139	105	24	12	6	4	2	-	-	-	-
Agricultural Serv. & Hunting	115	89	20	11	4	3	2	-	-	-	-
Mining	5,084	11,774	55	10	8	12	7	6	6	5	1
Oil & Gas Extraction	4,434	10,234	46	8	8	9	6	5	6	3	1
Non-metallic Minerals, Except Fuels	(D)	(D)	4	1	-	2	-	-	-	1	-
Contract Construction	6,636	10,225	483	222	93	90	53	16	5	4	-
General Building Contractors	1,795	2,495	131	59	28	26	8	7	3	-	-
Heavy Construction Cont.	2,085	3,359	48	11	6	11	11	4	1	4	-
Manufacturing	16,043	29,586	215	46	30	48	43	28	14	3	3
Food & Kindred Products	1,893	2,408	43	10	3	7	8	9	6	-	-
Lumber & Wood Products	182	206	12	4	1	3	4	-	-	-	-
Furniture & Fixtures	103	127	9	3	2	3	-	1	-	-	-
Paper & Allied Products	1,118	2,106	5	-	-	-	2	2	-	-	1
Printing & Publishing	231	348	24	9	8	3	3	1	-	-	-
Chemicals & Allied Products	861	1,870	11	-	3	4	1	2	-	-	1
Petroleum & Coal Products	(D)	(D)	7	-	-	-	3	2	2	-	-
Stone, Clay & Glass Prod.	1,047	1,641	17	1	1	5	5	3	-	2	-
Fabricated Metal Products	1,482	2,672	32	4	3	9	7	5	3	1	-
Machinery, Except Electrical	474	854	14	3	2	5	2	1	1	-	-
Transportation Equipment	(D)	(D)	12	2	2	2	3	1	1	-	1
Ship & Boat Building & Rpr.	(D)	(D)	12	2	2	2	3	1	1	-	1
Miscellaneous Manufacturing Industries	263	389	12	5	-	5	1	-	1	-	-

Industry	Number of Employees	Taxable Payrolls (Thousands of Dollars)	Total Reporting Units	Number of Reporting Units, by Employment Size Class							
				1-3	4-7	8-19	20-49	50-99	100-249	250-499	500 or more
Jefferson Parish (continued)											
Transportation & Other Public Utilities	3,915	5,949	230	83	48	54	26	10	8	1	-
Trucking & Warehousing	1,329	1,555	76	29	13	18	9	4	3	-	-
Water Transportation	1,561	2,527	116	40	24	30	15	4	3	-	-
Local Water Transportation	1,428	2,295	107	36	22	29	15	2	3	-	-
Transportation by Air	247	562	11	4	5	-	1	-	1	-	-
Electrical, Gas, & Sanitary Services	(D)	(D)	2	-	-	-	-	-	1	1	-
Wholesale Trade	5,095	9,519	413	138	103	106	52	7	7	-	-
Retail Trade	15,172	15,371	1,022	409	228	245	93	28	11	4	4
Building Materials & Farm Equipment	446	569	54	22	16	11	4	1	-	-	-
General Merchandise	3,091	2,744	47	11	3	16	8	2	3	2	2
Food Stores	3,164	3,191	133	58	20	32	11	5	5	1	1
Auto Dealers & Serv. Stations	2,175	2,918	234	97	65	48	18	4	2	-	-
Furniture	(D)	(D)	56	20	16	15	5	-	-	-	-
Eating & Drinking Places	3,008	2,164	271	111	55	62	31	12	-	-	-
Miscellaneous Retail Stores	1,026	1,060	137	66	31	28	10	2	-	-	-
Finance, Insurance, & Real Estate	1,783	2,471	247	161	43	22	14	6	1	-	-
Banking	492	666	8	-	-	1	4	2	1	-	-
Credit Agencies (Non-bank)	296	393	66	38	20	5	3	-	-	-	-
Insurance Carriers	315	594	13	3	2	3	2	3	-	-	-
Insurance Agents, Brokers, & Services	148	167	33	23	7	2	1	-	-	-	-
Real Estate	494	614	119	90	14	11	3	1	-	-	-
Services	9,038	10,146	944	510	183	166	61	13	10	-	1
Hotels	816	599	48	19	9	11	5	2	2	-	-
Personal Services	1,151	949	182	95	44	32	9	2	-	-	-
Miscellaneous Business Serv.	1,765	2,454	119	49	24	28	12	1	5	-	-
Auto Repair, Serv. & Garages	497	578	85	47	16	18	4	-	-	-	-
Miscellaneous Repair Serv.	547	840	75	38	16	15	5	1	-	-	-
Amusement & Recreational Serv.	580	494	64	29	12	16	6	-	1	-	-
Medical & Other Health Serv.	2,028	2,383	158	117	22	11	2	4	1	-	1
Legal Services	103	106	46	38	7	1	-	-	-	-	-
Education Services	782	826	64	28	10	13	10	2	1	-	-
Miscellaneous Services	293	600	47	24	14	6	2	1	-	-	-

Industry	Number of Employees	Taxable Payrolls (Thousands of Dollars)	Total Reporting Units	Number of Reporting Units, by Employment Size Class							
				1-3	4-7	8-19	20-49	50-99	100-249	250-499	500 or more
Lafayette Parish											
Agriculture, Forestry, Fisheries	144	76	18	11	2	3	2	-	-	-	-
Agricultural Serv. & Hunting	(D)	(D)	15	10	2	2	1	-	-	-	-
Mining	3,786	8,096	126	37	19	27	18	14	11	-	-
Oil & Gas Extraction	3,627	7,689	115	35	15	26	14	14	11	-	-
Contract Construction	2,469	3,331	186	70	39	40	26	10	1	-	-
General Building Contractors	918	1,355	41	12	7	9	8	4	1	-	-
Heavy Construction Cont.	379	511	20	6	2	5	4	3	-	-	-
Special Trade Contractors	1,172	1,465	125	52	30	26	14	3	-	-	-
Manufacturing	1,697	2,428	72	22	7	17	20	2	3	1	-
Food & Kindred Products	839	1,196	18	6	2	-	6	1	2	1	-
Printing & Publishing	208	241	10	4	-	3	2	-	1	-	-
Stone, Clay & Glass Products	176	214	11	1	2	5	3	-	-	-	-
Machinery, Except Electrical	140	273	10	2	1	5	2	-	-	-	-
Transportation & Other Public Utilities	2,372	4,211	70	27	7	19	5	9	1	-	2
Trucking & Warehousing	262	431	25	13	4	4	3	1	-	-	-
Water Transportation	188	301	16	7	3	5	-	1	-	-	-
Transportation by Air	(D)	(D)	3	-	-	1	-	1	-	-	1
Pipeline Transportation	(D)	(D)	2	1	-	-	-	1	-	-	-
Communication	662	1,080	9	2	-	3	2	1	-	-	1
Electrical, Gas & Sanitary	451	871	9	2	-	3	-	3	1	-	-
Wholesale Trade	2,561	3,909	241	81	56	73	26	3	2	-	-
Retail Trade	6,556	6,027	614	286	138	126	42	12	8	2	-
Building Materials & Farm Equipment	317	351	28	4	8	12	4	-	-	-	-
General Merchandise	1,441	1,205	39	14	3	14	3	1	2	2	-
Food Stores	692	571	81	47	11	16	5	-	2	-	-
Auto Dealers & Serv. Sta.	1,069	1,434	142	81	33	19	6	1	2	-	-
Furniture	(D)	(D)	37	15	9	11	2	-	-	-	-
Eating & Drinking Places	1,594	1,035	131	54	26	26	18	6	1	-	-
Miscellaneous Retail Stores	659	616	102	50	27	21	2	2	-	-	-
Finance, Insurance, Real Estate	1,523	2,343	229	153	31	26	16	1	2	-	-
Banking	315	432	4	-	-	1	1	-	2	-	-
Credit Agencies (Non-bank)	268	394	50	30	10	7	3	-	-	-	-
Security, Commodity, Brokers	42	84	12	9	1	2	-	-	-	-	-
Insurance Carriers	581	1,107	42	9	11	10	11	1	-	-	-
Real Estate	134	102	67	62	3	2	-	-	-	-	-

