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16. Abstract

This study was undertaken at the request of the Texas Department of Transportation in response to its obligations under Senate Bill 352, 72nd Texas State Legislature (Texas Revised Statutes, Article 6669C) to conduct a fact-finding study in support of a state-funds contracting and procurement program for businesses owned by minorities and women.

We have had joint responsibility for this Study. To assist in carrying out the assignment, we recruited a number of economic, financial, business, legal, and policy experts from both the public and private sectors. This draft report was prepared under our supervision by Dr. Peter Balash, Research Fellow, Lyndon B. Johnson School of Public Affairs, The University of Texas at Austin. He was assisted by Ms. Janine Berg and Mr. John Wilton, Staff Research Assistants.

This report serves as an overview of Texas economic history, concentrating on forces shaping access to business opportunities in areas of work relevant to the TxDOT. The analysis provides a base for understanding how economic trends and fluctuations and historical legacies affect the contemporary business situation. More thorough analysis of recent occupational and earnings data, in conjunction with a focus on educational endowments, shall render a complete picture of those factors which have a direct impact upon rates of entrepreneurship across groups, especially in construction-related fields. Recent survey results concerning educational background shall shed light upon current higher education data. Results strengthen the case that historical discrimination has had deleterious economic effects for minorities and women. The historical analysis generates conclusions that could lead to recommendations for combating deeply entrenched barriers to participation.

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conducted for the

Texas Department of Transportation

by the

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CENTER FOR TRANSPORTATION RESEARCH
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THE UNIVERSITY OF TEXAS AT AUSTIN

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PREFACE

This report, entitled "Historical Overview of the Role of Minorities in the Economic Development of Texas, with a Special Emphasis on the Texas Construction Industry," is the sixth report of the seven-volume "Disadvantaged Business Enterprise (DBE) Capacity Study." The study was undertaken at the request of the Texas Department of Transportation in response to its obligations under Senate Bill 352, 72nd Texas State Legislature (Texas Revised Statutes, Article 6669C) to conduct a fact-finding study in support of a state-funds contracting and procurement program for businesses owned by minorities and women.

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Prepared in cooperation with the Texas Department of Transportation.

DISCLAIMER

The contents of this report reflect the views of the co-principal investigators, the research director, and the authors of this volume, who are solely responsible for the facts and the accuracy of the data presented herein. The contents do not necessarily reflect the official views or policies of the Texas Department of Transportation. Since several important areas relevant to the scope of the paper have yet to be researched, this report must be regarded strictly as preliminary and incomplete.

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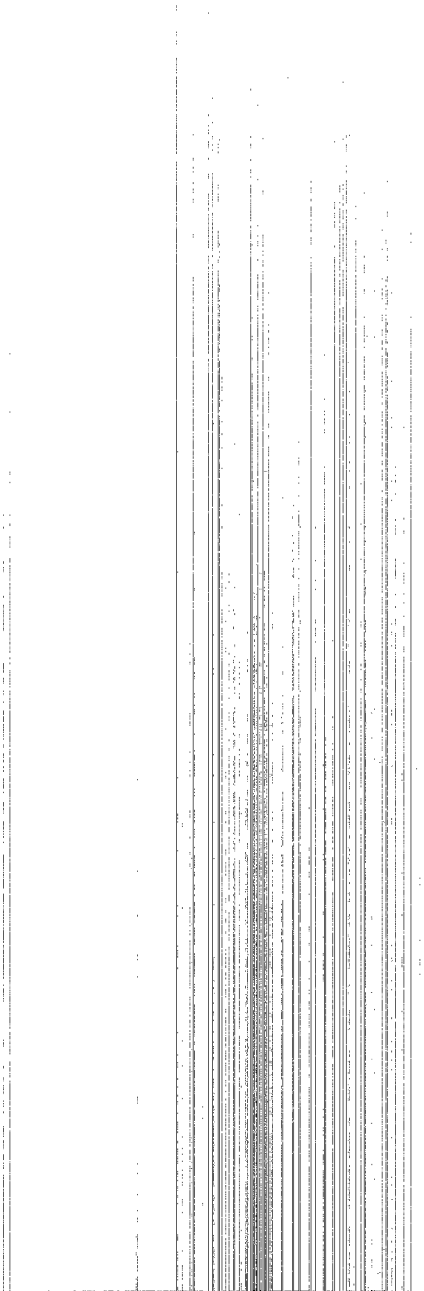
INTRODUCTION

A society - or any integral part of a society and its institutions - that wishes to construct and implement programs aimed at narrowing disparities between groups and overcoming obstacles erected by past discrimination should have a thorough understanding of the historical forces that shape the present situation. That is, understanding the past is necessary to understanding the present. When the purpose of affirmative action programs is expressly economic, such as expediting the development of minority business communities (or historically underutilized businesses), then it is imperative that the society's economic history be well-known in order to fathom the existence of barriers to entry into the marketplace. Given that Texas has the third largest population of states in the United States, when one of its largest public agencies - the Texas Department of Transportation - needs to construct a program which will allocate a fair share of contracts to disadvantaged business enterprises, then this agency must operate from an accurate portrayal of the economic history of the state in order to facilitate the implementation of a just and constitutional program. Such a portrayal should identify historical sources of economic and social disadvantages burdening members of a group. With these exigencies in mind, we will present a relatively brief account of the economic history of Texas, bearing in mind that non-market forces help shape the present as well.

While the focus of the overview will be on the role of minorities in the economic development of the state, we will begin with an account of the aggregate economic forces operating in Texas throughout its history, but especially in the past century, in order to place the proper perspective upon the experience of minority business enterprise. After an analysis of the major trends including production, population, and urbanization in the state, we will concentrate upon some aspects of the experience of African-Americans and Mexican-Americans of Texas. We will look not only at the economic roles played by these groups in the development of Texas (in Parts Two and Three), but also at the obstacles to their advancement erected both by social customs and public policy (Parts Four and Five). A special emphasis on the status of minorities in construction and construction related fields will be woven into the body of the overview. We will emphasize the slow, uneven march toward improved opportunity

over most of the course of Texas history while recognizing both the significant advances made and the difficulties which remain during the civil rights era.



PART ONE: TRENDS AND CHANGES IN THE TEXAS ECONOMY

THE TEXAS ECONOMY TO 1933

For roughly the first 100 years of its history as a state, Texas can be characterized as being an integral part of the Southern regional economy. The dominance of agriculture in general and cotton in particular has led some observers to characterize the Texan economy as "colonial" at least until the First World War (Adair 1977). That is, not only did production associated with the primary sector of the economy predominate, but also the profits of this activity and the proceeds from investment in Texas flowed to out of state interests and small local elitist groups, with little long-term development. The quintessential Texan economic activities of cattle ranching (at its height in the latter half of the 19th century), and oil exploration and drilling (the first true boom taking place in the 1920s) did nothing to dispel this image before World War II. British and Northern capital often controlled the railroads and often the large cattle ranches (Woodward, 1971, p.118). Tellingly, the mostly self-sufficient state exported primary goods such as agricultural products and raw materials to out-of-state manufacturers who would process them into finished products (Adair, p.76). In the manufacturing sector, food and kindred products, on the one hand, and lumber and wood products on the other, were the two most important sectors. Moreover, with over three-quarters of the Texas labor force involved in agriculture as late as 1880, and nearly 60% in 1910, cotton cultivation remained the state's economic foundation, as Texas remained the largest state producer of cotton in the United States during the first four decades of the 20th century (Adair, p.99).

As tempting as it may be to view Texas development as passing from a long "colonial" stage to a blossoming urban, industrialized economy after World War I, this perception would obfuscate the historical experience of Texas as part of the regional Southern economy. We may encapsulate the meaning of Southern regionalism in the following manner: i) the Civil War destroyed the basis of the credit system in the cotton South, transforming planters from owners of high-priced labor to possessors of relatively low-valued land - in the words of Gavin Wright (1986), from "laborlords" to landlords; ii) agriculture both remained based on cotton, a crop whose absolute and relative price fell throughout the rest of the 19th century, and declined as a component of the region's economy much more slowly than in the rest of the nation; iii) the

expansion and diversification of industry was slow, difficult, and based on low-wage labor, and iv) though local labor markets functioned (i.e., the postbellum South was not characterized by "involuntary servitude"), the Southern labor market was isolated from the rest of the country.

As Wright describes, the transformation mentioned in (i) changed the income status of the South from the richest per capita region, albeit with highly unequal distributions of wealth and income, to the poorest. Indeed, in 1877 the richest state of the former Confederacy, Virginia, was more than $100 poorer per capita than Kansas, the poorest non-Southern state (Woodward, p.111). With the basis of wealth no longer movable, the destruction of the antebellum banking structure, and its replacement by a system of "country finance" bereft of normal banking services (Hughes, p.260; in fact, Texas had no true banks until 1900) - the Southern economy was reduced to following the fluctuations of the world cotton market from Emancipation to the Second World War (Wright, p.12). Unfortunately, the world price of cotton peaked in the late 1850s: in 1865 the price of cotton averaged 43 cents per pound, by 1880 the price had fallen to 8 or 9 cents per pound, a trough at which it stayed until the turn of the century (Hughes, 1990, p.256). Nonetheless, cotton production increased until 1875, but productivity (of land and of labor) fell. Whether because of "debt peonage" -poor farmers forced by local financial monopolists to grow the only marketable (export) crop, cotton, at the expense of self-sufficiency - or because the falling prices of other agricultural goods reinforced cotton's position as the only dependable cash crop for the poor farmer (white or black) - the upshot is that the South experienced "retrograde development," becoming a region "noted for wasting human resources until well into the twentieth century" (Hughes, p.261). That is, a static system of low prices and high levels of production made it difficult to raise productivity or develop human capital.

While the history of sharecropping and tenancy and of the "agricultural ladder" in the South has been told many times, and is a story we won't repeat, the manifold legacy of slavery has nonetheless several important consequences for our purposes - in this section, we note that it established black isolation within a separate regional labor market. Antebellum European immigration developed "path dependence": patterns initiated by initial migrants of various ethnic groups and followed by later cohorts. For the most part, this later immigration largely avoided the South. Despite the well-documented arrival of Central Europeans to regions near San Antonio in the 1840s, the majority of immigrants to Texas were from other Southern states (Campbell and Lowe,

1977, ch. II). These immigration patterns continued throughout the rest of the century and until World War I. Because unskilled industrial positions in the North were often filled by immigrants after the Civil War, the large unskilled labor force in the South, including the emancipated slaves, felt no Northern pull. So while wage and migration data indicate that there was mobility within the South (croppers often changing landlords, for instance), labor did not leave the South. Further, the South experienced a high rate of natural population increase which constantly augmented the labor force. As a result, techniques and wages in both agriculture and industry remained backward (Wright, p.12).

The prominence of cotton slavery also retarded the growth of industry in the South. With practically no resources allocated to education - no statewide system of public schools existed as of 1860 - the South lagged behind in adapting existing technology to local needs. Hence the absence of an indigenous technological community and the isolation of the labor market relegated postbellum Southern industry to those, such as lumber and timber products, which made use of cheap labor and labor-intensive methods that lent nothing to local development (Wright, p.159). Only through hard work could incomes improve - a self-limiting proposition. Exacerbating low labor productivity after 1870 was the reliance by the conservative business leaders on the convict-lease system of labor, maintained by states specifically to suppress wages and gain revenue (Woodward, pp.212-215). To the extent that there was an inflow of Northern capital into Southern industry - as Woodward extensively documents - there was no inflow of people. Texas, for instance, still received most of its immigrants from older parts of the South (ibid., pp.108-109).

Whereas the regions in which most Texans lived operated within the Southern economy, the ranching business pushed into the frontier regions of Texas. In South Texas (that is, below the Nueces River), ranches adapted to the Mexican *hacienda* system of the conquered Tejanos, complete with *patrones* and permanent resident labor. Meanwhile, in West Texas and the Panhandle, large estates operated by corporate and often British interests were the rule. (Montejano, 1986, p.86). Millions of acres were owned by English companies (Woodward, pp.119). Cattle drives and independent cowboys thrived from 1866-1880, until fences and the railroads ended both. The coming of the railroads in the late 1870s, aided by the mass sell-off of 32 million acres to twelve railroad companies (ibid, p.118), ended the relative isolation of West and South Texas from the rest of the state and nation. Anglos continued to penetrate what

had been a "Tex-Mex" economy in South Texas and along the border. An historical irony is that while the work crews of the railroads were predominantly Mexican (i.e. Texas Mexican), the forces put in motion by the railroads led to the displacement of old Tejano landowners (Montejano. p.91 - the manner of this displacement will be described later). Though the cattle industry did challenge cotton to some extent in the early postbellum period, it was never cotton's equivalent in this "heyday of Texas agriculture" (Adair, p.77).

TABLE 1.1: Percent of Labor Force in Agriculture, Relative Personal Income Level, Texas and the United States, 1880-1970.

	RELATIVE PERSONAL INCOME INDEX (US=100)	AGRICULTURAL LABOR FORCE SHARE		TEXAS/US INDEX (US=100)
YEAR		TEXAS	US	
1880	56.3	75.8	51.5	153
1890		65.8	40.6	162
1900	66.4	67.4	38.8	174
1910		59.6	32.5	183
1920	81.8	45.8	25.6	179
1930	65.9	38.1	21.4	178
1940	72.7	28.8	17.5	165
1950	90.7	15.1	11.6	130
1960	86.3	7.5	5.9	127
1970	89.6	4.0	2.9	135

SOURCES: Income: Adair, p.53, and Zlatkovich (1992), Table 6 (1930-70); Labor Force: Adair, p.78.; generally from Census data

As mentioned previously, within manufacturing lumber and food products were the two most important industries. In 1880, lumber and wood products accounted for 26% of manufacturing value added in Texas and 30% of manufacturing employment. The figures for food products are similar, and this pattern was essentially unchanged until 1914, at which time manufacturing as a whole contributed less than 10% of the state's product (Adair, p. 82, p.141.). World War I induced a high demand for petroleum products for automotives, leading to both a crude oil and petroleum refining boom which extended until the Great Depression (Adair pp.81 and

102). However, as with Texas' other leading economic activities, resource exploitation did not greatly improve social welfare - per capita income in 1939 was only 3/4ths of the national level, and Texas education, health, and housing conditions were among the nation's worst. (Adair, pp. 107-108). Keep in mind that the non-Southern US economy was based on mass production - whether in manufacturing or education, facilitating the dissemination of mass-produced technology. Texas did not share in this relatively more knowledge-intensive economy.

The figures in Table 1.1 above, summarizing the aggregate story, support some of Wright's contentions. Personal income levels in Texas, as in the rest of the South, lagged far behind the rest of the nation: the fluctuations from 1900-1930 represent rising and then falling relative and absolute prices of cotton. The relative income index illustrates that the painfully slow process of catching up to the national norm has stretched out over generations. While the labor force of Texas moved out of agriculture and into other sectors, the pace was slower than in the country as a whole. Between 1880 and 1910, the share of the labor force in agriculture declined over 34% in the US but only 21.4% in Texas. This disparity is indicated by the rise in the Texas-US ratio shown in the last column. Thus while Texas did industrialize in those years, the state and the region remained relatively backward.

THE TEXAS ECONOMY 1933-1970

Aggregate statistics prove beyond doubt that Texas, and the South in general, experienced a tremendous transition to an urban, industrialized economy from 1933 to 1970. This growth was due to the phenomenal stimulus provided by World War II, and by the expansion of defense-related industries and construction after the war. The previous table only indicates some of the changes. Data tabulated by Zlatkovich (1992, Tables 1-3) show that personal income from agriculture in Texas fell from 15.29% of the total in 1930 to 2.92% in 1970. Meanwhile, relative manufacturing income grew from 9.02% of the state total in 1930 to 16.0% in 1970 before declining thereafter. Similarly, construction income grew from 4.32% of the total in 1930, to 6.33% in 1950 to 6.36% in 1970. Services, meanwhile, grew from 10.2% in 1930 to 12.63% in 1970, before rising at the expense of manufacturing ever since.

Zlatkovich also employs "location quotients" to indicate the importance of these major sources of income in Texas relative to the nation. Agriculture, with a quotient of 2.11 (Texas/US), was over twice as important to Texas as to the US in 1930. This figure

stood at 1.30 in 1970. That manufacturing grew faster in Texas than nationally can be seen by this quotient rising from 0.44 in 1940 to 0.75 in 1975. Notice, however, how far back Texas started from the national average. In fact, the industrial capacity of Texas in 1954 was four times that of 1939 (Lynch, 1955). Chemicals and allied products was the leading sector of Texas manufacturing between 1940 to 1960, its contribution to state income jumping from a paltry 5% in 1940 to over 22% in 1960, becoming the most important income earner in the process (Adair, p.81). Indeed, Houston, Beaumont, and Corpus Christi became large centers of the petrochemical industry, a more knowledge-intensive sector than purely extraction, with the Houston area having the largest such concentration in the world (Institute for Studies in Business, 1992). Meanwhile, the location quotient for services has held steady near a value of 1.00, indicating that services growth has mirrored that in the nation as a whole. It thus comes as no surprise that the percent of the Texas population living in urban areas grew from 45.4% in 1940 to 62.7% in 1950, to 75% in 1960, and finally to 79% in 1970, a level which has remained stable to the present (US Bureau of the Census, 1980 and 1990). All ethnic and racial groups took part in the move to the cities (Barr, 1973, p.197, Montejano, p.296).