Industry	Number of Employees	Taxable Payrolls (Thousands of Dollars)	Total Reporting Units	Number of Reporting Units, by Employment Size Class							
				1-3	4-7	8-19	20-49	50-99	100-249	250-499	500 or more
			Lafayette Parish (continued)								
Services	4,584	4,782	613	374	111	88	30	7	1	2	-
Hotels	417	262	21	11	-	6	2	1	1	-	-
Personal Services	424	335	91	62	12	13	4	-	-	-	-
Miscellaneous Business Serv.	842	1,275	109	50	24	24	9	2	-	-	-
Auto Repair, Serv. & Garages	182	186	46	27	14	4	1	-	-	-	-
Miscellaneous Repair Services	136	183	35	23	9	2	1	-	-	-	-
Amusement & Recreational Serv.	174	114	19	10	4	2	3	-	-	-	-
Medical & Other Health	1,308	1,221	125	98	16	4	3	2	-	2	-
Legal Services	126	133	36	28	4	3	1	-	-	-	-
Educational Services	154	88	21	8	5	7	1	-	-	-	-
Miscellaneous Services	461	679	56	29	14	9	2	2	-	-	-
			Lafourche Parish								
Agriculture, Forestry, Fisheries	289	329	86	63	16	7	-	-	-	-	-
Fisheries	272	317	83	61	16	6	-	-	-	-	-
Mining	1,146	2,314	37	5	6	11	10	3	1	1	
Oil & Gas Extraction	(D)	(D)	36	5	6	10	10	3	1	1	-
Contract Construction	550	670	95	63	16	6	10	-	-	-	-
General Building Contractors	165	191	24	14	5	2	3	-	-	-	-
Heavy Construction Cont.	108	158	11	8	-	-	3	-	-	-	-
Special Trade Contractors	277	321	60	41	11	4	4	-	-	-	-
Manufacturing	1,748	2,565	47	11	6	8	12	7	2	1	-
Food & Kindred Products	899	1,179	17	1	2	2	6	5	-	1	-
Paper & Allied Products	(D)	(D)	1	-	-	-	-	-	1	-	-
Machinery, Non-electrical	259	399	5	-	1	1	1	1	1	-	-
Transportation Equipment	233	399	12	5	-	4	2	1	-	-	-
Ship & Boat Building & Rpr.	(D)	(D)	11	5	-	4	1	1	-	-	-
Ship Building & Repair	169	298	5	-	-	3	1	1	-	-	-
Transportation & Other Public Utilities	1,926	2,808	167	75	32	38	17	2	3	-	-
Trucking & Warehousing	84	116	14	9	2	1	2	-	-	-	-
Water Transportation	1,585	2,271	141	62	29	35	11	1	3	-	-
Local Water Transportation	1,412	2,060	126	58	26	30	8	1	3	-	-
Water Transportation Serv.	(D)	(D)	14	4	2	5	3	-	-	-	-
Communication	158	257	6	2	-	2	1	1	-	-	-
Wholesale Trade	622	792	68	24	17	20	6	1	-	-	-
Retail Trade	2,207	2,081	354	196	70	58	29	1	-	-	-
Building Materials	234	281	33	15	9	5	4	-	-	-	-
General Merchandise	358	273	34	11	5	10	8	-	-	-	-

Industry	Number of Employees	Taxable Payrolls (Thousands of Dollars)	Total Reporting Units	Number of Reporting Units, by Employment Size Class							
				1-3	4-7	8-19	20-49	50-99	100-249	250-499	500 or more
			Lafourche Parish (continued)								
Food Stores	319	262	53	32	8	9	3	1	-	-	-
Auto Dealers & Serv. Sta.	501	648	71	42	11	10	8	-	-	-	-
Apparel & Accessory Stores	128	82	32	22	5	4	1	-	-	-	-
Furniture	123	143	24	13	7	3	1	-	-	-	-
Eating & Drinking Places	331	181	64	38	15	8	3	-	-	-	-
Miscellaneous Retail Stores	213	211	43	23	10	9	1	-	-	-	-
Finance, Insurance, & Real Estate	431	600	68	39	14	11	3	1	-	-	-
Banking	163	241	6	-	1	2	2	1	-	-	-
Credit Agencies (Non-bank)	93	111	20	9	9	2	-	-	-	-	-
Insurance Agents, Brokers	94	130	19	12	2	4	1	-	-	-	-
Real Estate	31	26	16	15	1	-	-	-	-	-	-
Services	1,580	1,524	228	129	54	36	6	1	2	-	-
Personal Services	141	117	35	23	7	4	1	-	-	-	-
Miscellaneous Business Serv.	98	109	16	6	4	5	1	-	-	-	-
Auto Repair, Serv. & Garages	57	57	18	12	5	1	-	-	-	-	-
Miscellaneous Repair Serv.	257	409	21	12	5	3	-	-	1	-	-
Amusement & Recreational	72	57	11	4	3	4	-	-	-	-	-
Medical & Other Health	533	441	50	27	15	5	1	1	1	-	-
Legal Services	40	38	16	13	3	-	-	-	-	-	-
Educational Services	106	94	8	2	-	4	2	-	-	-	-
Miscellaneous Services	82	97	15	11	2	1	1	-	-	-	-
			Livingston Parish								
Agriculture, Forestry, Fisheries	(D)	(D)	2	-	2	-	-	-	-	-	-
Mining	24	38	4	1	2	1	-	-	-	-	-
Contract Construction	336	356	53	32	10	8	2	1	-	-	-
General Building	91	107	10	6	2	1	-	1	-	-	-
Special Trade Contractors	207	218	34	20	8	4	2	-	-	-	-
Manufacturing	390	461	49	23	14	6	5	1	-	-	-
Lumber & Wood Products	180	150	37	21	10	4	2	-	-	-	-
Transportation & Public Util.	70	111	17	12	3	1	1	-	-	-	-
Trucking & Warehousing	20	15	12	10	2	-	-	-	-	-	-
Wholesale Trade	75	88	12	4	3	4	1	-	-	-	-
Retail Trade	722	716	109	60	21	18	10	-	-	-	-
Building Materials & Farm Equipment	55	55	10	6	2	2	-	-	-	-	-
Food Stores	191	139	23	13	4	2	4	-	-	-	-
Auto Dealers & Serv. Sta.	235	297	30	16	4	6	4	-	-	-	-
Eating & Drinking Places	57	58	14	9	3	2	-	-	-	-	-
Miscellaneous Retail Stores	58	53	15	9	4	2	-	-	-	-	-

Industry	Number of Employees	Taxable Payrolls (Thousands of Dollars)	Total Reporting Units	Number of Reporting Units, by Employment Size Class							
				1-3	4-7	8-19	20-49	50-99	100-249	250-499	500 or more
Livingston Parish (continued)											
Finance, Insurance, Real Estate	111	152	22	16	4	1	-	1	-	-	-
Services	321	266	47	33	7	4	2	-	1	-	-
Medical & Other Health	208	174	16	11	2	-	2	-	1	-	-
Orleans Parish											
Agriculture, Forestry, Fisheries	379	409	76	51	17	5	2	1	-	-	-
Agricultural Serv. & Hunting	343	363	64	43	13	5	2	1	-	-	-
Fisheries	36	46	12	8	4	-	-	-	-	-	-
Mining	6,865	17,969	104	33	16	18	11	7	12	3	4
Oil & Gas Extraction	2,545	5,796	74	31	12	11	9	4	5	1	1
Non-metallic Minerals (Except Fuels)	351	709	5	-	1	1	-	1	2	-	-
Contract Construction	15,524	26,742	857	384	143	159	112	29	23	3	4
General Building Contractors	(D)	(D)	232	111	44	35	18	13	10	1	-
Heavy Construction Cont.	4,752	8,896	60	17	6	8	14	2	7	2	4
Special Trade Contractors	6,363	10,701	562	256	93	115	79	13	6	-	-
Manufacturing	35,510	64,376	611	150	91	146	94	45	49	25	11
Ordnance & Accessory	(D)	(D)	4	1	-	-	1	-	-	-	2
Food & Kindred Products	8,045	12,688	109	12	14	29	14	14	15	10	1
Textile Mills Products	351	435	5	1	-	-	2	1	1	-	-
Apparel & Other Textile Prod.	4,384	4,933	42	9	4	5	5	4	10	3	2
Lumber & Wood Products	395	408	15	3	5	1	4	-	2	-	-
Furniture & Fixtures	443	482	20	4	1	5	8	2	-	-	-
Paper & Allied Products	955	1,430	20	-	1	6	8	2	2	1	-
Printing & Publishing	2,427	4,060	112	44	21	27	14	4	1	-	1
Chemicals & Allied Products	662	1,286	44	7	11	19	4	1	2	-	-
Petroleum & Coal Products	(D)	(D)	2	-	-	-	-	-	1	1	-
Rubber & Plastic Products	(D)	(D)	3	1	-	-	-	2	-	-	-
Stone, Clay & Glass Products	1,814	3,284	28	4	3	8	4	3	3	3	-
Primary Metal Industry	(D)	(D)	4	-	1	1	-	-	1	1	-
Fabricated Metal Product	2,353	4,590	56	19	6	12	9	5	3	1	1
Machinery, Except Electrical	774	1,495	28	10	4	6	4	2	2	-	-
Electrical Equipment & Supplies	89	122	12	4	5	1	2	-	-	-	-
Transportation Equipment	4,104	7,774	26	3	4	6	3	1	2	4	3
Ship & Boat Build. & Rpr.	4,022	7,667	21	3	3	3	2	1	2	4	3
Ship Building & Repair	3,941	7,553	14	1	1	2	-	1	2	4	3
Instruments & Related Prod.	308	535	13	3	1	5	3	-	1	-	-
Miscellaneous Manufact. Ind.	332	388	25	10	3	10	1	-	1	-	-

Industry	Number of Employees	Taxable Payrolls (Thousands of Dollars)	Total Reporting Units	Number of Reporting Units, by Employment Size Class							
				1-3	4-7	8-19	20-49	50-99	100-249	250-499	500 or more
			Orleans Parish (continued)								
Transportation & Other Public Utilities	32,339	50,096	497	129	87	103	73	48	35	10	12
Local & Interurban Passenger Transportation	2,423	3,835	22	2	6	5	2	4	1	1	1
Trucking & Warehousing	5,432	7,315	175	44	28	40	27	24	11	-	1
Water Transportation	10,025	12,929	115	31	18	20	14	7	15	6	4
Deep-sea Foreign Trans.	870	715	8	3	-	2	-	-	1	2	-
Transportation on Rivers & Canals	914	1,815	13	3	2	2	3	-	1	2	-
Local Water Transportation	1,479	2,706	51	16	9	9	7	4	6	-	-
Water Transportation	6,761	7,691	42	8	7	7	4	3	7	2	4
Marine Cargo Handling	6,291	6,962	25	-	4	2	4	3	7	1	4
Water Transportation Serv. (NEC)	470	728	17	8	3	5	-	-	-	1	-
Transportation by Air	(D)	(D)	24	5	7	2	6	1	2	-	1
Transportation Services	2,061	1,976	115	41	28	27	12	4	1	2	-
Communication	5,723	10,235	22	2	-	6	5	5	2	1	1
Electrical, Gas & Sani. Serv.	3,056	6,438	13	4	-	1	3	1	2	-	2
Wholesale Trade	22,838	41,357	1,342	446	255	365	187	62	20	5	2
Retail Trade	38,658	38,873	2,754	1,292	610	515	206	76	36	12	7
Building Materials & Farm Equipment	1,029	1,628	96	39	19	30	6	1	-	1	-
General Merchandise	7,367	7,607	113	28	23	27	15	11	3	1	5
Food Stores	5,652	5,556	383	227	66	51	25	6	3	3	2
Auto Dealers & Serv. Sta.	4,299	6,109	379	169	101	72	12	19	6	-	-
Apparel & Accessory Stores	3,877	3,747	250	81	64	71	21	6	5	2	-
Furniture	1,713	2,260	152	65	36	28	18	3	2	-	-
Eating & Drinking Places	9,571	6,127	840	422	177	134	68	24	12	3	-
Miscellaneous Retail Stores	4,080	4,275	514	258	121	95	34	3	1	2	-
Finance, Insurance, & Real Estate	19,031	30,672	1,487	830	266	205	125	35	16	6	4
Banking	3,331	5,002	14	1	1	2	2	-	3	2	3
Credit Agencies (Non-bank)	2,698	4,210	412	208	116	63	20	4	1	-	-
Security, Commodity Brokers	1,015	2,335	52	29	9	5	5	2	1	1	-
Insurance Carriers	6,759	11,858	149	20	17	36	42	19	11	3	1
Insurance Agents, Etc.	1,733	3,047	275	159	53	45	16	2	-	-	-
Real Estate	3,040	3,504	533	382	60	50	34	7	-	-	-
Services	52,314	57,690	3,616	2,003	662	567	228	85	43	14	14
Hotels, Etc.	5,699	4,569	126	56	21	17	15	7	4	2	4
Personal Services	4,034	3,522	573	306	144	90	23	6	4	-	-