REVOLUTION IN AGRICULTURE

These numbers, however, abstract from the wrenching change Southern and Texas agriculture went through in the middle part of the century. The destruction of the sharecropper-tenant system of cotton agriculture by mechanization has its roots in the New Deal. As Wright aptly describes (1986, Chapter 7), the federal government led an "assault on the low wage economy" in the 1930s, which had the short term effect of the massive displacement of farm workers, especially blacks, in the rural areas. The instruments of this assault were minimum wage legislation, which led to the "overnight" narrowing of wage differentials between the South and the rest of the nation - and because of which Negroes were the first to be fired - and also the administration of agricultural payments (for non-planting) to planters, which began the transition to wage labor on the farm. That is, farm programs of the Agricultural Adjustment Act in 1933 paid planters to plow under their crop, but mailed the checks to the landlords (and not to tenants). While the reduction in cultivated acreage was supposed to proportionately affect the planter's (wage labor) portion and the tenants' portions, the economic incentive facing the planters encouraged reducing the share of

acreage in tenancy in favor of that devoted to wage labor while claiming equal reductions. Indeed, the Red River region saw a 40-50% increase in acreage worked by wage labor in the mid-1930s (Wright, p.229); additionally, between 1930 and 1940, black tenants decreased from 65,000 to 32,000, while farm laborers increased from 41,000 people to 66,000. The remainder moved to the cities or other states: 20,000 blacks left Texas during this period (Barr, p.135).

Accordingly, when the demands of wartime industry, especially from the North, began to be felt, the massive out-migration of blacks from the South (including Texas) commenced. The farm population in the South fell by 3 million in the 1940s (Wright, p.240). The Texan black rural population of 505,750 in 1940 was approximately halved by 1960. The number of black farmers in Texas fell from 52,751 to 15,041 (Barr, p.196). While the urban population increased from 421,820 to 905,089 during the same period, over 101,000 blacks left the state between 1940-1950, primarily to Northern and Western industry (Stiles, p.20) The frustration of the Texan black community is reflected by the following: though the median income of blacks increased relatively and absolutely in the period, it still stood at only 50% of white median income in 1960 (Barr, p.199). Also leaving, to a lesser extent, were Mexican-Americans from the cotton and vegetable fields of South Texas, drawn by northern corporate farms as well as by industry (Montejano, Ch. 12).

The resulting labor shortages of the late 1940s in the fields were conducive to the development and marketing of economical, mechanized cotton harvesters (spurred by the research of International Harvester in the 1940s). As other large companies join the mechanization push, the percentage of American cotton mechanically picked grew from 5% in 1950 to 50% in 1960 and to over 90% in 1970. In Texas, the share of the cotton crop thus harvested increased from 12% in 1950 to 58% in 1960, and the transition was complete by 1972. Of course, croppers and pickers were evicted by the tens and hundreds of thousands. The pull of the 1940s was replaced by the push of the 1950s (Wright, p.244). In Texas the eviction of sharecroppers also proceeded at a brisk pace, since Texas was at the forefront of mechanization. In some cases, full time black tenants were replaced by migrant Mexican and Mexican-American workers (Stiles, p.32).

The decline of tenancy and the low-wage Southern industrial market - its foundations laid in the 1930s, the rapid collapse occurring in just twenty years - destroyed the internal logic underlying regional isolation. Further, the prospects of

facing federal courts induced a new desire of Southern business leaders for social harmony, if only to be able to attract Northern capital (Wright, ch. 8). The long term effects of the chain of events put in motion by the federal programs of the 1930s culminated in the integration of the southern regional economy into the national economy, at least by the 1980s, as well as in the rise of per capita living standards (see table 1.1 above). While leaders of southern states have been proud of the advancement of the region, it bears repeating that much of it was propelled by the phenomenal displacement and out-migration of a large segment of its population. According to Wright (p.237), this departure after 1940 "was the greatest single economic step forward in black history, and a major advance toward the integration of blacks into the mainstream of American life."

CONTEMPORARY TEXAS

The patterns set in the post-war generation continue into today, with one major exception: manufacturing income and employment is on the decline, in Texas as well as in the nation. While manufacturing nationwide began to slip (relatively) as a source of personal income in the 1960s, Texas manufacturing began a slow relative decline in the 1970s before plummeting from 15.27% of state personal income to 11.85% in 1990, a level not seen since 1950 (Zlatkovich). Income from the service sector ballooned both nationally and in Texas during the 1980s, contributing nearly a fifth of personal income in both cases.

HIGHWAY CONSTRUCTION IN THE 1980'S

Highway construction patterns also generally followed national patterns, with employment peaking in the late 1960s, declining precipitously for the next 15 years to 1982 - a fall of over 30% for the US, about 15% in Texas - before recovering from the recessional trough with growth of over 30% to 1987 nationwide and over 55% in Texas (Zlatkovich, tables 18-19). Data tabulating value of construction work indicates that road and bridge construction in Texas grew from about 7% to about 8.25% of the US total, in the same categories, between 1972 and 1987 (*Census of Construction Industries*, 1987). Nationally, highway and street construction accounts for about 8% of all construction (ibid.), generally hovers at about a quarter of all public construction (Northrup, 1984, p.6), and consisted of 12,145 firms with payrolls in 1987. In the same year in Texas, highway and bridge construction was a three billion dollar industry

consisting of 821 firms with payrolls, or 6.76% of the US total for these firms. Finally, roads and bridges and like construction accounted for almost half of the value of the "heavy" construction category, but for only about a quarter of the firms (Zlatkovich).

However, the integration of Texas into the national economy has had its limits. Though per capita income levels have increased slowly since 1970, Texas is at the same relative position in 1990 as it was in 1970 - at approximately 90% of the national average. Thus a plateau for relative income levels has been more or less maintained since the 1950s, except for periodic oil booms (see table 1.1 above).

As shown in Table 1.2 below, income gains for the large minority groups have essentially stagnated. Notice the difference between per capita and household income levels. While lower median ages (in 1990 - Anglo: 31.0 years; Mexican American: 21.9 years; Black: 24.7 years) can explain both some of the gap as well as the interchange of relative positions between Mexican Americans and African Americans, there is no gainsaying that progress toward any notion of income equality has been extremely slow. Given that black income was 50% of white income in 1960, (as mentioned above), racial income inequality remains a long term problem. For Mexican Americans, data problems and undercounts have plagued the Census over the years, precluding a strictly similar comparison (see Bean and Tienda, 1987, ch.2, for a discussion). For example, the 1970 US census listed the total Mexican American population in the US as 4.5 million, whereas a 1973 survey with much improved methods estimated the population to be 6.3 million - thus researchers need to be careful when interpreting changes occurring in the 1970s when the underlying data are from the Census.

TABLE 1.2: Per Capita and Median Household Income Levels, by Race/Ethnic Group, Texas, 1979 and 1989, (current dollars)

	POPULATION (,000s)		PER CAPITA INCOME		MEDIAN HOUSEHOLD INCOME	
	1980	1990	1980	1990	1980	1990
TOTAL	14,229	16,987	7,205	N/A	16,708	N/A
Anglo	9,370	10,292	8,766	14,629	17,847	38,544
Black	1,705	2,022	4,512	8,102	11,038	23,275
as % of Anglo		*51.5*	*55.4*	*58.6*	*60.4*	
Mexican	2,744	3,891	3,758	6,633	12,180	24,354
as % of Anglo		*42.9*	*45.3*	*64.7*	*63.2*	

SOURCE: U.S. Census Bureau: *Characteristics of the Population, General Economic and Social Characteristics: Texas*

Browning and McLemore (1964) detail more or less comparable figures showing that family (not household) income of both Spanish-surnamed and black groups approximated about 50% of white family income in 1959. Moreover, they point out that the disparities between minorities are small while those between Anglos and minorities are large (p.48). In any case, Table 1.2 points out that the 1980s have seen little progress in reducing income disparities. If we bear in mind both the relative youthfulness of the minority population and that minority per capita income levels are half (or less) of those of Anglos (non-Hispanic whites), then we surmise that a higher percentage of minority children live in poverty. Further, while the overall population in Texas grew by nearly 20% in the 1980s, Anglos increased by only 10%, blacks by 19% and Mexican Americans by over 40%.

Poverty and unemployment rates in Table 1.3 complement the income statistics.

TABLE 1.3: Poverty and Unemployment Rates in Texas, 1970–1990

Poverty

YEAR	TOTAL	BLACK	HISPANIC
1970	18.3%	37.0%	35.5%
1980	11.2%	26.6%	27.6%
1990	17.7%	29.7%	32.1%

Unemployment

YEAR	TOTAL	BLACK	HISPANIC
1970	3.6%	5.9%	5.4%
1980	4.0%	6.9%	6.4%
1990	7.1%	13.4%	10.9%

SOURCE: Institute for Studies in Business (1992), compiled from U.S. Census Bureau, *Census of the Population.*

The glaring disparities evident in the table can not be overemphasized. Suffice it to say that in 1990 the proportional number of persons living below the poverty line remains 68% higher for black Texans and 81% higher for Hispanic Texans than the state average. Since 1970 the unemployment rate has doubled in Texas. For Hispanics, the worsening unemployment rate hovers at over 50% of the state average, whereas for blacks joblessness in 1990 was 89% higher than the average, compared to 64% higher in 1970. However, in order to gain an even deeper understanding of the long term economic problems confronting African Americans and Mexican Americans than can be gleaned from aggregate economic statistics, we must review the history of discrimination against these groups in Texas. In order to present such history succinctly, we'll consider the following areas: occupational distributions, segregation of the school system, and Anglo attitudes.

PART TWO: OCCUPATIONAL DISTRIBUTIONS BEFORE 1970

OCCUPATIONAL HISTORIES OF MINORITIES IN TEXAS

Systematic treatment of the occupational distributions among minorities, particularly characteristics of minority business owners in Texas, are sporadic at best. Jacob Stewart (1956 pp.2-3) complained that it

> was almost impossible to obtain information about the characteristics, the extent and location of business enterprises owned and operated by Negroes.

The intervening 36 years since Stewart's time have not removed the paucity of historical data, whether the subject was black, Mexican, or Women-owned business enterprises. However we can trace the historical patterns of opportunities facing Texas minorities, allowing us to approximate an accurate portrayal of the role of minorities in the economic development of the state.

AFRICAN-AMERICANS TO 1940

Our task here is to examine briefly what the economic consequences of slavery were (and are) for black Texans. During the 1850s, the number of slaves in Texas increased from 58,161 to 182,566. Forty percent of East Texas slaves worked as field hands on large cotton and sugar plantations, while 50% worked on smaller farms (Barr, pp.18-19). Overall, of course, the vast majority of slaves throughout the South were engaged in the cultivation of cotton (Greene and Woodson, 1930, p.8). Some of the rest worked in urban areas, often in cotton mills (Barr, p. 24), until rising cotton prices made slave labor much more valuable in the fields (Wright, p.128). Additionally, many slaves were trained as craftsmen, especially as bricklayers (Marshall and Christian, 1977, p.6), mainly to work on plantations or to be rented out. In fact, there is widespread evidence of slave artisans and mechanics in the antebellum South (Greene and Woodson). Other than field hands, however, the second most important occupational category was that of domestic and personal service - barbers, cooks, hairdressers, butlers, etc., for men, and maids, wash women, seamstresses, midwives, etc. for women. The use of slaves in businesses, however, became rarer after 1830 due to white fear of educated slaves and their insurrectional potential. Laws were passed forbidding employment in jobs requiring literacy. As a result, with the rare exception

of slaves working under the protection of powerful whites, only members of the tiny free black community in some Southern cities found business employment, often as proprietors of shops in the same personal service lines just mentioned (Harmon, Lindsay, and Woodson, 1929, pp.2-3). Back in Texas, an influx of frightened planters seeking safety in the state during the Civil War increased the population of slaves to 256,000 in 1865.

While the chief occupations awaiting freedmen - farming, whether as owners, tenants, or sharecroppers (see Wright for the differences) - have already been pointed out, other occupational forays were made. Most of these were in fields traditionally reserved to slaves, or else had their roots in slave occupations, such as catering, barbering, laundering, et cetera (Stewart, p.5). One Texas peculiarity is that, of the 35,000 men who took part in the cattle drives of 1865-1880, one-third of the hands were either Mexican (of whatever nativity) or black. Of course, no member of either group was allowed to boss an Anglo (Montejano, p.57). Of ranch hands in the 1870s, blacks constituted at least 20%, a fact ignored by the fiction writers of the early 20th Century (Barr, p.90).

Gavin Wright has advanced a controversial thesis that freedmen initially faced only "horizontal" discrimination which over time evolved into pernicious "vertical segregation." Consider that slaves had experience in iron foundries, but were taken out of the cotton mills during the 1850s. After the War, whites had an initial advantage in cotton mills, while blacks enjoyed a similar status in iron works. Initially, the wage structure was unaffected by this division of the labor market since the unskilled industrial wage was tied to that of the unskilled agricultural laborer. Over time, however, the cotton mill labor force matured, white workers moved up an occupational ladder, and black prospects in one of the South's most important industries became increasingly bleak. Blacks only received training if they dominated the pool of labor. However, job discrimination at higher levels in black industries - iron and steel in Alabama, lumber throughout the South and in Texas - cut off advancement for blacks. Wage data show that job discrimination at higher levels was more deleterious to blacks than wage discrimination by job. The contentious part of Wright's thesis is that vertical segregation over the long term was "efficient," contrary to orthodox economic theory. (Of course, Wright is conscious of the narrow rendering of efficiency in this context, not to be confused with social efficiency or "pareto optimality"). If enough whites were available, arbitrary racialist criteria for job

assignment were not disadvantageous to the industrialist. Benefit even accrued to the employer since concentrating blacks ensured a dependable supply of labor in undesirable jobs. As a result, "the typical white unskilled worker could expect to move up over time, [but] the typical black could expect to go nowhere," (Wright, pp.183-194) underlining the status as well as economic aspects of discrimination.

Some statistics from Texas are consistent with Wright's thesis. 1870 occupational data from Texas' then largest city, San Antonio, show that 63% of black males were considered unskilled, 10% semi-skilled, and 4% professional. Overall, regardless of skill level, 96% of freedmen were in the laborer category - compared to 90% of San Antonio's Mexicans, 68% of its European immigrants, and 56% of its Anglos (Barr, ch.3). Blacks were 42% of the labor force in the lumber industry - the most important industry in Texas in 1880, and which contributed between 20% and 25% of state output between 1880-1910. However, workforces employed in the industry were often temporary, and sawmills lasted perhaps a decade (Wright, p.159). A skilled cohort of black workers did not thrive in this environment. Between 1890 and 1910, while the number of blacks in non-agricultural jobs in the South increased by two thirds, all of jobs were in "Negro occupations" - sawmills, coal mining, railroad construction and maintenance. A negative relationship existed between the technological advance of an industry and black job opportunities within it (Woodward, pp. 360-361). And as the lumber industry receded in importance after World War I, the vast majority of non-agricultural black workers remained unskilled (Barr, ch.5).

C. Vann Woodward characterizes labor relations in the South as a reflection of the caste system: occupations divided up into white jobs and black jobs. The mid-1880s saw the heyday of the interracialist Knights of Labor, both in the nation and especially in Texas. The union's greatest success in 1885 and its spectacular defeat in 1886 both occurred primarily in Texas. Except for this brief interlude of "good feeling" and class solidarity (Woodward, pp. 229-230), race relations deteriorated. Blacks experienced death rates under the convict-lease system twice that of whites. Though populist and progressive pressure finally abolished the system in 1910, chain gangs and prison farms replaced it (*ibid.*, p.424).

Moreover, white skilled laborers generally opposed the inclusion of blacks into craft unions. The American Federation of Labor only rarely accepted segregated black locals. National leaders of the AFL found it impossible to enforce equalitarian and democratic principles upon the locals. Mutual animosity deepened as white labor kept

black labor out of unions while white employers used blacks as strikebreakers (Marshall, 1965, p.17). Racial exclusion of blacks reduced the percentage of black carpenters from 35% of the Texas total in 1900 to 5% in 1930, though the absolute number doubled. As Jim Crow became firmly ensconced in Southern society after 1898, "a large body of law grew up concerned with the segregation of employees and their working conditions," though employment segregation wasn't in need of the legal aid (Woodward, 1974, p. 98). In the 1930s, newly-imposed seniority systems of unions formalized customary job segregation. The consequent inferior access to on-the-job-training (whether through custom or seniority systems) precluded the acquisition of skills and thus reinforced the disadvantages of inferior education (Marshall and Christian, p.6). Of employed Negroes in 1900, almost 30% were in personal service.

In the 1890s, 159 Negro businesses existed in the state, often barber shops, mainly serving the black community. As blacks started moving to cities in the first part of the twentieth century, the number of businesses increased as well, so that by 1929 there were 1700 Negro-owned stores, mostly small retail outlets with little or no additional employees - only 300 jobs supported (Barr, p.152).