NEC - Not elsewhere classified

Industry	Number of Employees	Taxable Payrolls (Thousands of Dollars)	Total Reporting Units	Number of Reporting Units, by Employment Size Class							
				1-3	4-7	8-19	20-49	50-99	100-249	250-499	500 or more
Orleans Parish (continued)											
Miscellaneous Business Serv.	8,865	8,294	336	126	73	68	30	18	14	6	1
Auto Repair, Serv. & Garages	1,752	2,035	210	104	43	41	18	4	-	-	-
Miscellaneous Repair Services	1,185	1,806	153	79	34	32	5	2	1	-	-
Motion Pictures	620	553	42	7	9	17	6	3	-	-	-
Amusement & Recrea. Services	2,741	3,250	130	52	21	34	13	4	5	-	1
Medical & Other Health	10,216	10,489	765	581	99	44	16	9	7	4	5
Legal Services	1,538	2,028	364	275	47	29	9	4	-	-	-
Educational Services	6,836	10,112	177	64	18	51	27	12	2	1	2
Miscellaneous Services	2,924	5432	302	149	67	58	19	5	4	-	-
Plaquemines Parish											
Agriculture, Forestry, Fisheries	51	56	13	9	3	-	1	-	-	-	-
Fisheries	51	56	13	9	3	-	1	-	-	-	-
Mining	5,282	12,395	61	9	6	9	13	11	9	3	1
Oil & Gas Extraction	4,443	10,251	57	8	6	9	13	10	9	1	1
Non-metallic Minerals, Except Fuel	(D)	(D)	1	-	-	-	-	-	-	1	-
Contract Construction	2,074	3,801	44	12	6	13	5	4	3	-	1
Heavy Construction Cont.	1,800	3,435	17	1	1	6	1	4	3	-	1
Special Trade Contractors	220	305	21	8	4	6	3	-	-	-	-
Manufacturing	827	1,514	21	6	3	2	4	3	3	-	-
Chemicals & Allied Products	(D)	(D)	4	-	1	1	-	1	1	-	-
Stone, Clay & Glass Products	(D)	(D)	3	-	-	1	1	-	1	-	-
Transportation Equipment	(D)	(D)	5	2	1	-	1	-	1	-	-
Ship & Boat Build. & Rpr.	(D)	(D)	5	2	1	-	1	-	1	-	-
Boat Building & Repair	(D)	(D)	4	1	1	-	1	-	1	-	-
Transportation & Other Public Utilities	922	1,232	128	54	43	21	10	-	-	-	-
Water Transportation	768	988	111	48	38	17	8	-	-	-	-
Local Water Transportation	658	823	98	41	35	16	6	-	-	-	-
Water Transportation Serv.	(D)	(D)	12	7	3	1	1	-	-	-	-
Water Trans. Serv., NEC	(D)	(D)	12	7	3	1	1	-	-	-	-
Wholesale Trade	233	446	27	11	8	6	1	1	-	-	-
Retail Trade	852	1,016	102	53	27	17	4	-	-	1	-
Food Stores	184	152	21	10	4	4	3	-	-	-	-
Auto Dealers & Serv. Sta.	122	139	27	18	6	2	1	-	-	-	-
Eating & Drinking Places	410	575	28	13	8	6	-	-	-	1	-
Miscellaneous Retail Stores	51	42	10	4	5	1	-	-	-	-	-

Industry	Number of Employees	Taxable Payrolls (Thousands of Dollars)	Total Reporting Units	Number of Reporting Units, by Employment Size Class							
				1-3	4-7	8-19	20-49	50-99	100-249	250-499	500 or more
Plaquemines Parish (continued)											
Finance, Insurance, & Real Estate	76	93	11	6	4	-	1	-	-	-	-
Services	1,023	1,575	91	46	17	13	12	2	1	-	-
Hotels, Etc.	47	20	10	8	1	-	1	-	-	-	-
Miscellaneous Business Serv.	422	771	12	2	-	4	5	-	1	-	-
Miscellaneous Repair Services	208	403	11	4	2	-	4	1	-	-	-
Medical & Other Health	40	33	11	5	6	-	-	-	-	-	-
St. Bernard Parish											
Agriculture, Forestry, Fisheries	30	35	3	-	1	2	-	-	-	-	-
Mining	122	257	6	-	-	2	4	-	-	-	-
Oil & Gas Extraction	122	257	6	-	-	2	4	-	-	-	-
Contract Construction	806	1,580	67	27	20	13	5	-	2	-	-
General Building Contractors	99	124	13	2	7	3	1	-	-	-	-
Heavy Construction Contractors	246	430	8	2	1	2	2	-	1	-	-
Special Trade Contractors	461	1,026	46	23	12	8	2	-	1	-	-
Manufacturing	3,842	8,549	29	6	7	4	5	2	1	2	2
Food & Kindred Products	788	1,502	9	-	3	1	2	2	-	-	1
Petroleum & Coal Products	(D)	(D)	2	-	-	-	-	-	1	1	-
Primary Metal Industries	(D)	(D)	2	-	-	-	-	-	-	1	1
Transportation & Public Util.	251	410	23	10	5	5	1	2	-	-	-
Trucking & Warehousing	87	134	10	5	3	1	-	1	-	-	-
Wholesale Trade	275	474	28	11	8	7	-	2	-	-	-
Retail Trade	1,266	944	139	71	31	27	6	2	2	-	-
General Merchandise	272	118	10	3	2	4	-	-	1	-	-
Food Stores	350	298	28	11	8	5	2	1	1	-	-
Auto Dealers & Serv. Sta.	176	196	29	19	6	3	-	1	-	-	-
Eating & Drinking Places	258	119	36	19	7	8	2	-	-	-	-
Miscellaneous Retail Stores	130	133	19	8	6	3	2	-	-	-	-
Finance, Insurance, Real Estate	186	294	28	17	6	3	1	1	-	-	-
Banking	104	132	3	-	-	1	1	1	-	-	-
Services	708	567	104	64	18	13	7	2	-	-	-
Personal Services	70	47	23	15	5	3	-	-	-	-	-
Miscellaneous Business Serv.	106	113	9	4	2	-	3	-	-	-	-
Auto Repair, Serv. & Garages	29	30	11	8	3	-	-	-	-	-	-
Medical & Other Health	238	200	18	12	1	2	1	2	-	-	-
Educational Services	60	45	10	7	-	3	-	-	-	-	-

Industry	Number of Employees	Taxable Payrolls (Thousands of Dollars)	Total Reporting Units	Number of Reporting Units, by Employment Size Class							
				1-3	4-7	8-19	20-49	50-99	100-249	250-499	500 or more
St. Charles Parish											
Agriculture, Forestry, Fisheries	18	16	4	2	1	1	-	-	-	-	-
Mining	188	366	8	1	3	2	1	-	1	-	-
Oil & Gas Extraction	188	366	8	1	3	2	1	-	1	-	-
Contract Construction	1,895	3,494	41	10	7	4	9	8	2	-	1
General Building Contractors	(D)	(D)	5	3	-	-	1	-	1	-	-
Heavy Construction Cont.	1,390	2,533	15	1	-	1	6	5	1	-	1
Special Trade Contractors	(D)	(D)	21	6	7	3	2	3	-	-	-
Manufacturing	2,749	6,619	20	2	5	3	3	1	1	3	2
Chemical & Allied Products	(D)	(D)	9	1	1	1	1	-	1	3	1
Petroleum & Coal Products	(D)	(D)	2	-	1	-	-	-	-	-	1
Transportation Equipment	(D)	(D)	2	-	-	-	1	1	-	-	-
Transportation & Other Public Utilities	711	990	32	18	5	1	3	4	-	1	-
Local Interurban Pass. Trans.	18	7	12	11	1	-	-	-	-	-	-
Trucking & Warehousing	184	358	5	-	1	-	2	2	-	-	-
Water Transportation	489	582	12	7	1	-	1	2	-	1	-
Local Water Transportation	(D)	(D)	10	7	-	-	-	2	-	1	-
Wholesale Trade	476	830	18	6	6	2	2	-	2	-	-
Retail Trade	493	440	98	57	24	13	4	-	-	-	-
General Merchandise	45	42	11	7	2	2	-	-	-	-	-
Food Stores	103	79	15	6	5	3	1	-	-	-	-
Auto Dealers & Serv. Sta.	113	130	31	22	6	3	-	-	-	-	-
Eating & Drinking Places	142	83	25	16	4	3	2	-	-	-	-
Finance, Insurance, & Real Estate	106	144	21	14	5	-	2	-	-	-	-
Services	909	1,721	66	37	14	8	5	-	1	1	-
Personal Services	46	30	13	8	3	2	-	-	-	-	-
Miscellaneous Business Serv.	125	132	9	5	-	1	3	-	-	-	-
Miscellaneous Repair Services	(D)	(D)	4	-	2	-	-	-	1	1	-
Medical & Other Health	50	34	11	8	2	-	1	-	-	-	-
St. James Parish											
Agriculture, Forestry, Fisheries	(D)	(D)	2	-	-	1	1	-	-	-	-
Mining	76	159	4	1	-	2	1	-	-	-	-
Contract Construction	326	754	15	6	1	5	2	-	1	-	-
General Building Contractors	(D)	(D)	3	2	-	-	-	-	1	-	-

Industry	Number of Employees	Taxable Payrolls (Thousands of Dollars)	Total Reporting Units	Number of Reporting Units, by Employment Size Class							
				1-3	4-7	8-19	20-49	50-99	100-249	250-499	500 or more
			St. James Parish (continued)								
Manufacturing	2,028	4,886	16	3	1	-	1	6	3	1	1
Food & Kindred Products	662	1,333	4	-	-	-	1	2	-	-	1
Chemicals & Allied Products	1,040	2,821	5	-	-	-	-	2	2	1	-
Petroleum & Coal Products	(D)	(D)	2	-	-	-	-	1	1	-	-
Transportation & Other Public Utilities	64	65	6	3	1	1	1	-	-	-	-
Wholesale Trade	63	84	9	5	1	2	1	-	-	-	-
Retail Trade	471	433	76	37	15	20	4	-	-	-	-
General Merchandise	81	69	13	6	2	5	-	-	-	-	-
Food Stores	66	54	14	8	5	-	1	-	-	-	-
Auto Dealers & Serv. Sta.	80	113	14	8	2	3	1	-	-	-	-
Eating & Drinking Places	110	49	13	6	1	4	2	-	-	-	-
Finance, Insurance, & Real Estate	54	69	13	9	2	2	-	-	-	-	-
Services	196	142	42	27	8	4	3	-	-	-	-
Medical & Other Health	52	40	11	7	2	1	1	-	-	-	-
			St. John the Baptist Parish								
Mining	30	56	4	1	1	2	-	-	-	-	-
Contract Construction	394	712	20	10	4	1	2	2	1	-	-
Heavy Construction Contractors	248	426	3	-	-	-	1	1	1	-	-
Special Trade Contractors	96	190	11	8	1	1	-	1	-	-	-
Manufacturing	1,274	2,473	10	-	2	2	2	2	-	-	2
Food & Kindred Products	(D)	(D)	4	-	-	1	2	-	-	-	1
Chemical & Allied Products	(D)	(D)	1	-	-	-	-	-	-	-	1
Transportation & Other Public Utilities	131	207	11	4	1	3	3	-	-	-	-
Wholesale Trade	292	587	15	5	7	-	2	-	1	-	-
Retail Trade	484	363	64	36	11	13	2	2	-	-	-
General Merchandise	110	76	7	2	2	2	-	1	-	-	-
Food Stores	91	74	14	10	1	2	1	-	-	-	-
Auto Dealers & Serv. Sta.	28	24	11	10	-	1	-	-	-	-	-
Eating & Drinking Places	178	122	15	6	2	5	1	1	-	-	-
Finance, Insurance, & Real Estate	51	68	8	4	2	1	1	-	-	-	-
Services	208	120	34	19	8	5	1	1	-	-	-