AFRICAN AMERICANS: 1940-1970

Broad racial employment patterns in the South remained stable between the 1920s and the 1960s. For instance, 20% of black males in Texas in 1960 still served in households (Browning and McLemore, p. 41). During the 1960's, various manufacturing sectors grew in employment, as did services. Frustratingly, however, blacks were more highly concentrated in declining industries (using old technology) than in higher-growth sectors during the 1960s (Marshall and Christian, p.200) - another result of job segregation. While the South overall closed part of the gap between average state and national wage levels, Texas was an exception (ibid., p.9). The surplus labor in rural areas was totally ill-prepared for high-wage jobs in urban markets - a failure of public policy (ibid., p.16).

National and regional trends were operating in Texas as well. The state was industrialized by 1960. Between 1940 and 1960, the number of blacks working in agriculture decreased from 32.3% to 8% of the black labor force. While the vast majority of rural Negroes lived at a subsistence level in 1960, incomes were higher in the growing cities. Domestic service still led as the major employer of urban blacks, though it was declining. Manufacturing accounted for 11% of black male employment,

though only 2.6% were in skilled positions. Construction employment grew from 2.8% in 1940 to 6.85 in 1950, but back to 6.2% of black males in 1960.

As Stiles relates, most of the black professional class listed in Table 2.1, part A consisted of teachers and clergy, serving overwhelmingly the black community. About 3200 men were described as self-employed, mostly in food service. While the craftsmen category includes the skilled trades, most of the rest of the jobs in the last two columns of sub-table A were menial. Most black women were employed in services, particularly domestic. White women vastly outnumbered blacks in skilled clerical positions (stenographers, etc.) (Stiles, pp.49-50). For women, two-thirds of all non-minorities were in the top two classes, compared to one-third of the Spanish-surnamed and one-eighth of the blacks. Browning and McLemore considered this to be *prima facie* evidence of employment discrimination in Texas (p.42).

TABLE 2.1: Aggregate Occupational Distribution of Texas Males; Texas Females in 1960.

A.	TOTAL	PROFESSIONAL	CRAFTS	OPERATIVES	SERVICE
Black	255,170	7,740	20,404	53,321	64,419
percentage		*(3.03)*	*(8.0)*	*(21.0)*	(25.2)

B.	PROFESSIONAL MANAGERIAL	CRAFTS	FARM AND OTHER LABORERS
Anglo	26.0%	20.5%	6.4%
Black	5.1%	8.0%	31.6%
Spanish- Surnamed	6.4%	15.9%	32.0%

C.	WOMEN PROFESSIONAL MANAGERIAL	CLERICAL SALES	CRAFTS	PRIVATE HOUSEHOLD	SERVICE
Anglo	21.2%	46.2%	1.1%	3.3%	12.8%
Black	8.6%	3.5%	0.4%	46.8%	25.0%
Spanish-Surnamed	8.1%	25.2%	1.0%	16.1%	16.1%

SOURCE: (A.) Stiles, 1966, p.46; (B. and C.) Browning and McLemore (p.41-2)

Moreover, broad categories on an industry basis hide occupational disparities. For instance, within an industry African Americans and Mexican Americans were more likely to be at the bottom of the occupational ladder. Consider that for Texas males, 7.6% of Anglos, 9.1% of Spanish-surnamed, and 6.2% of "non-whites" (i.e. blacks) were employed in the Texas construction industry in 1960. When correlated with the information in part B of Table 2.1, it should be simple to deduce that few minorities were engineers, architects, or supervisors, in 1960.

Access to public service jobs was minimal as well. In 1947, a study found that of the 7,000 people employed at the Texas State Highway Department, not one skilled clerical worker or engineer was black. Of the 600 employed at the central office in Austin, the only blacks were porters. The situation remained the same in 1962 in Austin where that office had 1389 workers. Blacks were concentrated in road maintenance and shop work. Of the 1,250 engineers employed, none were black. While blacks regularly applied for both clerical and engineering positions, "not outspoken discrimination" but rather "custom" or "tacit agreement" prevented the hiring of African Americans (Stiles, pp.63-64).

BUSINESS ENTERPRISE

A rare survey of black business enterprise was undertaken by Jacob Thomas Stewart for Houston in 1954. He interviewed 814 of the 1019 Negro-owned business enterprises in Houston; they included 428 retail businesses, 342 service establishments, 15 insurance companies and newspapers, and the rest miscellaneous (Stewart, p.15). Almost all were in the Negro-dominated areas of the city. In the retail category, 78% were either eating and drinking establishments, grocery stores, or gasoline stations. Almost 90% were proprietorships, as were service establishments. Of these, "the personal service umbrella" - including barbershops, caterers, funeral homes, shoe repair - accounted for 71% of the enterprises (ibid., pp.21-24 and pp.29-33). The basic pattern of black business ownership had remained unchanged for generations. While white-owned firms did business in predominantly black areas of Houston, "past" discrimination limited Negro businessmen to Negro areas (ibid., p.33). Most businesses did not employ more than one other employee.

Almost half of business owners did not complete secondary education. Less than 5% of retailers and less than 9% of service enterprise owners had any business training (ibid., p.73.). Most Negro businessmen had to rely upon their own savings for

start-up capital and had insufficient funds for operating expenses. These short-lived businesses had inferior access to capital, though Stewart claimed that Houston banks were "*beginning* to grant loans to Negro businessmen to improve their businesses" (p.131 - italics added). Since Stewart makes no mention whatsoever of black construction contractors, the reader may wonder if such owners existed.

Despite the asserted "beginnings" of financing opportunities to black business during the mid-1950s, the situation remained stark in 1969. While blacks comprised 19% and 20% of the respective populations of Dallas and Houston, they owned a mere 3% of the businesses. We should observe that it was rare to find a Negro-owned business in a city of less than 50,000 people throughout the South. Note also that most blacks then (and now) live in East Texas, with the heaviest concentrations in Dallas and Houston. Texas offered no exception to the Southern pattern of the utter absence of black-owned businesses in small towns (Slaton, 1969, p.194). With little business ownership in the largest cities as well, modern prospects for black business enterprise start with a decided disadvantage.

Minority construction contractors, however, did exist if not exactly thrive during the 1960s in Houston. Of all black-owned businesses in Houston in 1970, 10% of black-owned and 22% of Chicano-owned businesses were in construction, relative to a national average of 10% (Glover, 1977). The Census Bureau found in 1969 that there were 978 minority-owned construction firms - 45.3% of these black-owned - most of which were specialty contractors. There were only a few general minority contractors (ibid., p.160). Within minority groups, blacks were more often plumbers and masons, whereas more than a third of the Mexican-Americans were tile or carpentry contractors. Glover found that the problems facing minority contractors in the early 1970s in Houston were similar to those facing all Negro businessmen in the 1950s: a lack of even rudimentary business training, often inferior vocational training (if any), and financing problems -access to start up and operating capital - even at higher levels of business enterprise (p.165). Another problem was that of the identification of minority contractors - many if not most minority contractors in Houston had not been identified (p.170).

Two points are essential for understanding of history of minority construction contracting. First, the specialty contractors almost always had previously been craftsmen. Second, most successful black general contractors had learned their skills from historically black schools, especially Tuskegee Institute in Alabama. Now ponder

the finding of a comprehensive 1965 study of Negro apprenticeship in the South which ascertained that of the 610 apprentice craftsmen surveyed in 6 Texas cities, 6 Negroes were apprentice carpenters, 5 of them in Dallas. This rate of 0.98% for Texas was in line with the Southern average of 0.70%, while both were substantially below the already meager 1960 US average of 2.52% (Marshall and Briggs, 1967, p.31). Since apprenticeship was the main avenue to higher-paying skilled jobs in the trades, and even to managerial positions, the policy of racial exclusion followed in the South generally and Texas particularly was extremely deleterious to the appearance of minority craftsmen in the short run and contractors in the long run. While over 18% of the construction labor force in Houston was black in the 1960s, the vast majority labored in unskilled or semi-skilled positions (ibid., p.177). Couple this with the long history of racial segregation and the inferior quality of higher education for minorities (let alone vocational training) in Texas (to be discussed below), then it is no surprise that there was an *apparent* lack of "qualified" minority contractors.

An important caveat should be raised at this point. Texas is historically an "open-shop" or non-union state, particularly in highway construction. Union apprenticeship programs are then of limited importance for the state, as union strength is concentrated primarily in the Gulf Coast region. Instead, on-the-job training has occurred under unilateral programs of particular firms (i.e., not a joint labor-management program) or under the auspices of contractor associations. Minority craftsmen have always tended to work open shop due to longstanding union-minority antagonisms and because most black contractors were open shop. (Northrup, p.538). Moreover, much of the discussion above did not focus specifically on highway construction. In a later section, then, we will discuss both these training efforts and the relative openness of highway construction in Texas to minority participation, after we have dealt with the more systematic occupational data available since 1970.

It should be clear from the preceding discussion that African American workers and entrepreneurs have faced and continue to grapple with many obstacles to progress. Before we investigate one of the root causes of minority disadvantage - inferior schooling and education - we should consider the experience of Mexican Americans in Texas.

MEXICAN-AMERICANS TO 1940

While sharing similar experiences and obstacles as the African-American community, the Tejano community has had a distinct history. Originally a group living as a conquered people within the United States, Texas Mexicans have acquired some aspects of immigrant groups since the mass migration of the 1920s. Today they constitute nearly a quarter of the Texas population. Nonetheless, the historical bias against Mexicans predates the twentieth century and is worth investigating in order to acquire a proper perspective of the problems facing Mexican-Americans in Texas today.

David Montejano (1986) provides the best and most comprehensive account of the experience of the Texas Mexican community, especially of history prior to the 1960s. His analysis indicates that the established Mexican ranch families faced a long and inexorable ordeal of dispossession and expulsion (and nearly extinction) from their lands between 1836 and 1900. While Anglos had substantially driven Mexicans out of Central Texas by mid-century, South Texas below the Nueces River remained essentially Mexican (Ch. 3).

However, the transition from subsistence to market production, a trend happening across the United States - spelled the end of the traditional ranch society. The lack of railroads until nearly 1880 and geographical remoteness had more or less isolated the border and near border areas from the rest of the American market. However, though Anglo ranchers such as Richard King had become "Mexicanized" - they adapted to the *hacienda* system, employing and supporting permanent workforces - they came from a commercial-minded background as opposed to the semi-feudal culture of the *patrones*. While confiscatory raids and dubious legal proceedings were used by Anglos to drive Mexicans off of land, market forces worked decidedly against the traditional society. For instance, undercapitalized Mexican families did not have the means to dig wells on the semi-arid land and implement modern techniques of ranch management. Market fluctuations thus struck hard at the cash-poor Mexican landowners, as evidenced by the fact that Mexican land was usually sold at low prices during hard economic times while Anglo land sold at higher prices during boom times (Montejano, pp.61-68). Except for in a few border enclaves, such as Laredo and Starr County, the Mexican elite lost their status.

The final collapse, though, of the Mexican ranch society came in the first two decades of the twentieth century. The discovery of aquifers and the profitability of

vegetable farming -specifically onions - due to irrigation changed the economy of South Texas. Railroads penetrated deep South Texas in 1904. Telephones reached Dimmit County in 1908 (Taylor, 1930, p.302). Large landowners divided their land into plots and sold them to farmers from the Midwest - and the colonization of South Texas was on (ibid., p.107).

The needs of commercial farmers led to demands for higher tax rates to pay for county improvements - roads, etc. Higher taxes took a mounting toll on the remnants of ranch society - landowners displaced, the middle class run out of business, and the Mexican cowboy - the *vaquero* - as well as ranch workers reduced to a landless laborers.

Further, the newcomers - of which there were thousands - did not heed previous social customs of recognizing class differences among the Tejanos. To the infuriation of the old elite, all Tejanos were considered to be "Mexican," as opposed to Spanish, Indian, etc. The new farmers mixed well with neither the Mexican laborer nor the rancher (of whatever ethnicity). The clash of the two cultures erupted in the border troubles of 1915-1917, which Montejano characterizes as predominately a Texas Mexican insurrection. Hundreds if not thousands of Texas Mexicans were killed - mostly by Texas Rangers. The short term result of the troubles was the disruption of the Rio Grande Valley economy; the long term result of the culture conflict was segregation (Montejano, chapter 5).

Rural Mexicans faced two basic types of labor division: along the Gulf Coast, they tended to be tenants and sharecroppers on cotton lands, while in the "Winter Garden" vegetable raising region - primarily Dimmitt, Frio and other counties southwest of San Antonio - Mexicans were most often migrants, that is, temporary wage laborers. In the citrus growing regions of the Lower Valley, the labor force was mixed, with most tenants being Anglo (ibid., p.173).

Thus, South Texas was dependent upon Mexican labor. However, small Anglo farmers and townspeople were fearful of the influence of Mexicans in their society. The small farmer (as opposed to the absentee large landowner) tended to be a Southerner who transferred racial feelings toward Negroes to the Mexicans (Taylor, pp.345-355). Exacerbating social tension was the tremendous influx of immigrants from Mexico - over 680,000 came to Texas between 1900-1930; over 480,000 in the 1920s. The spread of cotton, sheep, and especially vegetable farming constituted the economic pull upon Mexican labor (ISB, p.12). Class differences divided Anglos on the question of immigration - growers and large businessmen felt cheap Mexican labor to

be indispensable to the economy, whereas small farmers (and tenants) and urban workers feared for their livelihoods. All agreed, however, to exclude Mexicans from industry and relegate them to the fields. Stiff resistance to school integration or even the provision of education followed (Montejano, Ch. 8; see Taylor, pp.372-387).

Like the blacks, then, the Mexican-American community was predominately agricultural until World War II, working at the behest of Anglo bosses (Montejano, p.220). Immigrants came to South Texas by the thousands, attracted by relatively high wages on Texas farms and ranches. The end of European immigration through restriction elevated Mexicans to primary status as cheap labor for Anglo farmers and capitalists, especially as blacks began to leave rural Texas for the cities and out-of-state following World War I (Shapiro, 1952, p.74). While perhaps pushed by the political instability within Mexico, most immigrants came primarily in search of augmenting their livelihoods. Often, however, farmer-dominated counties attempted to use labor controls of dubious legality to keep migrants - of whatever nativity - from traveling to Michigan and Ohio. They were only partially successful, as the beet farmer association of these states paid agents to ship out 10,000 Texas Mexicans annually in the 1920s (Montejano, p.209, Shapiro, p.100). While San Antonio received the most of the city-bound immigrants, smaller numbers migrated to cities such as Austin. A 1925 survey of the Mexican community in Austin found that most men were "happy" to work at the subsistence wage, mostly for streetcar and railway companies. While most men were considered to be mere laborers, there were single instances of a mason, a concrete worker and a truck driver among the work force. Two tailors were self-employed (Connell, 1925, p.23).

Even in larger cities such as San Antonio, Mexican workers before 1941 were primarily unskilled laborers who faced many of the same obstacle as did black workers: namely, exclusionary craft unions, job and school segregation. (Shapiro, p.221). There is some evidence of wage discrimination in the oil industry against blacks and Mexicans (Montejano, p.265). In fact, the petroleum industry - the leading growth sector of the Texas economy from 1920 to WWII, employed less than 3% of Mexican Americans in 1945, relegating them to mainly unskilled positions (Kibbe, 1946, Ch. 10). A survey performed in 1927 by Texas A&M (cited by Montejano) of San Antonio showed that Mexicans were excluded from skilled occupations both as a result of management policy and segregationist unions. In a city probably half Mexican, Mexicans made up less than 6% of the city's carpenters. They had a sizable presence in

only 3 of 28 skilled categories -namely iron workers, blacksmiths, and automotive painting. Notice that the first two crafts were in declining industries. Mexicans were barred completely from retail sales, the commercial trades of bookkeeping, stenography, et cetera, and from engine repair. In municipal employment Mexicans could only obtain common laborer positions (Montejano, pp.267-268). Upward mobility at this time was indeed rare.

MEXICAN AMERICANS FROM 1940

The industrialization and urbanization trends affecting Texas and stimulated by World War II made their mark upon the Mexican-American community as well. The War attracted thousands of Mexicans to Texas cities. Though the War temporarily lifted industrial segregation restrictions, after the war segregation was back in full force: policies of the Texas Good Neighbor Commission and of the federal government met with stiff resistance from Anglo employees, provoking the formation of the American G.I. Forum for the promotion of civil rights for Texas Mexicans.

The mounting frustration felt by Mexican Americans is made evident by a survey of Spanish-surnamed people in Austin. Austin in 1948 contained 140,000 people, of which nearly 10% were of Mexican descent and 13% were black. As Table 2.2 below indicates, no pronounced differences of broad occupations existed between Negroes and Mexicans. Additionally, Crain found that almost 96% of black women worked within domestic service, as did over a third of Mexican women and 13% of Anglo women. When we compare Tables 5 and 6, we see evidence that supports the notion that the first generation of minority workers following the Second World War experienced minimal progress.

TABLE 2.2: Occupational Distribution, Austin, 1948.

CATEGORY *(percentages)*	**ANGLO**	**BLACK**	**SPANISH SURNAMED**
Professional Managerial	9.9	0.9	1.8
Clerical/Sales	26.8	0.9	4.3
Service Domestic	7.6	42.8	18.3
Skilled	17.8	2.0	5.7
Semi-skilled	18.3	14.6	16.4
Unskilled	9.9	33.5	41.0

SOURCE: Crain, 1948, p.26

Moreover, nothing from Austin in 1948 contradicts Browning and McLemore's conclusion for Texas in 1960, namely, that the disparities are small between minorities but large between Anglos and minorities. Combining the two tables, we see that occupational progress for minorities between 1940 and 1960 seems to have been real but slow.

Obstacles facing Mexican workers at the State Employment Service included referral outside of stated occupation - that is, Mexicans (and blacks) were referred to employers as common laborers even if they had a skill - denigration of wartime occupational experience, and overt discrimination. For instance, Crain documents the case of a Mexican worker who, though born on a farm, had worked several years in the military as a welder in a shipyard, and had even opened up a welding shop after the War, but could not make a go of it. The Employment Service interviewer classified the man as a "farm hand" (Crain, p.50). The Employment Service would call prospective employers to ascertain whether the manager would accept Mexicans. Few employers seemed to be willing to hire Texas Mexican sales and clerical workers - adverse customer and employee reaction were usually offered as excuses. Minority craftsmen also face the problem that since most craftsmen were hired out of union halls, instead of the Employment Service, minorities were frozen out of most jobs. Overall, Anglos had a much higher chance of being referred to jobs within their trade category (Crain, pp.54-56).

TABLE 2.3: Occupational distributions, Spanish-named Population of Texas, 1950-1980

Category	1950 (%)	1970 (%)	1980 (%)
Professional	2.2	7.6	8.0
Proprietor/Managerial	8.7	5.8	5.4
Clerical/Sales	10.2	19.3	22.4
Skilled	10.2	15.0	17.1
Semi-skilled	17.7	21.5	18.2
Unskilled	27.8	25.0	25.2
Farm Laborer	23.2	5.8	3.8

SOURCE: Montejano, Table 17, p.298

Despite these obstacles and seeming static patterns of employment, fundamental changes have occurred in the employment patterns of Texas Mexicans, just as with African Americans, in the past several decades, especially during the 1960s. Consider data compiled by Montejano from Census publications in Table 2.3. The dramatic drop in agricultural workers comes as no surprise given the changes in the regional economy described in previous sections above. There has been over a 50% increase in the number of people described as craftsmen, for example, between 1950 and 1970. There was over a 300% increase in the number of Mexican American professionals and technicians. However, there was a nearly a 40% decline in the number of proprietor/managers in the same period.

Several words of caution are in order, however. First, we should heed Browning and McLemore's admonition in 1964 that:

> percentage gains on low bases often are deceptively impressive and must be evaluated in conjunction with appropriate absolute increases (p.63).

Second, intergenerational occupational mobility in the 1960s was not matched by income gains. Consider the argument of Fred Romero (1979). While in Texas there were 25% more third generation Spanish-surnamed males in white collar positions than second generation males, the median income of the third generation had increased by only 10.6% over that of their elders. Moreover, the median income of the third generation male remained at 61% of the Anglo male's - indicating that the Mexican Americans were taking less well-paid jobs in the white collar occupations. In other words, the 1960s were a "decade of interoccupational advance but intraoccupational ambiguity," further clouded by large gains in education levels not translating into proportional advances within and between occupations (Romero, pp.54-59). Third, the pace with which Mexican Americans closed the occupational (and income) gaps between 1970 and 1980 slowed considerably, as we can see from Table 2.3. Since only preliminary data are in from the 1990 census on race and ethnic-based occupational distributions, the following comment is provisional: Relative and absolute advances over the last 20 years for minority groups seem to have stagnated. This proposition can be tested with forthcoming data, and will be discussed in the next section.

At this time, however, we should observe that a study directed by Chapa and Cardenas (1991) of businesses in San Antonio's predominately Mexican American districts found that 81% of Mexican-owned businesses were concentrated in the low-profit sectors of retail, repair, personal service, and entertainment (p.4). Three-fourths of Mexican American-owned businesses grossed under $100,000 in revenues in 1990, whereas over two-thirds of Anglo-owned businesses grossed over the same amount. Conditions facing businesses in the heavily Mexican American West Side of San Antonio are eerily similar to the black businesses of Houston in the 1950s: local residents provided most of the customers - few businesses had links with the rest of the San Antonio economy; nearly three-fifths of these businesses relied on personal resources for start-up capital, whereas less than 10% received start-up loans from commercial institutions; most did not make use of technical assistance programs offered by local educational institutions and business associations (to which most did not belong) (*ibid*, p.11).

Attempts by the City of San Antonio to augment the meager 2% of 1987 city contract money awarded to minority and women owned firms have met with mixed success. While goals seem to have been met or surpassed, a 1989 guideline revision discovered that two-thirds of the previously certified firms were too large to be considered disadvantaged or were not in fact controlled by minorities. Moreover, the capacity of firms in the West Side remained unknown as most businesses there did not take part in the program (*ibid.*, ch.2). Finally, the analysis of lending data to areas of San Antonio with high concentrations of minorities does not contradict the prevalence of redlining by financial institutions (*ibid.*,p.71).

Advances up the occupational ladder have occurred for African and Mexican Americans in Texas, but only in the last 40 years. These groups are still woefully underrepresented at the higher ends of occupational distributions and disproportionately concentrated at the lower ends. For Mexican Americans, Texas was known as a land of low wages and limited opportunity, relative even among the other states of the Southwest, particularly California, at least until 1970 (Romero, p.37). Recall too that for both groups official poverty rates have fluctuated around 30% and relative unemployment has worsened (see However, the above data surveyed up to this point have been general. Since 1970 the Equal Employment Opportunity Commission has compiled extensive occupational data by major industrial category. Not only will these data allow us to gain further insight into the

Table 1.3

employment status of minorities and women in Texas, but they will permit a narrow focus on the construction industry. Thus, before we go on to consider the questions of education and training, we'll analyze some aspects of the construction industry and the opportunities for women and minorities within it in the next part of the overview.

PART THREE: POST-1970 OCCUPATIONAL DATA AND THE CONSTRUCTION INDUSTRY

In this part of the paper we analyze the occupational data sets drawn from the 1970, 1980, and 1990 editions of *Job Patterns for Minorities and Women in Private Industry*, published by the EEOC. These data sets allow us to discover employment trends across and within industrial categories. For our purposes we will concentrate on the structure of the construction data, comparing the results with an all-industry average. Additionally, published reports of the Texas Advisory Committee to the US Civil Rights Commission are consulted, giving us a portrait of the state in 1977.

The purpose of analyzing employment data is simple. Subcontractors have historically been craftsmen who have gone into business, while general contractors (especially since 1950) first obtained engineering degrees, complemented with some amount of business management courses, before entering the field (Levitt and Leighton, 1977, pp.268-269). Thus knowing the levels and trends of minority group employment in the skilled crafts, managerial, and professional occupations furnishes a rough idea of the future availability of minority and women owned firms, especially since white craftsmen have rarely worked for minority contractors. An initial analysis of selected data from the survey of TxDOT construction and maintenance contractors, conducted during the summer of 1993, serves to complement the analysis of EEOC data. The portrait we draw here will therefore add salience and pertinence to the discussion of both training and higher education in Part Four.

THE EEOC DATA

Since 1970 the Equal Employment Opportunity Commission has collected data regarding employment patterns in the private sector. Firms covered include only those with over 100 employees. While a vast amount of firms are left out, the large firms share of employment is quite disproportionate. For other states, the construction data would be skewed toward union firms. In Texas, however, construction is mainly open shop, so no significant problems peculiar to unions exist in these data. Further, large firms account for 30% to 40% of employment (Northrup, p.549). Our task is made still easier by the fact that, though the construction data include Standard Industrial Classification Codes (SIC) 15 (Buildings), 16 (Highway and Heavy), and 17 (specialty),

SIC 16 firms will predominate given the prevalence of large firms in this sector relative to the other construction fields (Northrup, CH. 1). It was noted earlier that road construction firms make up about half of the SIC 16 firms in Texas. The representativeness of this data set therefore seems assured.

The coverage of the EEOC survey has varied over the years. In 1970, the overall number of establishments surveyed was 7512, whereas for SIC codes 15-17, 294 firms filled out questionnaires. In 1980, 12,613 firms overall and 310 firms in construction supplied the data, while in 1990 the respective numbers were 10,178 and 190. Employment overall fluctuates around 2,000,000 persons overall and between 40,000-50,000 in construction.

Defining terms will facilitate dealing with this large data set. The *occupational distribution* for a group is the number or percentage of group members within occupational categories, measured across all group members. *Participation rates* measure the share of the group within an occupational category, relative to other groups. Thus, for instance, an occupational distribution tells us, say, given the number of Hispanics in Construction, what percentage of them are managers and how many of them are laborers, while participation rates show how large the Hispanic share is relative to the total, which is comprised of Anglos, African Americans, Asians, and Native Americans. Also, *relative participation rates* compare the share of a group within construction relative to the all-industry average. Thus we can analyze the relative position and performance of the construction industry in employment matters. Finally, what this author calls *occupational disparity rates* shows the over- or under-representation of a group within an occupational category, given their presence in the industry.

Obviously, construction exhibits a heavy skew towards manual occupations, reflecting the relative labor-intensiveness of the industry. Across all industries, we see an marked progression over time toward white collar jobs and away from manual occupations. In construction, however, only the highest and lowest paid white collar jobs see real increases: managers and clerical workers. Additionally, while the skilled and unskilled occupations have experienced declines, the semi-skilled category has grown larger.

TABLE 3.1: Occupational Distribution, All Employees, All Industries and Construction, 1970-1990 (Percentages)

	All Industry			*Construction*		
YEAR:	1970	1980	1990	1970	1980	1990
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0
Officials and Managers	9.0	11.5	11.5	8.0	9.8	10.6
Professionals	8.6	9.1	13.9	5.2	4.8	4.8
Technical	5.2	5.9	6.7	4.3	2.9	3.5
Sales	8.8	10.1	11.7	0.6	1.1	1.6
Clerical	17.1	15.9	16.3	5.8	6.7	7.7
Crafts	15.5	13.1	10.3	35.3	33.8	30.7
Operative	20.7	18.0	13.2	18.5	21.5	25.8
Laborer	8.3	7.7	6.5	20.5	18.2	14.2
Service	6.7	8.9	9.8	1.7	1.2	1.2

SOURCE: EEOC, Job Patterns for Minorities and Women in Private Industry (JPMWPI), 1970-1990

For comparison purposes , two tables appear in the Appendix of occupational distributions and participation rates for groups, derived from data in recently distributed *1990 Census of Population and Housing* EEO file. These tables loosely compare to all-industry averages. The data source for the census is the set of returns from individuals, rather than employment forms submitted to the EEOC. Thus, generating a table for "construction" does not seem feasible. Generally, the distributions are somewhat more favorable to minorities than are the EEOC data. However, whether that discrepancy is due to hiring practices of large firms, or more favorable self-reporting practices of individuals returning census forms, can not be determined at this point. Moreover, past tables form previous censuses would need to be constructed to see in similar patterns occur across data sets.

With the overall distributions of occupations in mind we can proceed to analyzing characteristics of and differences between groups, in both absolute and relative terms. The tables that follow will present the occupational distributions and participation rates for each of the groups, while graphs will show the relative participation rates (inter-industry differences) and the occupational disparities (intra-

industry differences). These data do not permit an analysis of intra-occupational differences among groups, however.

For expositional purposes, we will differentiate groups primarily along racial and ethnic lines; the only female group analyzed will be Anglo women. This categorization is due to the US Department of Transportation's decision to consider minority women as minorities, not as women, for the purposes of Disadvantaged Business Enterprise (DBE) programs. There is some justification for just the opposite in the literature of "dissimilarity indexes," indexes which sum the percentage differences among the same categories across distributions for two groups. Some have found that though there are differences among women along ethnic/racial lines, these differences are not as severe as those between males and females (US Commission on Civil Rights, 1978, p.42-44). This proposition, of course, could be tested on the basis of these data. However, tables in the Appendix amply show that minority women tend to follow similar patterns as do Anglo women, rather than that of their male counterpart. Nonetheless, our categorization scheme will follow that of the Department of Transportation. Of course, mitigating the harm of this procedure, albeit in a negative fashion, is the fact that all minority females make up less than 3% of the construction workforce.

ANGLO MEN

Table 3.2 below shows the figures for Anglo males. The most important trends to notice are declining participation rates in the high-paying jobs and the skilled crafts. The share of white males in administrative positions fell by 14%, and their share of professionals by nearly 20%. The Anglo male proportion of craftspersons also fell by 18% whereas the shares in other manual occupations remained steady. Notice, however, that an Anglo male was more 60% more likely to be an operative in 1990 than in 1970, and almost 40% more likely to be a manager. We can speculate that a certain amount of de-skilling has taken place, resulting in less craftsmen and more semi-skilled operatives, both absolutely and relatively, than before.

TABLE 3.2: Occupational Distribution and Participation Rates in Texas Construction, 1970-1990, Anglo* Males (*Percentages*)

	Occupational Distribution			Participation Rates		
	1970	1980	1990	1970	1980	1990
TOTAL	100.0	100.0	100.0	63.2	57.1	55.6
Officials and Managers	11.1	14.6	15.4	94.0	84.8	80.8
Professionals	7.8	6.9	6.6	95.6	82.5	76.6
Technicical	6.0	3.9	4.7	87.4	77.9	77.7
Sales	0.8	1.4	1.8	89.1	71.7	62.6
Clerical	2.6	1.9	1.9	27.5	16.3	13.7
Crafts	44.3	41.8	36.3	79.2	70.5	65.7
Operative	15.4	20.2	24.7	52.7	53.4	53.5
Laborer	10.3	8.5	7.9	31.6	26.5	30.8
Service	1.0	0.9	0.5	39.0	42.3	23.8

*"Anglo" = non-Hispanic white
SOURCE: EEOC, 1970-1990, *JPMWPI.*

Nonetheless, Anglo males still account for 8 out of 10 managers, 3 of 4 professionals, and nearly 2 of 3 craftspersons. Further insight is gained from a look at the relative position of white males within and without the industry. A glance at Figures 3.1 and 3.2 demonstrate that though absolute participation rates have fallen for Anglo males, the construction industry has increasingly become more relatively dominated by white males since 1970. This pattern holds both overall and for all higher-paying non-manual occupations. In other words, white male participation has dropped more quickly across all industries than in construction. For example, the construction professional is 50% more likely to be an Anglo male than across all industries combined. White males have maintained relative parity between their numbers in the crafts in construction and on average.

FIGURE 3.1: Relative Construction Participation Rates, 1970–1990, Anglo Men, High-Paying and/or White Collar