Industry	Number of Employees	Taxable Payrolls (Thousands of Dollars)	Total Reporting Units	Number of Reporting Units, by Employment Size Class							
				1-3	4-7	8-19	20-49	50-99	100-249	250-499	500 or more
St. Martin Parish											
Agriculture, Forestry, Fisheries	(D)	(D)	1	-	1	-	-	-	-	-	-
Mining	933	1,180	22	7	7	1	5	1	-	-	1
Oil & Gas Extraction	933	1,180	22	7	7	1	5	1	-	-	1
Contract Construction	504	668	31	16	3	7	3	-	2	-	-
General Building Cont.	101	100	13	6	1	5	1	-	-	-	-
Heavy Construction Cont.	325	500	4	1	-	-	1	-	2	-	-
Special Trade Contractors	78	68	14	9	2	2	1	-	-	-	-
Manufacturing	491	458	18	6	1	2	6	1	2	-	-
Food & Kindred Products	271	152	9	2	-	-	3	1	1	-	-
Chemical & Allied Products	(D)	(D)	1	-	-	-	-	-	1	-	-
Transportation & Other Public Utilities	45	51	15	11	3	1	-	-	-	-	-
Wholesale Trade	284	361	24	11	7	3	2	-	1	-	-
Retail Trade	712	546	148	104	19	18	7	-	-	-	-
Building Materials & Farm Equipment	77	67	11	3	6	1	1	-	-	-	-
General Merchandise	87	78	13	6	4	2	1	-	-	-	-
Food Stores	173	127	34	26	1	5	2	-	-	-	-
Auto Dealers & Serv. Sta.	154	160	25	19	1	3	2	-	-	-	-
Eating & Drinking Places	151	66	38	28	4	5	1	-	-	-	-
Miscellaneous Retail Stores	27	20	13	12	-	1	-	-	-	-	-
Finance, Insurance, Real Estate	81	92	17	13	-	4	-	-	-	-	-
Services	187	155	52	39	7	5	1	-	-	-	-
Personal Services	27	19	14	12	1	1	-	-	-	-	-
St. Mary Parish											
Agriculture, Forestry, Fisheries	231	233	51	37	10	2	1	1	-	-	-
Fisheries	(D)	(D)	46	35	9	1	1	-	-	-	-
Mining	3,644	8,003	58	5	6	7	17	12	8	3	-
Oil & Gas Extraction	3,219	7,173	50	4	5	7	15	9	7	3	-
Non-metallic Minerals, Except Fuels	307	553	3	-	-	-	-	2	1	-	-
Rock Salt	(D)	(D)	2	-	-	-	-	2	-	-	-
Contract Construction	1,994	3,470	84	33	16	18	11	3	2	-	1
General Building Contractors	338	458	28	10	6	7	4	1	-	-	-
Heavy Construction Cont.	1,288	2,600	17	4	1	4	4	1	2	-	1
Special Trade Contractors	368	412	39	19	9	7	3	1	-	-	-

Industry	Number of Employees	Taxable Payrolls (Thousands of Dollars)	Total Reporting Units	Number of Reporting Units, by Employment Size Class							
				1-3	4-7	8-19	20-49	50-99	100-249	250-499	500 or more
St. Mary Parish (continued)											
Manufacturing	2,593	4,426	70	11	10	20	17	6	3	3	-
Food & Kindred Products	498	611	14	1	-	2	8	2	1	-	-
Chemicals & Allied Prod.	618	1,239	5	-	-	2	-	-	2	1	-
Fabricated Metal Products	495	904	7	1	2	-	1	2	-	1	-
Machinery, Except Electrical	205	398	14	4	3	3	3	1	-	-	-
Transportation Equipment	536	968	9	-	1	4	2	1	-	1	-
Ship & Boat Build. & Repair	536	968	9	-	1	4	2	1	-	1	-
Boat Building & Repair	(D)	(D)	6	-	1	3	1	-	-	1	-
Transportation & Other Public Utilities	2,039	3,335	139	63	36	26	8	2	3	-	1
Trucking & Warehousing	194	310	11	3	5	2	-	-	1	-	-
Water Transportation	1,542	2,571	111	56	27	18	6	2	1	-	1
Local Water Transportation	1,264	2,069	97	48	25	15	6	2	-	-	1
Water Transportation Serv.	278	502	14	8	2	3	-	-	1	-	-
Communication	(D)	(D)	4	1	-	2	-	-	1	-	-
Wholesale Trade	785	1,319	80	21	22	27	10	-	-	-	-
Retail Trade	2,560	2,319	336	167	73	68	22	5	1	-	-
Building Materials & Farm Equipment	116	133	14	5	1	7	1	-	-	-	-
General Merchandise	298	241	23	7	5	5	5	1	-	-	-
Food Stores	450	387	55	33	9	8	2	3	-	-	-
Auto Dealers & Serv. Sta.	550	594	80	44	15	13	8	-	-	-	-
Apparel & Accessory Stores	127	85	19	6	8	4	1	-	-	-	-
Furniture	109	113	21	11	5	5	-	-	-	-	-
Eating & Drinking Places	722	588	81	37	18	19	5	1	1	-	-
Miscellaneous Retail Stores	188	178	43	24	12	7	-	-	-	-	-
Finance, Insurance, & Real Estate	483	678	76	44	20	5	6	1	-	-	-
Banking	144	229	6	-	-	1	5	-	-	-	-
Credit Agencies (Non-bank)	85	112	22	12	9	1	-	-	-	-	-
Insurance Agents, Brokers	88	151	16	11	4	-	1	-	-	-	-
Real Estate	150	167	27	19	4	3	-	1	-	-	-
Services	2,037	2,376	231	110	54	42	19	4	2	-	-
Hotels & Other Lodging	109	58	14	6	2	5	1	-	-	-	-
Personal Services	100	69	27	14	11	2	-	-	-	-	-
Miscellaneous Business Services	744	1,058	47	11	6	20	8	1	1	-	-
Auto Repair Serv. & Garage	82	102	16	9	4	2	1	-	-	-	-
Miscellaneous Repair Services	232	498	22	11	4	3	3	1	-	-	-
Amusement & Recreational Serv.	88	68	17	8	5	3	1	-	-	-	-
Medical & Other Health	229	244	38	25	9	1	2	1	-	-	-
Legal Services	39	29	12	7	5	-	-	-	-	-	-

Industry	Number of Employees	Taxable Payrolls (Thousands of Dollars)	Total Reporting Units	Number of Reporting Units, by Employment Size Class							
				1-3	4-7	8-19	20-49	50-99	100-249	250-499	500 or more
			St. Tammany Parish								
Agriculture, Forestry, Fisheries	86	87	10	6	2	1	-	1	-	-	-
Mining	82	116	6	4	-	-	1	1	-	-	-
Contract Construction	650	689	77	37	23	10	4	3	-	-	-
General Building Contractors	86	85	15	5	7	3	-	-	-	-	-
Heavy Construction Contractors	298	304	17	6	5	1	3	2	-	-	-
Special Trade Contractors	266	300	45	26	11	6	1	1	-	-	-
Manufacturing	1,446	2,331	43	15	6	10	7	3	-	1	1
Lumber & Wood Products	157	172	14	7	1	4	1	1	-	-	-
Stone, Clay & Glass	(D)	(D)	9	3	1	1	2	1	-	-	1
Transportation Equipment	423	614	5	-	2	-	1	1	-	1	-
Ship & Boat Build. & Rpr.	423	614	5	-	2	-	1	1	-	1	-
Transportation & Other Public Utilities	384	621	35	21	6	4	2	1	1	-	-
Trucking & Warehousing	60	48	19	14	3	2	-	-	-	-	-
Communication	(D)	(D)	4	1	2	-	-	-	1	-	-
Wholesale Trade	176	214	29	15	6	7	1	-	-	-	-
Retail Trade	1,895	1,732	291	156	59	59	15	1	1	-	-
Building Materials	110	116	19	8	7	3	1	-	-	-	-
General Merchandise	231	210	21	6	4	8	3	-	-	-	-
Food Stores	387	350	37	18	6	10	1	1	1	-	-
Auto Dealers & Serv. Sta.	512	594	89	56	11	5	7	-	-	-	-
Apparel & Accessory Stores	98	70	23	16	3	4	-	-	-	-	-
Furniture	30	27	10	8	2	-	-	-	-	-	-
Eating & Drinking Places	348	195	59	29	15	12	3	-	-	-	-
Miscellaneous Retail Stores	179	170	33	15	11	7	-	-	-	-	-
Finance, Insurance, Real Estate	341	431	70	45	16	5	3	1	-	-	-
Banking	147	190	5	-	-	1	3	1	-	-	-
Credit Agencies, Except Banks	73	101	20	12	6	2	-	-	-	-	-
Insurance Agents, Brokers	49	62	16	10	5	1	-	-	-	-	-
Real Estate	53	41	24	20	4	-	-	-	-	-	-
Services	1,257	1,392	183	114	40	22	5	-	2	-	-
Personal Services	127	97	41	28	11	2	-	-	-	-	-
Miscellaneous Business Serv.	297	582	12	3	4	4	-	-	1	-	-
Auto Repair Serv. & Garages	38	41	13	10	2	1	-	-	-	-	-
Medical & Other Health	401	333	43	31	5	4	2	-	1	-	-
Legal Services	54	47	21	16	4	1	-	-	-	-	-
Educational Services	122	126	10	2	3	4	1	-	-	-	-

Industry	Number of Employees	Taxable Payrolls (Thousands of Dollars)	Total Reporting Units	Number of Reporting Units, by Employment Size Class							
				1-3	4-7	8-19	20-49	50-99	100-249	250-499	500 or more
			Tangipahoa Parish								
Agriculture, Forestry, Fisheries	88	81	15	8	4	3	-	-	-	-	-
Agricultural Serv. & Hunting	65	48	11	6	3	2	-	-	-	-	-
Mining	60	61	8	5	1	1	1	-	-	-	-
Contract Construction	506	602	75	39	16	16	3	1	-	-	-
General Business Contractors	194	252	23	14	4	3	1	1	-	-	-
Heavy Construction Cont.	99	104	10	1	4	4	1	-	-	-	-
Special Trade Contractors	213	246	42	24	8	9	1	-	-	-	-
Manufacturing	2,022	2,044	87	32	14	17	11	9	3	1	-
Food & Kindred Products	629	558	23	6	5	4	3	4	1	-	-
Lumber & Wood Products	969	1,008	33	16	4	4	3	3	2	1	-
Stone, Clay & Glass Products	167	183	9	-	1	5	2	1	-	-	-
Transportation & Other Public Utilities	321	423	42	32	5	2	2	-	1	-	-
Trucking & Warehousing	108	107	22	18	1	1	2	-	-	-	-
Communication	(D)	(D)	5	1	2	1	-	-	1	-	-
Wholesale Trade	723	781	83	43	13	18	8	-	1	-	-
Retail Trade	2,744	2,433	384	198	83	71	27	5	-	-	-
Building Materials & Farm Equipment	159	172	23	9	6	7	1	-	-	-	-
General Merchandise	377	299	29	8	5	10	5	1	-	-	-
Food Stores	416	321	64	42	12	4	5	1	-	-	-
Auto Dealers & Serv. Sta.	684	829	86	52	11	13	8	2	-	-	-
Apparel	148	107	31	17	8	5	1	-	-	-	-
Furniture	(D)	(D)	18	8	7	3	-	-	-	-	-
Eating & Drinking Places	374	168	69	36	14	16	3	-	-	-	-
Miscellaneous Retail Stores	474	415	63	26	20	13	3	1	-	-	-
Finance, Insurance, Real Estate	400	540	68	45	11	9	2	-	1	-	-
Banking	167	238	4	-	-	2	1	-	1	-	-
Credit Agencies (Non-bank)	96	115	23	12	7	4	-	-	-	-	-
Insurance Agents, Brokers	40	48	19	16	3	-	-	-	-	-	-
Real Estate	19	12	13	13	-	-	-	-	-	-	-
Services	1,315	871	175	112	34	21	3	3	2	-	-
Personal Services	186	134	29	13	7	8	1	-	-	-	-
Auto Repair, Serv. & Garages	37	34	13	10	2	1	-	-	-	-	-
Miscellaneous Repair Serv.	21	18	10	9	1	-	-	-	-	-	-
Medical & Health	501	390	46	36	3	2	2	2	1	-	-
Legal Services	50	43	17	11	5	1	-	-	-	-	-

Industry	Number of Employees	Taxable Payrolls (Thousands of Dollars)	Total Reporting Units	Number of Reporting Units, by Employment Size Class							
				1-3	4-7	8-19	20-49	50-99	100-249	250-499	500 or more
			Terrebonne Parish								
Agricultural Services, Forestry, Fisheries	109	89	40	30	9	1	-	-	-	-	-
Fisheries	92	70	35	26	8	1	-	-	-	-	-
Mining	3,734	7,709	72	7	12	8	22	13	9	-	1
Oil & Gas Extraction	(D)	(D)	70	7	11	8	22	12	9	-	1
Contract Construction	1,076	1,667	108	62	15	20	5	4	2	-	-
General Building Contractors	158	196	23	13	5	4	-	1	-	-	-
Heavy Construction Cont.	483	811	19	7	-	4	4	3	1	-	-
Special Trade Contractors	435	660	66	42	10	12	1	-	1	-	-
Manufacturing	2,255	2,853	59	13	11	14	9	8	3	-	1
Food & Kindred Products	913	732	20	3	4	3	3	5	2	-	-
Fabricated Metal Products	226	319	5	-	-	1	2	2	-	-	-
Machinery (Not Electrical)	685	1,126	8	2	1	1	2	1	-	-	1
Transportation Equipment	277	472	11	3	4	3	-	-	1	-	-
Ship & Boat Build. & Rpr.	277	472	11	3	4	3	-	-	1	-	-
Ship Building & Repair	(D)	(D)	3	-	1	1	-	-	1	-	-
Transportation and Other Public Utilities	1,796	2,676	157	81	35	24	11	3	2	1	-
Trucking and Warehousing	457	645	22	6	8	5	1	1	1	-	-
Water Transportation	807	1,202	109	66	22	12	7	1	1	-	-
Local Water Transportation	777	1,165	101	61	20	11	7	1	1	-	-
Communication	(D)	(D)	5	1	-	3	-	-	-	1	-
Electrical, Gas & Sanitary Serv.	134	283	6	1	1	1	2	1	-	-	-
Wholesale Trade	878	1,419	121	43	41	26	11	-	-	-	-
Retail Trade	3,461	3,717	385	192	88	68	28	7	-	2	-
Building Materials & Farm Equipment	160	259	17	7	5	2	3	-	-	-	-
General Merchandise	719	674	29	5	7	8	7	1	-	1	-
Food Stores	543	515	59	32	10	9	5	3	-	-	-
Auto Dealers & Serv. Sta.	629	816	88	45	21	13	8	1	-	-	-
Apparel & Accessory Stores	156	109	35	20	9	6	-	-	-	-	-
Furniture	187	251	25	9	7	7	2	-	-	-	-
Eating & Drinking Places	820	854	86	55	12	14	2	2	-	1	-
Miscellaneous Retail Stores	247	239	46	19	17	9	1	-	-	-	-
Finance, Insurance, Real Estate	691	960	105	64	25	9	5	1	1	-	-
Banking	229	312	3	-	-	-	1	1	1	-	-
Credit Agencies, Non-bank	141	175	31	13	13	5	-	-	-	-	-
Real Estate	142	118	43	37	4	-	2	-	-	-	-
Services	2,351	2,685	271	150	54	40	19	7	-	1	-
Personal Services	192	166	40	25	8	6	1	-	-	-	-
Miscellaneous Business Serv.	596	931	38	11	9	7	8	3	-	-	-