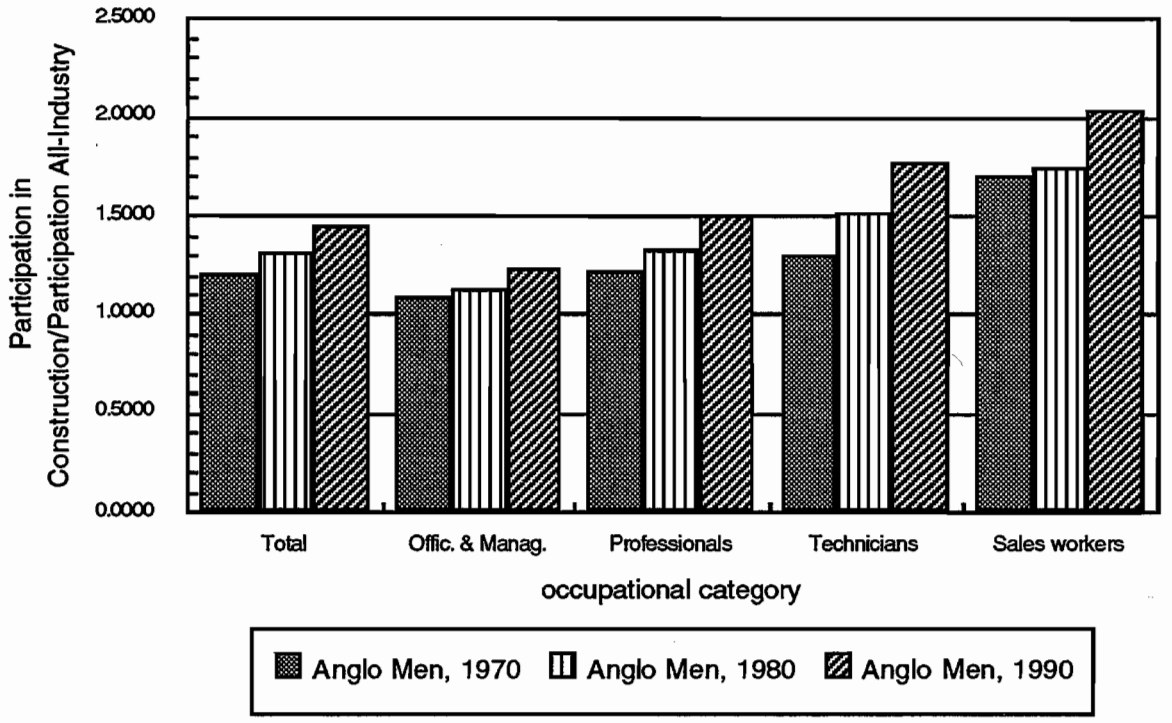
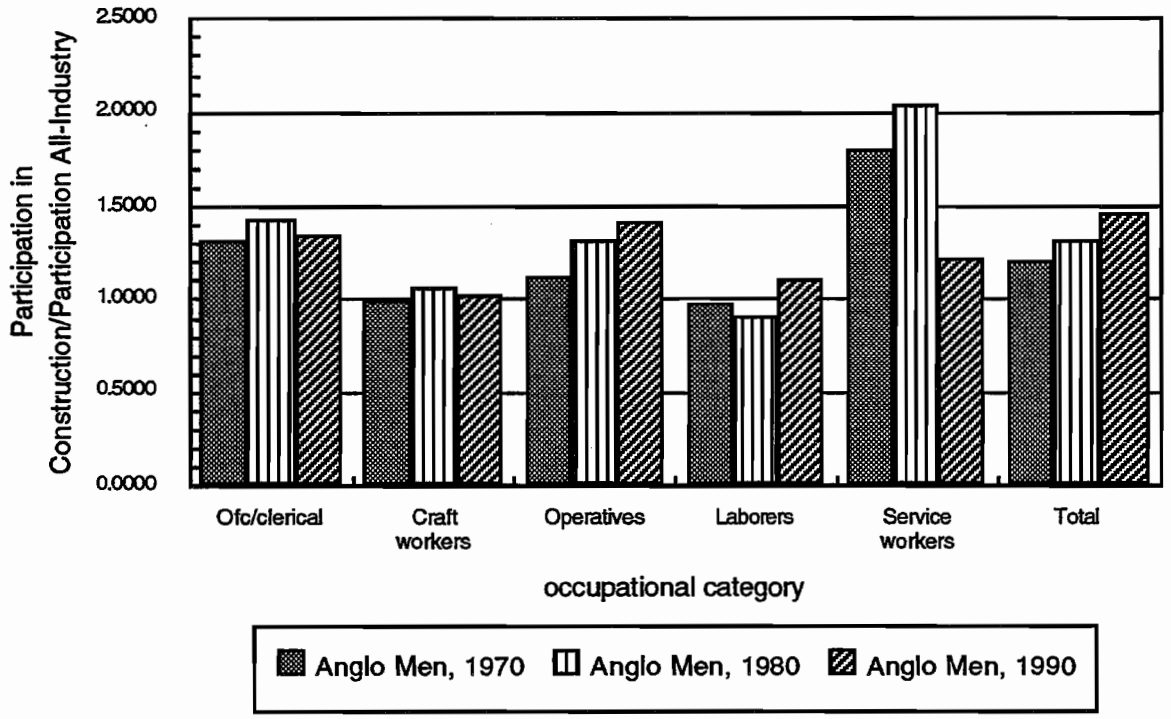
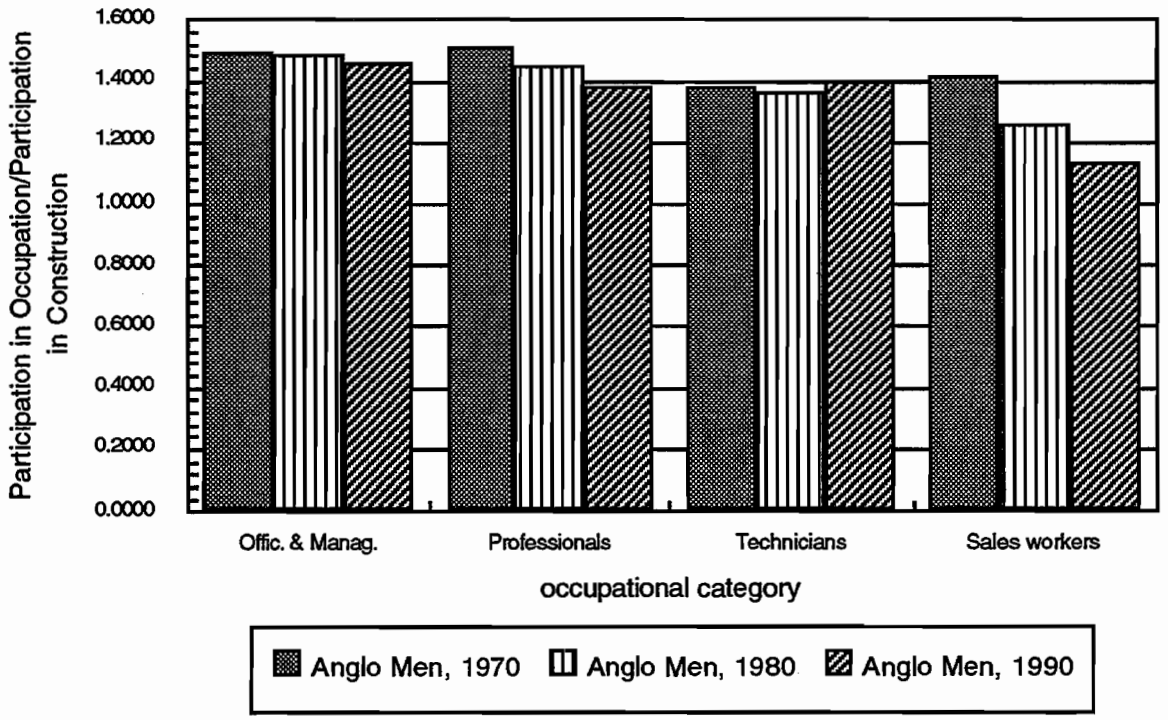


FIGURE 3.2: Relative Construction Participation Rates, 1970–1990, Anglo Men, Low-Paying and/or Blue Collar



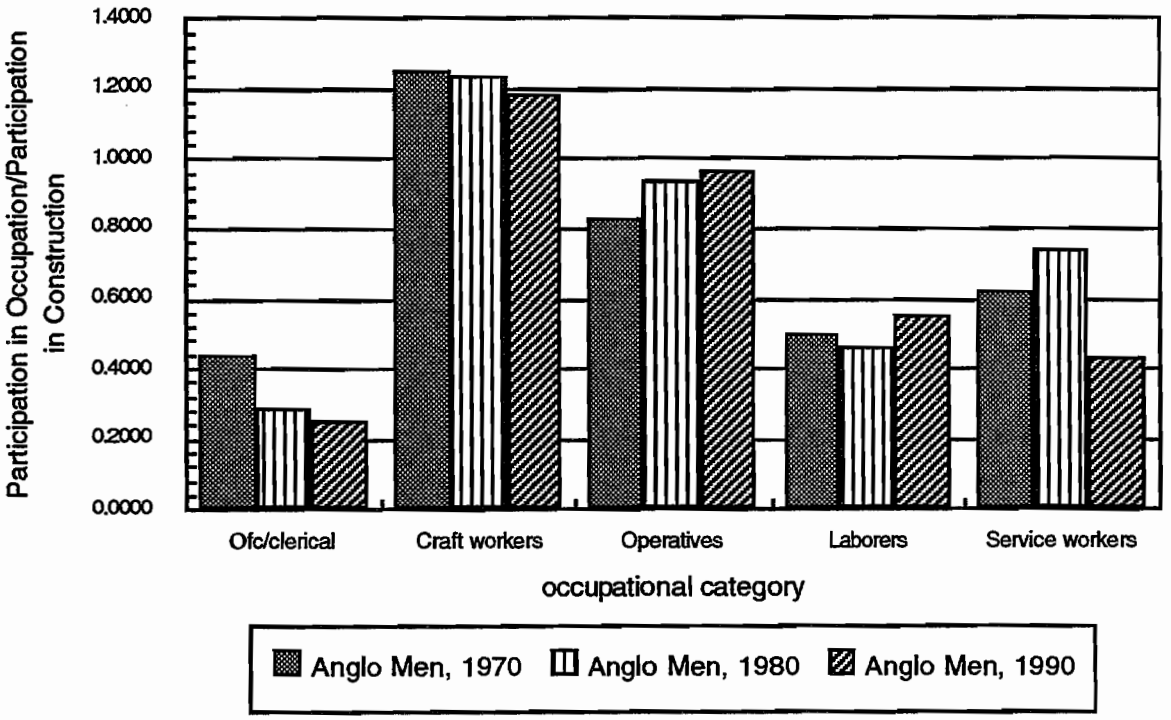
Figures 3.3 and 3.4 below display the position of Anglo males within the construction industry. In every higher-paying occupation, including the crafts, white men are overrepresented relative to their participation in the industry. In 1990, this overrepresentation ranged from 45% in the managerial category to 13% in sales, and 18% in the crafts. Moreover, though the statistical significance of the declines (in some categories) is open to question at this time, change has been slight as the relative position of white men within large firms in construction has remained solid since 1970. To the extent that contractors, and general contractors in particular, are former employees of construction firms, then Anglo males still enjoy a spectacular advantage in the field.

FIGURE 3.3: Construction Occupational Disparity Rates, 1970–1990, Anglo Men, High-Paying and/or White Collar



NOTE: In this graph, and several others appearing below in this section, the term Occupational Disparity rate = participation rate in occupational category in construction industry / overall participation rate in construction).

FIGURE 3.4: Construction Occupational Disparity Rates, 1970–1990, Anglo Men, Low-Paying and/or Blue Collar



ANGLO WOMEN

Women in general suffer from the longstanding perception that construction is "man's work" and the reality that employment in the industry is male-dominated. The lack of role models in the field and discouraging attitudes upon the part of potential employers have long been mentioned as obstacles facing women seeking entry (Barrie, 1977, p.391). In 1970, males comprised 94.3% of total employees in the EEOC data; by 1990, this share had barely slipped to 88.9%. Of the near doubling of the female participation rate in construction, Anglo women constituted over 60% of the increase, most of which in turn occurred during the 1970s.

One factor contributing to the growth of the female construction labor force in general, and that of Anglo women in particular, is that women comprise the fastest growing group of engineering students (Barrie). We would then expect to see increasing numbers of professional women. Given the problems facing minorities in

education (to be discussed in Part Four), we further expect that white females would be the prime beneficiary of this growth. Indeed, across all industries Anglo females are found more frequently in professional occupations than they are in the overall workforce (see Appendix). On the other hand, the negligible percentage of female craftspeople of any race or ethnic group severely limits entry into business ownership through the ranks. Herbert Northrup, for one, was extremely pessimistic in 1984 (p.569) of the prospective fortunes of women in construction. Audrey Barrie, cited above, called for employers to recruit women form their clerical staffs and encourage them to join the organization Women in Construction (WIC) to seek relevant training. While we'll leave issues of training and education to Part Four, at this time we observe that the data support these arguments and conclusions.

TABLE 3.3: Occupational Distribution and Participation Rates in Texas Construction, 1970-1990, Anglo Females (*Percentages*)

	Occupational Distribution			Participation Rates		
YEAR	1970	1980	1990	1970	1980	1990
TOTAL	100.0	100.0	100.0	5.2	7.2	8.6
Officials and Managers	2.8	4.9	8.1	1.8	3.9	6.6
Professionals	1.2	3.9	8.2	1.3	6.4	14.6
Technical	3.6	3.3	2.7	4.4	8.3	6.7
Sales	0.7	2.9	5.1	6.5	20.2	28.1
Clerical	74.4	66.1	62.6	65.2	70.9	69.7
Crafts	0.7	3.7	2.5	0.1	0.8	0.7
Operative	2.1	7.3	6.9	0.6	2.4	2.3
Laborer	10.3	4.9	3.0	0.5	1.9	1.8
Service	1.0	1.9	0.8	39.8	10.9	5.5

SOURCE: EEOC *JPMWPI*, 1970-1990

The most obvious characteristic of Anglo women in construction seen in Table 3.3 is their continued preponderance in clerical occupations. While Anglo women were somewhat less likely in 1990 to be secretaries and the like than they were in 1970, they continued to hold nearly 70% of these positions. In fact, Figure 3.8 leaves off the clerical category since Anglo women were disproportionately concentrated as office workers by a factor of eight, relative to their numbers in the industry, a concentration

so extreme that the rest of the graph would have been unreadable. Participation in the crafts, while increasing by a factor of seven, is still nearly nil. Coming up through the ranks for women is no more viable now than it ever has been. For most of the occupations, gains are modest.

On the other hand, solid gains in the managerial ranks and spectacular advances in the professional occupations reflect the considerable increase in the number of female engineering students over the years (and business and law, for that matter). Anglo females increase their participation in the professional category by a factor of four in the 1970s and by 128% in the 1980s, while managers saw 114% more Anglo females in the seventies and 69% more in the eighties. The disproportionate share of professional Anglo women - 70% relative to participation in construction (see Figure 3.7) - bodes well for future entrepreneurial opportunities.

A sobering picture, however, illustrated by Figures 3.5 and 3.6, is provided by relative participation rates. Despite the aforementioned gains in managerial and professional positions, Anglo women are doing far worse in the construction industry than on average. In every category other than clerical, Anglo women in 1990 are still vastly underrepresented relative to their participation in other industries. For example, Anglo females are still almost 88% less likely to be employed as craftspersons in construction, the industry the most craft-intensive - than across all industries. Even in the most promising occupation, professionals, Anglo women lag in construction by 56% their numbers in all industries. With over 60% of Anglo females still occupying clerical positions, it seems reasonable to conclude that Anglo females face their longest, hardest road to equal opportunity in the construction industry.

FIGURE 3.5: Relative Construction Participation Rates, 1970–1990, Anglo Women, High-Paying and/or White Collar

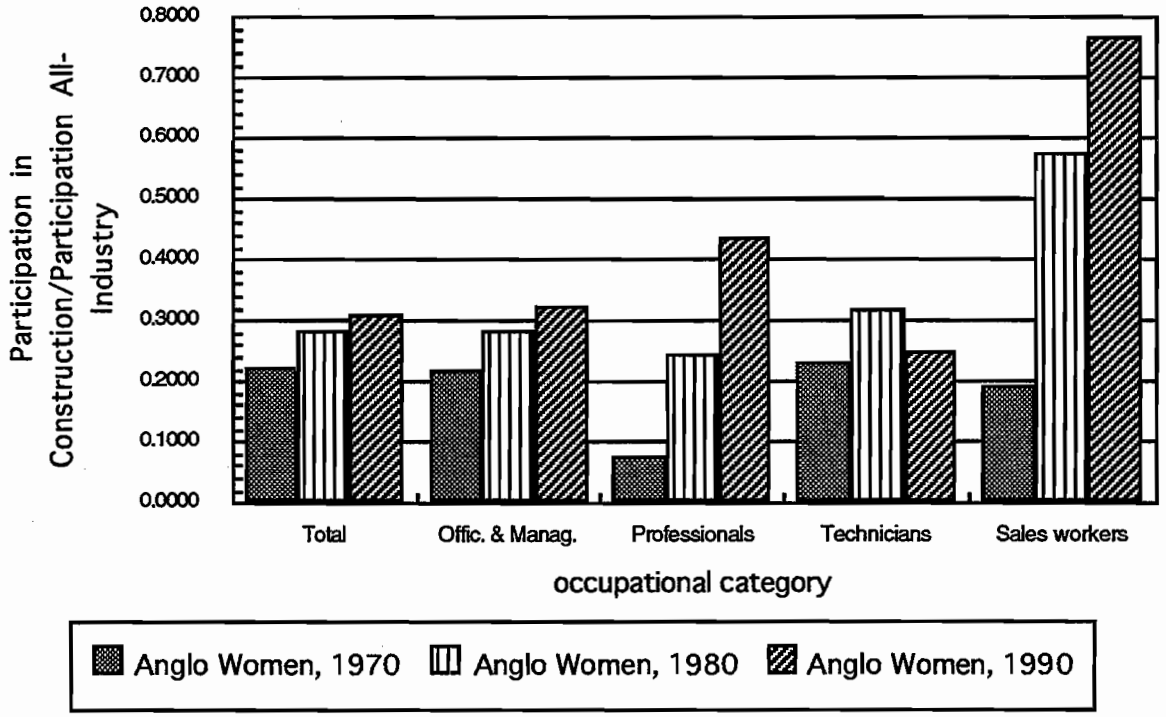


FIGURE 3.6: Relative Construction Participation Rates, 1970–1990, Anglo Women, Low-Paying and/or Blue Collar

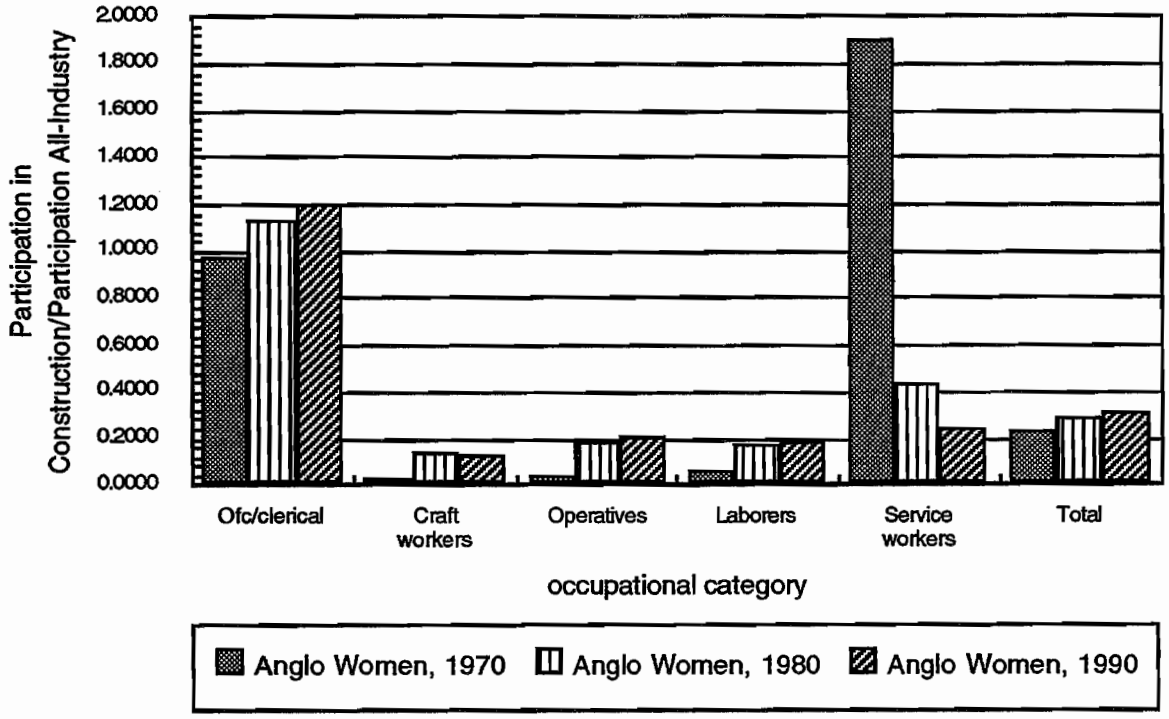


FIGURE 3.7: Construction Occupational Disparity Rates, 1970–1990, Anglo Women, High-Paying and/or White Collar

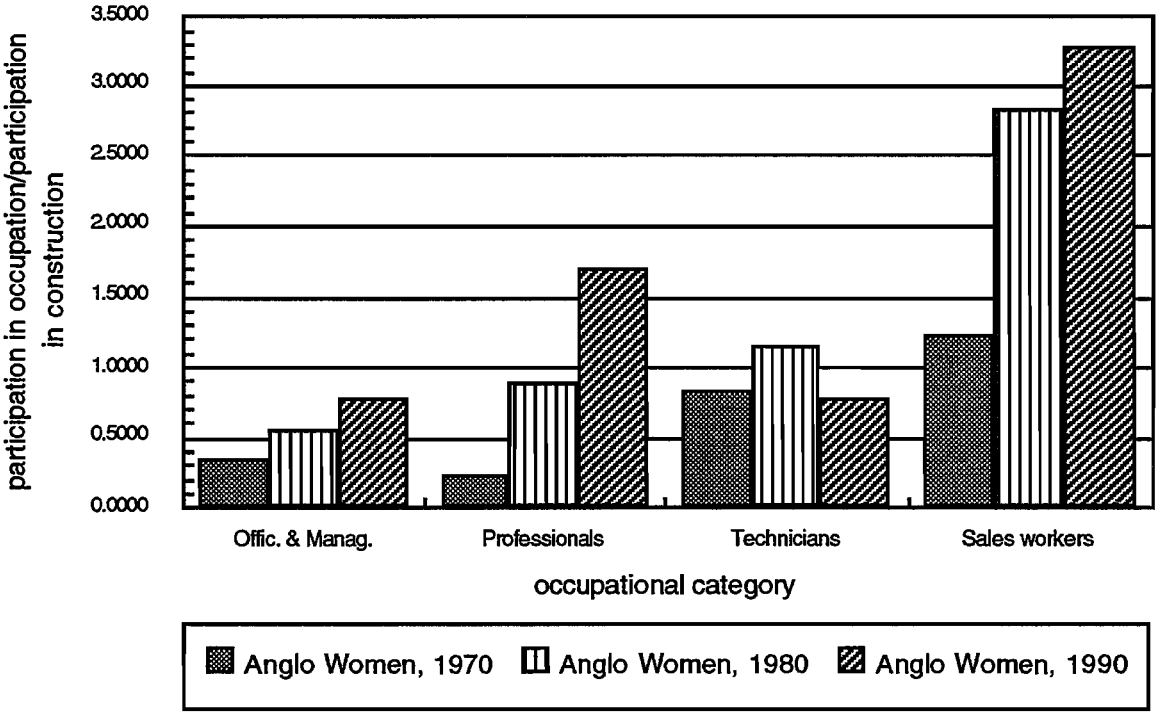
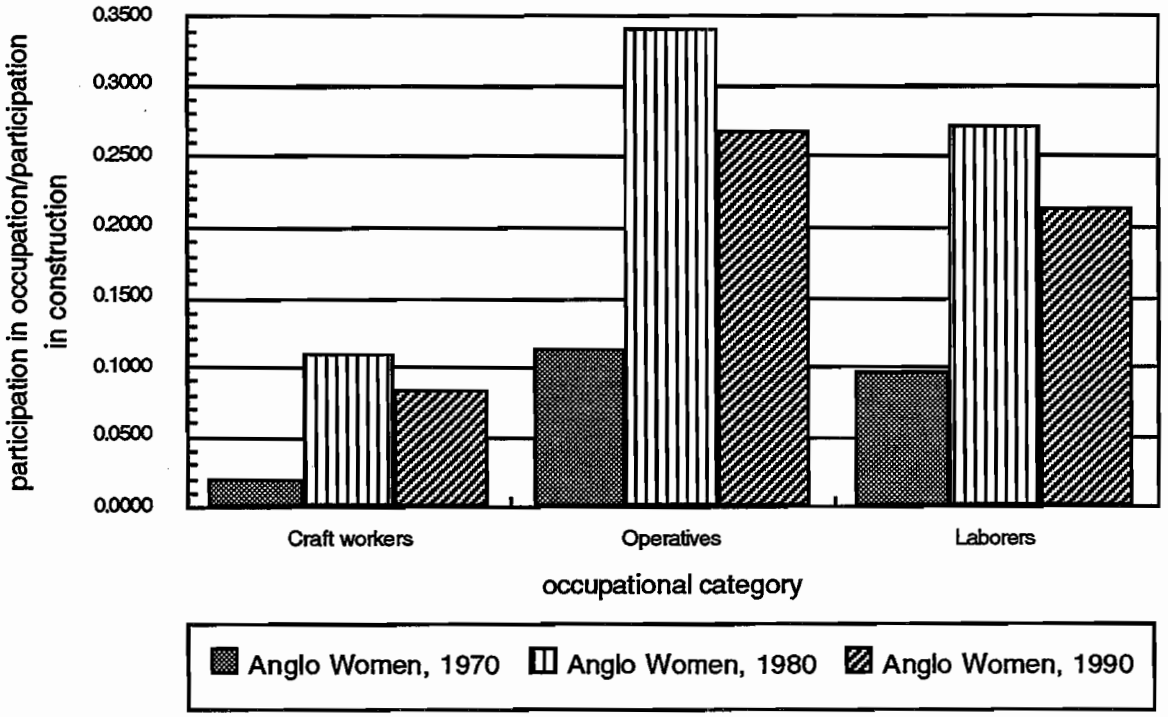


FIGURE 3.8: Construction Occupational Disparity Rates, 1970–1990, Anglo Women, Low-Paying and/or Blue Collar



HISPANICS

We are now set to consider racial and ethnic minorities, groups that have historically faced a long history of multi-faceted discrimination. As noted earlier, Hispanics, who in Texas are primarily - over 90% - Mexican American, have been concentrated in the lower echelons of the income, educational, and occupational distributions of the state and throughout the Southwest. Our task here is to examine the extent to which Hispanics have gained new opportunities, both in construction and by implication across industries.

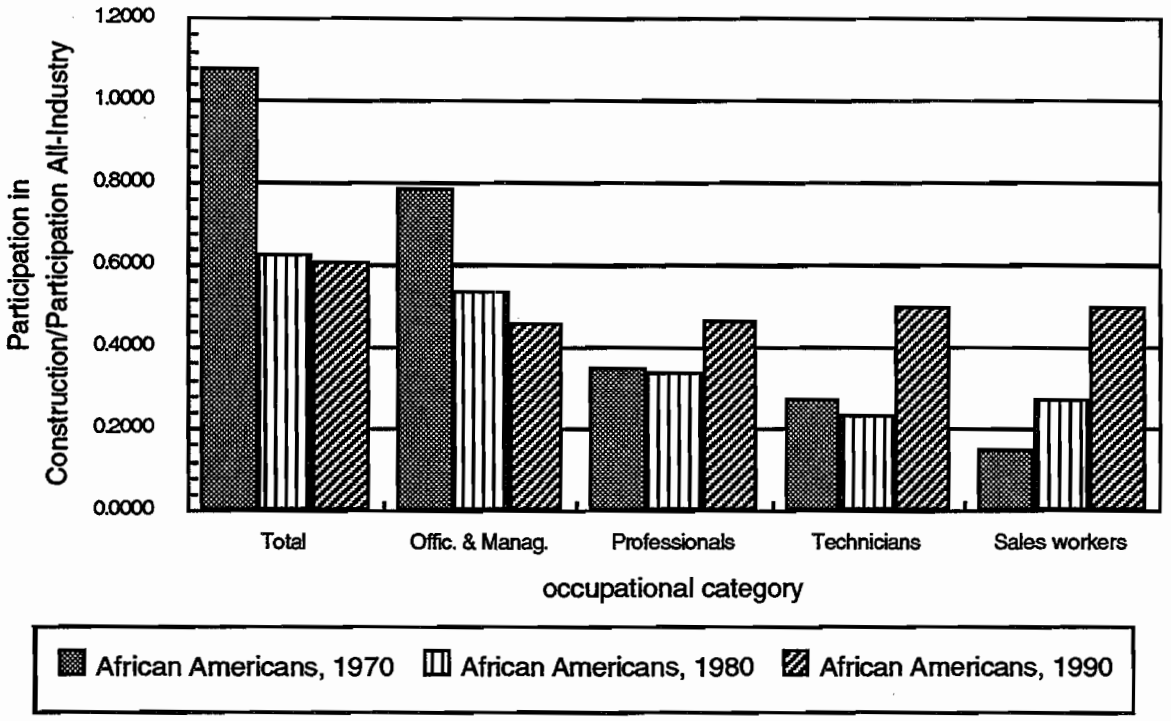
TABLE 3.4: Occupational Distributions and Participation Rates in Texas Construction, 1970-1990, Hispanics (*Percentages*)

	Occupational Distribution			Participation Rates		
YEAR	1970	1980	1990	1970	1980	1990
TOTAL	100.0	100.0	100.0	18.9	26.5	26.8
Officials and Managers	1.3	3.0	3.7	3.0	8.2	9.5
Professionals	0.7	0.9	0.6	2.6	4.8	3.7
Technical	1.5	0.9	1.0	6.5	8.8	7.5
Sales	0.1	0.2	0.2	3.7	5.4	3.3
Clerical	1.6	1.7	2.9	5.1	6.6	9.9
Crafts	25.3	26.8	30.7	13.5	20.9	26.7
Operative	26.6	26.4	30.9	27.2	32.1	32.1
Laborer	42.3	39.1	28.0	38.9	56.1	52.9
Service	0.6	1.1	2.0	7.1	14.1	43.3

SOURCE: EEOC, 1970-1990, *JPMWPI*

Even a cursory reading of Table 3.4 can not mistake the heavy concentration of Hispanics in the manual occupations within construction. In the 1970s, Hispanics became the majority within the laborer category in which they have always been disproportionately concentrated. Between occupations however, there seems to have been some upward mobility, from the ranks of the unskilled to those of semi-skilled and the crafts, between 1970 and 1990. In the crafts especially, Hispanics have shown steady progress over the last two decades, nearly doubling their participation and reaching parity with their presence within the industry.

FIGURE 3.9: Relative Construction Participation Rates, 1970–1990, Hispanics, High-Paying and/or White Collar



Indeed, Figure 3.10 demonstrates that the construction industry has historically been relatively open to Hispanic workers in the blue-collar occupations, perhaps, as Herbert Northrup would argue (p.538), a result of the open shop arrangements in the industry.

Gains in the high paying occupations pale in comparison since nearly 90% of Hispanics work at manual occupations. The substantial increase in Hispanic managers - from 3.0% in 1970 to 9.5% in 1990 - mainly occurred in the 1970s. Other high paying categories have seen retrenchment in the eighties, with participation in the important professional category falling to less than 4% of this workforce. Figure 3.9 shows that Hispanics face relatively declining opportunities in all of the high paying white collar occupations. The preponderance of evidence indicates that the more prestigious positions in construction remain closed despite increasing overall numbers. Hispanics

are still 64% underrepresented as managers within construction (Figure 3.11). Once again, Hispanics in the 1980s became less likely to be professionals and technicians.

FIGURE 3.10: Relative Construction Participation Rates, 1970–1990, Hispanics, Low-Paying and/or Blue Collar

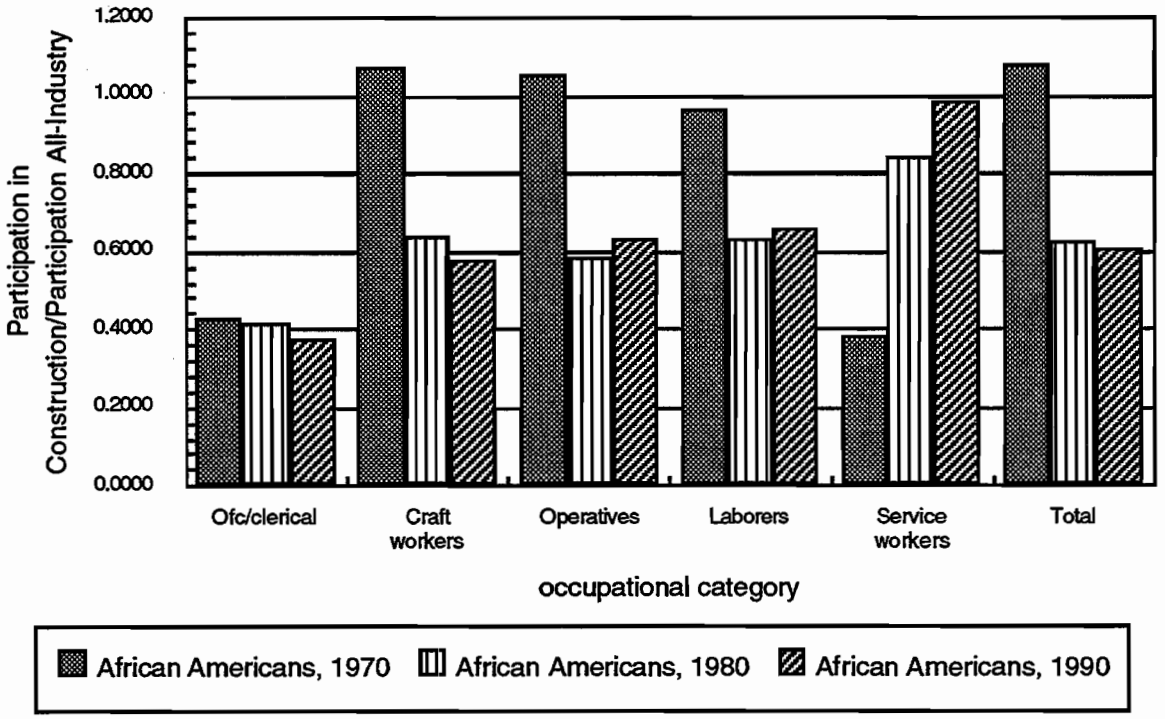


FIGURE 3.11: Construction Occupational Disparity Rates, 1970–1990, Hispanics, High-Paying and/or White Collar