Industry	Number of Employees	Taxable Payrolls (Thousands of Dollars)	Total Reporting Units	Number of Reporting Units, by Employment Size Class							
				1-3	4-7	8-19	20-49	50-99	100-249	250-499	500 or more
			Terrebonne Parish (continued)								
Auto Repair, Serv. & Garages	94	115	27	16	8	3	-	-	-	-	-
Miscellaneous Repair Services	213	368	25	13	4	6	1	1	-	-	-
Amusement & Recreational Serv.	91	60	16	9	4	2	1	-	-	-	-
Medical & Other Health	595	547	52	35	12	2	1	1	-	1	-
Legal Services	57	49	21	16	3	2	-	-	-	-	-
Educational Services	141	105	7	1	1	3	1	1	-	-	-
			Vermilion Parish								
Agricultural Services, Forestry, Fisheries	78	42	26	18	6	2	-	-	-	-	-
Agricultural Serv. & Hunting	55	32	17	11	5	1	-	-	-	-	-
Mining	961	2,142	26	4	4	8	5	3	1	1	-
Oil & Gas Extraction	961	214	26	4	4	8	5	3	1	1	-
Contract Construction	668	1,055	34	19	6	4	1	2	2	-	-
General Building Contractors	533	939	6	1	-	1	-	2	2	-	-
Special Trade Contractors	118	106	22	13	6	2	1	-	-	-	-
Manufacturing	784	754	34	9	11	6	3	4	1	-	-
Food & Kindred Products	664	614	14	2	3	1	3	4	1	-	-
Transportation & Other Public Utilities	472	606	53	25	8	13	6	1	-	-	-
Water Transportation	250	288	34	18	6	6	4	-	-	-	-
Local Water Transportation	218	245	29	16	5	4	4	-	-	-	-
Electrical, Gas & Sanitary	124	154	6	1	-	3	1	1	-	-	-
Wholesale Trade	312	422	51	24	13	12	2	-	-	-	-
Retail Trade	1,424	1,179	298	171	68	53	6	-	-	-	-
Building Materials & Farm Equipment	330	317	37	10	7	18	2	-	-	-	-
General Merchandise	113	86	19	7	7	5	-	-	-	-	-
Food Stores	217	152	42	23	10	8	1	-	-	-	-
Auto Dealers & Serv. Sta.	297	330	57	34	11	10	2	-	-	-	-
Apparel & Accessory Stores	63	34	25	20	4	1	-	-	-	-	-
Furniture	49	43	18	13	4	1	-	-	-	-	-
Eating & Drinking Places	167	67	53	37	12	4	-	-	-	-	-
Miscellaneous Retail Stores	188	150	47	27	13	6	1	-	-	-	-
Finance, Insurance, Real Estate	213	239	41	26	8	5	2	-	-	-	-
Banking	104	130	6	-	-	4	2	-	-	-	-
Credit Agencies (Non-bank)	33	35	10	7	3	-	-	-	-	-	-
Insurance Agencies & Brokers	44	39	14	10	4	-	-	-	-	-	-

Industry	Number of Employees	Taxable Payrolls (Thousands of Dollars)	Total Reporting Units	Number of Reporting Units, by Employment Size Class							
				1-3	4-7	8-19	20-49	50-99	100-249	250-499	500 or more
			Vermilion Parish (continued)								
Services	1,319	1,510	144	101	22	12	7	-	1	1	-
Personal Services	541	822	27	23	1	2	-	-	-	1	-
Auto Repair Serv. & Garages	13	13	10	10	-	-	-	-	-	-	-
Miscellaneous Repair Serv.	252	311	19	13	3	1	1	-	1	-	-
Medical & Other Health	247	166	38	22	11	1	4	-	-	-	-
Legal Services	32	34	10	7	2	1	-	-	-	-	-
			West Baton Rouge Parish								
Agriculture, Forestry, Fisheries	26	45	3	-	-	3	-	-	-	-	-
Mining	(D)	(D)	1	1	-	-	-	-	-	-	-
Contract Construction	232	310	15	8	3	1	2	-	1	-	-
Heavy Construction Contractors	195	267	5	1	1	-	2	-	1	-	-
Manufacturing	321	591	8	1	1	2	2	1	1	-	-
Transportation Equipment	(D)	(D)	1	-	-	-	-	-	1	-	-
Ship & Boat Building	(D)	(D)	1	-	-	-	-	-	1	-	-
Ship Building & Repair	(D)	(D)	1	-	-	-	-	-	1	-	-
Transportation & Other Public Utilities	221	349	11	3	1	2	4	1	-	-	-
Wholesale Trade	(D)	(D)	7	3	2	1	-	-	1	-	-
Retail Trade	266	190	60	36	14	8	2	-	-	-	-
Food Stores	87	67	13	9	1	1	2	-	-	-	-
Auto Dealers & Serv. Sta.	62	44	15	7	7	1	-	-	-	-	-
Eating & Drinking Places	56	29	15	8	4	3	-	-	-	-	-
Finance, Insurance, & Real Estate	43	65	8	4	2	2	-	-	-	-	-
Services	142	121	30	15	9	6	-	-	-	-	-

DATE DUE

GAYLORD	No. 2333		PRINTED IN U.S.A.

NOAA COASTAL SERVICES CENTER LIBRARY

3 6668 14106 2747