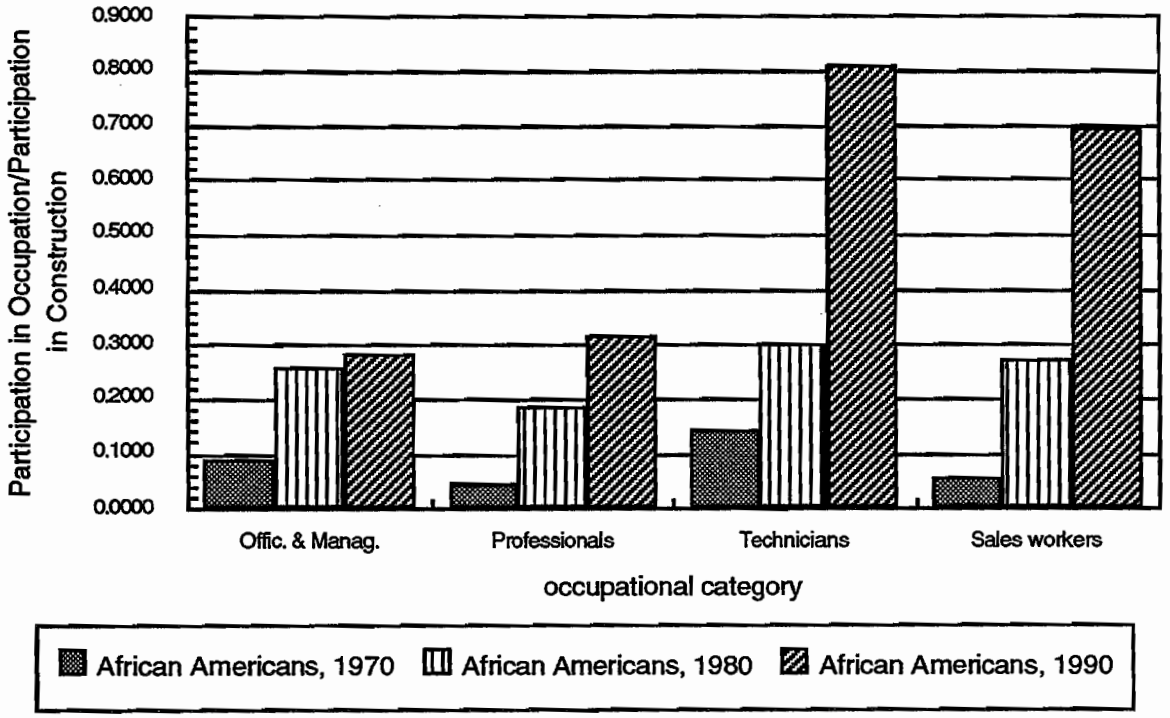
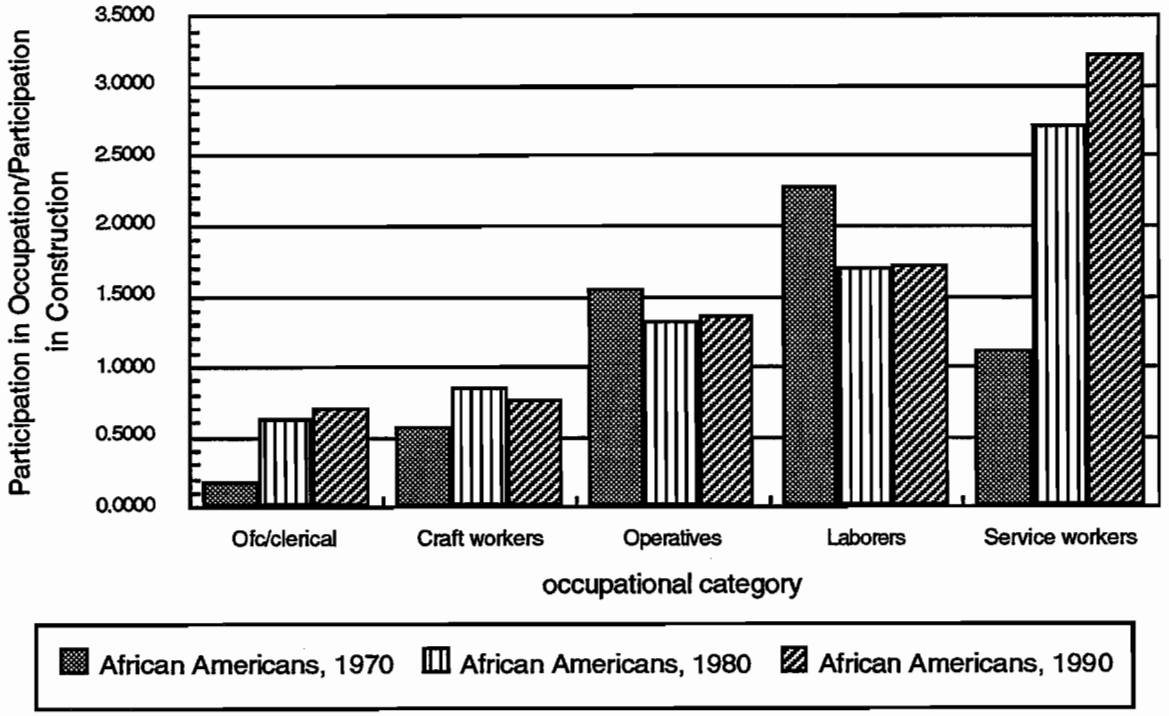


FIGURE 3.12: Construction Occupational Disparity Rates, 1970–1990, Hispanics, Low-Paying and/or Blue Collar



The best or most hopeful statement we can make is that the picture is mixed. Hispanics are coming up through the ranks of the blue collar occupations, perhaps creating a pool of future subcontractors. However, there seems to be little evidence, especially since 1980, of Hispanics being recruited out of the manual occupations into more responsible positions. At rates of growth established in the 1980s, over 100 years would be needed to reach parity in the managerial or administrative occupations. The eighties' patterns would have to reversed for progress to be made elsewhere in the higher paying jobs.

AFRICAN AMERICANS

The situation of African Americans graphically depicts the most obstinate problems for the construction industry. Overall, blacks have been leaving or have been led out of the industry. Within the manual occupations, the semi-skilled category has experienced steady growth. The crafts grew as a likely occupation for African

Americans in the 1970s but saw a reversal in the 1980s. In line with overall participation rates, those in manual occupations have all fallen and those in the higher-paying white collar occupation have increased at distressingly low levels. The two best signs are i) black craftspeople have so far resisted the extent of the overall fall in participation, and, as shown by Figure 3.16, have stayed within 75% of parity within the industry; ii) the growth rates in the professional and technician categories remained high in the 1980s, at 66% and 160%, respectively. Nonetheless, the length of time needed to gain a respectable presence in these categories will be immeasurably long without intensified reforms in recruitment and training of African American workers, regardless of occupation.

Relative participation rates for African Americans show the seriousness of the situation (Figures 3.13 and 3.14). Once an industry relatively open to African Americans, albeit only in the manual categories, construction now employs proportionately less African Americans in every occupation. Large relative declines have occurred in all the blue-collar jobs, especially the skilled ones. Blacks in high-paying jobs in other industries do much better than those in construction, increasingly so at the managerial level.

In a similar vein, African Americans are vastly underrepresented as managers and professionals relative to their declining presence in the industry. In both categories, blacks are about 70% underrepresented. On the other hand, in the smaller category of technicians we find the most impressive improvement: blacks are now less than 20% away from parity, as illustrated in Figure 3.15.

TABLE 3.5: Occupational Distributions and Participation Rates in Texas Construction, 1970-1990, African Americans (*Percentages*)

	Occupational Distribution			Participation Rates		
YEAR	1970	1980	1990	1970	1980	1990
TOTAL	100.0	100.0	100.0	12.7	8.4	7.2
Officials and Managers	0.7	2.5	3.0	1.1	2.2	2.0
Professionals	0.2	0.9	1.5	0.6	1.6	2.6
Technical	0.6	0.9	2.8	1.8	2.5	6.7
Sales	0.0	0.3	1.1	0.7	2.3	5.7
Clerical	1.1	4.2	5.4	2.3	5.3	5.8
Crafts	20.0	28.8	23.1	7.2	7.2	6.1
Operative	28.4	28.4	34.9	19.6	11.1	11.1
Laborer	47.1	30.8	24.2	29.1	14.3	14.0
Service	1.8	3.3	4.1	14.2	22.9	26.4

SOURCE: EEOC, 1970-1990, JPMWPI

FIGURE 3.13: Relative Construction Participation Rates, 1970–1990, African Americans, High-Paying and/or White Collar

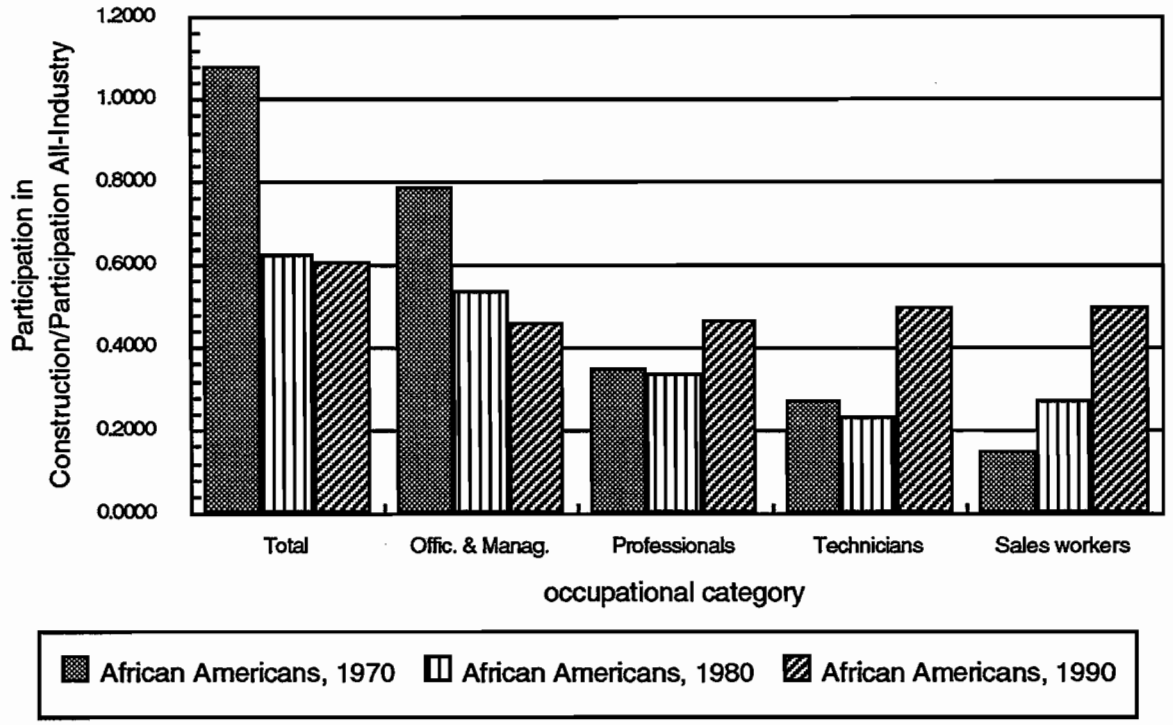


FIGURE 3.14: Relative Construction Participation Rates, 1970–1990, African Americans, Low-Paying and/or Blue Collar

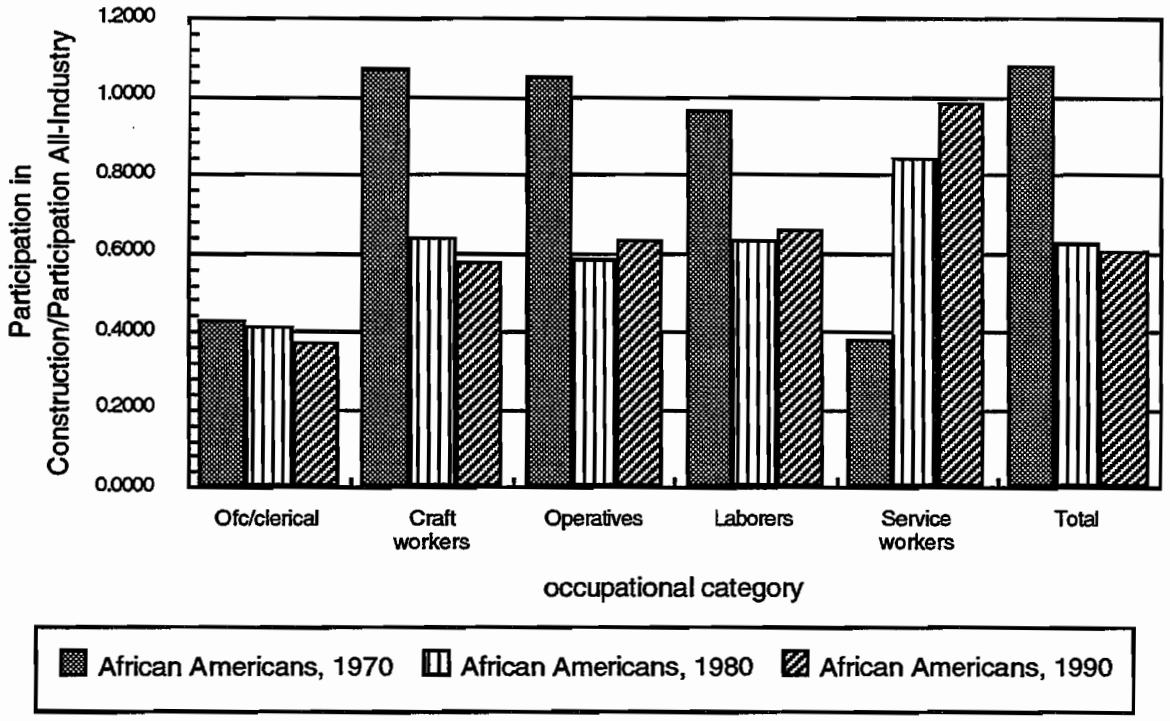


FIGURE 3.15: Construction Occupational Disparity Rates, 1970–1990, African Americans, High-Paying and/or White Collar

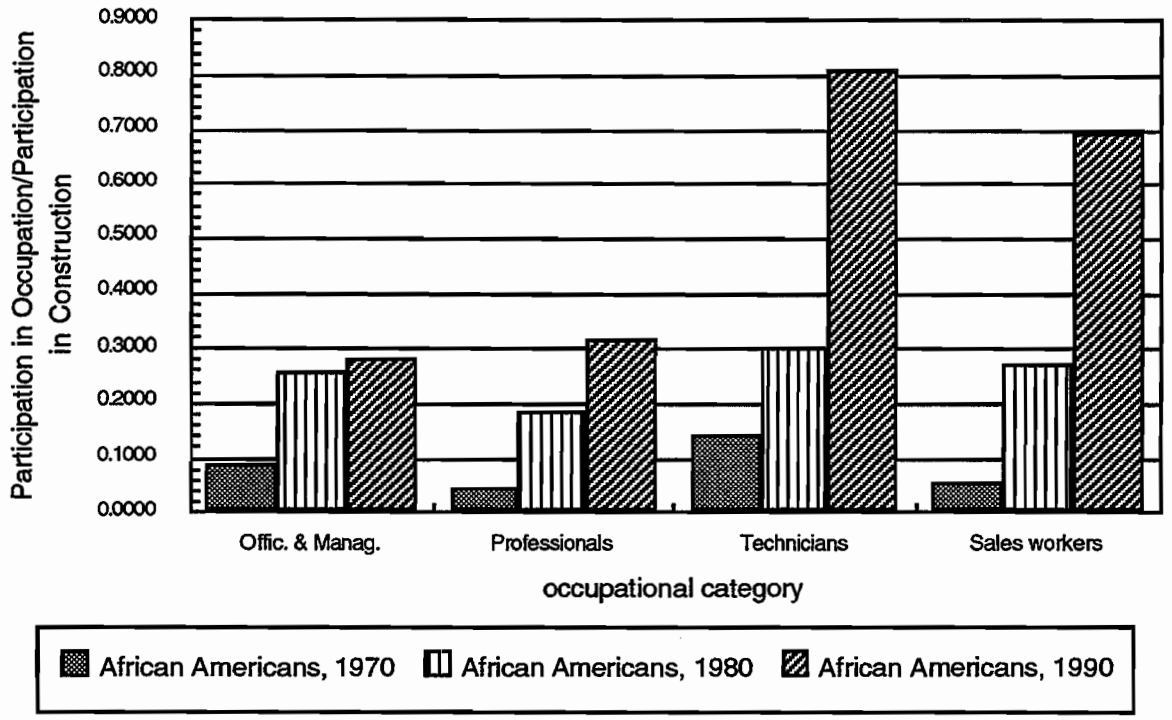
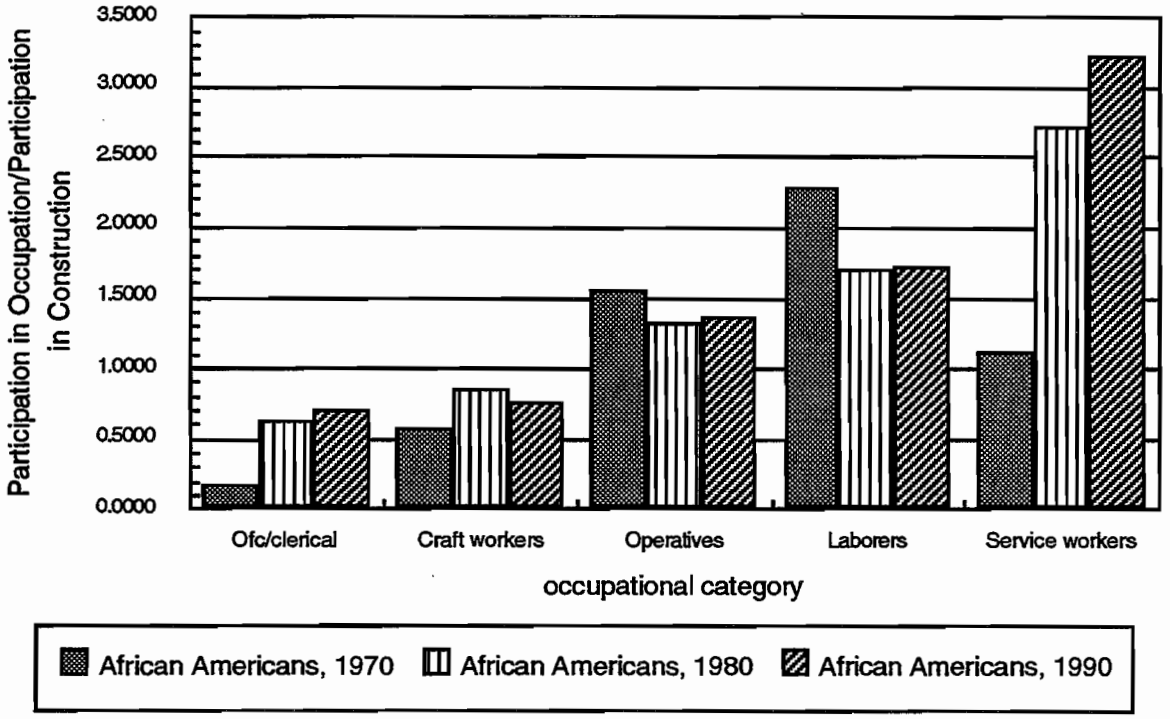


FIGURE 3.16: Construction Occupational Disparity Rates, 1970–1990, African Americans, Low-Paying and/or Blue Collar



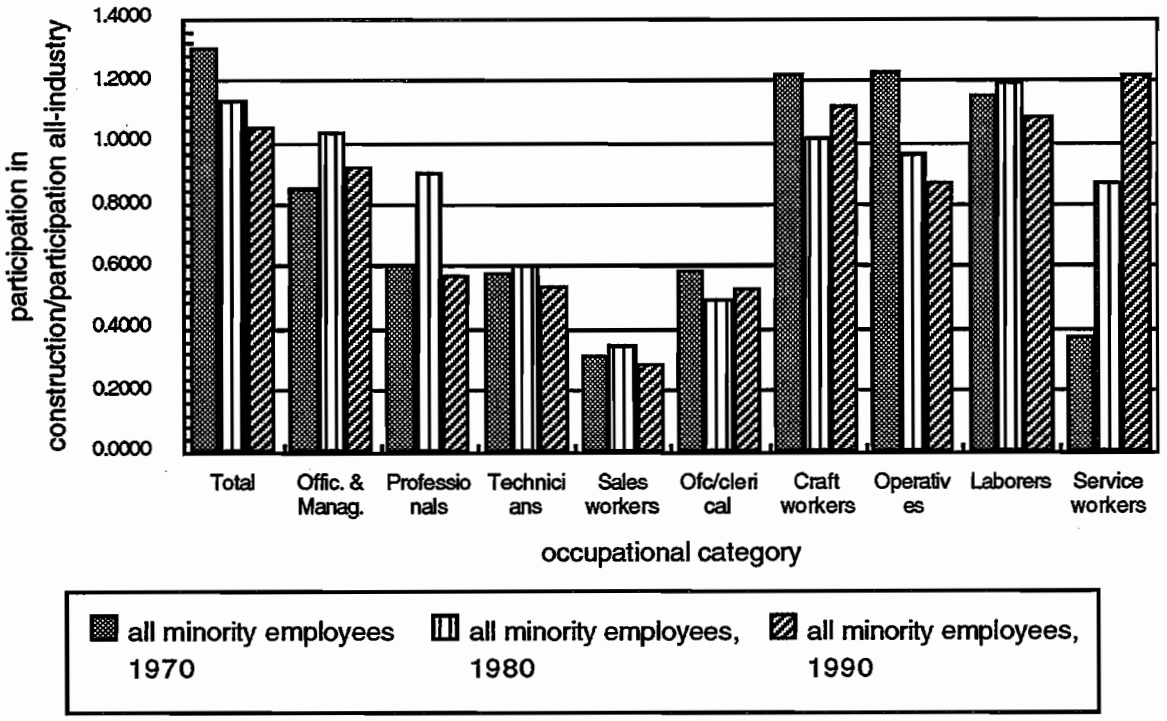
OTHER MINORITIES

Asian Americans and Native American groups are literally absent from the EEOC data in 1970. By 1990, both groups combined do not make up 1% of the Construction workforce. Only in two categories, professional and technician, do Asians reach a measurable level: 2.3% and 1.3%, respectively, of the workforce. While both groups, of course, comprise very small percentages of the Texas population and only 2% and 0.3% of the employees in the entire EEOC data set, both groups have experienced hostility and discrimination in the history of the state. Though more research needs to be done in this area, one seeming incident of this versus Asians will be documented in Part Four. At this point, since most of the numbers are near zero, all statistics for these groups can be found in the Appendix.

SUMMARY OF EEOC DATA

To some extent employment patterns in construction follow more general trends - Texas has seen increased participation of women and minorities in better-paying jobs over the last twenty years. Nonetheless, though occupational segregation may have weakened, its effects continue. For minorities considered as a group, increased participation in construction has taken place mostly at the lower ends of the occupational distribution. The picture is encouraging for Hispanics in the crafts, but less so for African Americans. At higher-level occupations, real gains have been made, albeit at very low levels. Relative to all industries, however, construction has seen falling levels of employment for minorities (Figure 3.17). In all the high paying white collar occupations, gains made in the 1970s were partially or totally reversed in the 1970s. That is, minorities continue to make larger gains outside construction than within it. Though minorities make up over 35% of the construction workforce, in none of the higher-paying white collar occupations are they more than 3 out of 20 workers (see Appendix tables).

FIGURE 3.17: Texas Relative Construction Participation Rates, 1970–1990, All Minority Employees



For Anglo women, the blue-collar occupations remain essentially off-limits. Impressive gains have been made at the top occupations, but participation remains dominated by clerical workers. Relative to other industries, despite improving levels, Anglo females continue to do better outside of the industry in Texas. Finally, for Anglo men, though overall participation levels have fallen in recent decades, the construction industry is increasingly becoming a disproportionate stronghold of employment.

INITIAL ANALYSIS OF SELECTED DATA FROM THE SURVEY OF TXDOT CONSTRUCTION AND MAINTENANCE CONTRACTORS

During the summer of 1993, over 2900 firms, comprising the entire construction and maintenance contracting pool for the Texas Department of Transportation were sent questionnaires covering several aspects of the bidding/contracting process. A

total of 855 firms responded. These firms come from five general categories: certified DBE professional services firms, certified DBE construction contractors, non-DBE construction contractors, DBE maintenance contractors, and non-DBE maintenance contractors. Included in the questionnaire were sections covering general business characteristics, contracting experiences with the TxDOT, education/training background, and barriers to participation in TxDOT procurement. All DBE's and non-DBE's known to deal or to have dealt with the TxDOT were surveyed. The survey, including the instruments used, is described in much more detail elsewhere in the study report; here we concern ourselves with the initial treatment of data that will shed some light on the following questions:

i) what are the educational backgrounds of TxDOT contractors - how relevant is the dichotomy, alluded to earlier in Part Three, between college-educated prime contractors and craft-oriented subcontractors?;

ii) can we detect differences across contracting groups according to race, gender, or DBE status?;

iii) what do the data pertaining to occupations last held before essaying entrepreneurship imply about current market opportunities?

For questions concerning education and training, only respondents who indicated that they were an owner of the firm being surveyed were considered. Owners comprised 776 of the 855 returns, or about 91%. Of these 776, 691 of the returns were usable. The remaining 85 firms did not answer all or part of this section, either because the firm was a publicly-held corporation or because the respondent did not feel comfortable releasing such information. In order to focus on construction and maintenance firms, we exclude the returns from the DBE professional service category for the moment, reducing the relevant total to 586. Out of these, 258 or 44% of (construction/maintenance) firm owners indicated that they had completed either undergraduate or graduate educations. Of these 258, 82 or 32% indicated that they had engineering degrees. Data pertaining to these firms owned by engineers is presented below in Table 3.6.

TABLE 3.6: Education and Training I: College-Trained Engineers Operating Construction and Maintenance Firms Eligible for Contracting with TxDOT

College graduates or above; engineers; N=82						
	African-American	Anglo	Asian/ Pacific	Hispanic	Native American	Other
Total	9	58	2	9	3	1
% of total	11.0	70.7	2.4	11.0	3.7	1.2
male	5	51	2	7	3	1
% of total	6.1	62.2	2.4	8.5	3.7	1.2
% of ethnic group	55.6	87.9	100.0	77.8	100.0	100.0
female	4	7	0	2	0	0
% of total	4.9	8.5	0.0	2.4	0.0	0.0
% of ethnic group	44.4	12.1	0.0	22.2	0.0	0.0

Notice:

- Anglos in general and Anglo males in particular dominate the ranks of college-trained engineers. Anglos constitute over 70% of the sample of engineers, and Anglo males comprise over 62%; whereas among all respondents to the survey (i.e. noy just college-trained engineers), these figures are 64.3% (340/776) and 45% (499/776), respectively.
- Among the college-trained engineers in our sample, males predominate in all ethnic categories, although among African-Americans, females approach parity. Over 84% of the engineers are male, whereas among all respondents to the survey only 76% are male (587/776). In the smaller minority groups, males are the only engineers. Among whites, males make up 88% of engineers, whereas males comprise only 68% of all white respondents to the survey (340/499).
- Among known engineers in our sample, minorities still approach 30% of the sample. Indeed, after we include Anglo females, over 36% of the sample is non-Anglo and non-male. However, the reader must keep in mind that minorities and Anglo females among all respondents to the survey make up 36% and 21%, respectively, for a total of 57%.

This last point leads us to consider the type of contracting performed by these engineer/entrepreneurs, an analysis partially described by Tables 3.8 and 3.9, below. However, we next look at the breakdown of contractors in our sample without college educations who indicated that they have craft backgrounds.

TABLE 3.7: Education and Training II: Skilled Craftspeople without College Educations Operating Construction and Maintenance Firms Eligible for Contracting with TxDOT

Less than college graduate, skilled crafts, N=106						
	African-American	**Anglo**	**Asian/ Pacific**	**Hispanic**	**Native American**	**Other**
total received	9	73	1	15	5	3
% of total	8.5	68.9	0.9	14.2	4.7	2.8
male; n=87 (82%)	8	56	1	14	5	3
% of total	6.1	52.8	0.9	13.2	4.7	2.8
% of ethnic group	88.9	76.7	100.0	93.3	100.0	100.0
female; n=19 (17.9%)	1	17	0	1	0	0
% of total	0.9	16.0	0.00	0.9	0.0	0.0
% of ethnic group	11.1	23.3	0.00	6.7	0.0	0.0

Several points are obvious from examination of this table:

- Of the 586 construction/maintenance firms included in the analysis, 328 or 56% of the owners did not complete a college education. Of these 328, 106 or 32.3% (or 18.1% of the total) responded that they were skilled craftspeople.
- With almost 69% of the sample, Anglos continue to predominate the skilled crafts among TxDOT contractors, although slightly less so than was the case with engineers. Anglo males comprise about 64% of the sample, slightly more than was the case with engineers.
- On the basis of the present cross-sectional sample, at least, white women have a greater degree of representation here than the occupational employment data for women in the crafts in Table 3.3 would suggest. The practically negligible levels of participation in crafts in the EEOC data would not lead one to surmise that 16% of craftspeople owning their own firms are women. This fact is less surprising, however, in light of the finding that 24% of the respondents to the survey were WBEs, and over 20% were Anglo WBEs. Given this, one possible conclusion is that the federally-mandated TxDOT DBE program provides far greater economic opportunities for female skilled construction craftspeople than large construction firms in the private sector afford. Further research would be helpful in extending and clarifying this finding.
- Blacks and Hispanics, in both engineering and the skilled crafts, participate at levels below their overall levels in the sample population, suggesting that either, 1) they have greater participation in the groups that either did not respond to the education questions or marked mixed responses that precluded the use of

their questionnaires in these regards, 2) their overall numbers are raised by the admittedely higher levels of DBE's in the professional service/miscellaneous group, or (3) blacks and Hispanics are somehow being systematically prevented from entering these two primary avenues towards construction entrepreneurship.

Our first initial finding, then, is that the DBE program has succeeded in enlisting WBEs from the skilled crafts in numbers greatly disproportionate to their representation in the EEOC data presented above. Our next initial finding is that Anglos, and Anglo males in particular, strongle dominate the pool of TxDOT contractors trained in engineering and also in the skilled crafts—even more so than they do in general in the overall survey sample. Whether contracting dollars and contract awards flow in the same manner is a question to be determined in the utilization report of the overall study. For our part, we can examine the contracting areas—general or prime contracting in construction, subcontracting in construction, and maintenance contracting—in which the firms in engineering group and the skilled crafts group find themselves. The following tables are categorized according to both racial/gender groups and contracting groups. The contracting groups are as follows:

Group A: Certified DBE professional services/miscellaneous services
Group B: Certified DBE construction contractors
Group C: Pre-qualified bidders - construction contractors
Group D: Bidders questionnaires - construction contractors
Group F: Maintenance contractors (centrally compiled by the Maintenance Division)
Group G: Self-certified M/WBE maintenance contractors.

For comparison purposes, Group A, certified DBE professional services/miscellaneous services, will often stand alone, for lack of a comparable non-DBE alternative in the available departmental contractor/bidder lists; and because the area of work most often marked by this group was engineering and/or architectural services, technically, a non-construction field.

For contracting areas, frequencies are listed first. The second row relates the frequency to the total received. The third row reports the frequency as its share within the contracting category (and thus sums across), while the last row shows the distribution of the (column) group across contracting categories (and thus compares with the fourth column of the other contracting categories).

TABLE 3.8: Operating Areas of TxDOT Construction/Maintenance Contractors, College-Trained Engineers, by Survey Group

Group I: Engineers; N = 81						
	B	**C**	**D**	**F**	**G**	**Total**
Total received	**9**	**34**	**5**	**18**	**15**	**81**
% of total	11.1	42.0	6.2	22.2	18.5	100.0
Male	**7**	**33**	**5**	**17**	**9**	**69**
% of total	8.5	39.0	4.9	20.7	11.0	84.2
% of column	77.8	97.0	80.0	94.4	52.9	84.2
share of control group among males	10.1	46.4	5.8	24.6	13.0	100.0
Female	**2**	**1**	**1**	**1**	**8**	**13**
% of total	2.4	1.2	1.2	11.2	9.8	15.9
% of column	22.2	3.0	20.0	5.6	47.1	15.9
share of control group among females	15.4	7.7	7.7	7.7	61.5	100.0
General contractors - construction						**Total**
total received	4	30	2	8	5	49
% of total	4.9	37.0	2.5	9.9	6.2	60.5
% of prime contractor	8.2	61.2	4.1	16.3	10.2	100.0
% of grp members in prime category	44.4	88.2	40.0	44.4	33.3	60.5
Maintenance contractors						**Total**
total received	0	0	0	4	6	10
% of total	0.0	0.0	0.0	4.9	7.4	12.4
% of maint.enance contractor	0.0	0.0	0.0	40.0	60.0	100.0
% of grp members in maint. category	0.0	0.0	0.0	22.2	40.0	12.4
Subcontractors - construction						**Total**
total received	5	4	3	5	4	21
% of total	6.2	4.9	3.7	6.2	4.9	25.9
% of subcontractor	23.8	19.1	14.3	23.8	19.1	100.0
% of group members in sub category	55.6	11.8	60.0	27.8	26.7	25.9

NOTE: One (1) response out of the 81 could not be categorized.

TABLE 3.9: Operating Areas of TxDOT Construction/Maintenance Contractors, College-Trained Engineers, by Race/Ethnic/Gender Group

Group I: Engineers N = 81						
	African-American	**Anglo Male**	**Anglo Female**	**Asian/ Pacific**	**Hispanic**	**Native American**
total received	9	50	7	2	8	3
% of total	11.1	61.7	8.6	2.5	9.9	3.7
General contractors - construction; N = 48						
total received	3	36	3	2	2	1
% of total	3.7	44.4	3.7	2.5	2.5	1.2
% of prime contractors	6.25	75.0	6.25	4.2	4.2	2.1
% of group members in prime category	33.3	72.0	14.3	100.0	25.0	33.3
Maintenance contractors; N = 10						
total received	1	4	2	0	2	1
% of total	1.2	4.9	2.5	0.0	2.5	1.2
% of maint. contractor	10.0	40.0	20.0	0.0	20.0	10.0
% of group members in maintenance category	11.1	8.0	28.6	0.0	25.0	33.3
Subcontractors - construction; N = 21						
total received	4	10	2	0	4	1
% of total	4.9	12.3	2.5	0.0	4.9	1.2
% of sub contractor	19.1	47.6	9.5	0.0	19.1	4.8
% of group members in sub category	44.4	20.0	28.6	0.0	50.0	33.3

TABLE 3.10: Operating Areas of TxDOT Construction/Maintenance Contractors, Skilled Craftspersons, Non-College Trained, by Survey Group

Group I: Skilled Craftspeople; N = 106						
	B	**C**	**D**	**F**	**G**	**Total**
t.otal individuals	**18**	**8**	**11**	**50**	**19**	**106**
% of total	17.0	7.6	10.4	47.1	17.9	100.0
Male	**14**	**7**	**9**	**44**	**13**	**87**
% of total	13.2	6.6	8.5	41.5	12.3	82.1
% of column	77.8	87.5	81.8	88.0	68.4	
distrib. of males across categories	16.1	8.1	10.3	50.6	14.9	100.0
Female	**4**	**1**	**2**	**6**	**6**	**19**
% of total	3.8	0.9	1.9	5.7	5.7	17.9
% of column	22.2	12.5	18.2	12.0	31.6	
distrib. of females across categories	21.1	5.3	10.5	31.6	31.6	100.0
Note: The contracting areas add to N=104; due to missing values; however, the 4th row in each area refers to othe verall total of N=106						
Prime contractors - construction						**Total**
total received	0	7	4	16	4	31
% of total	0.0	6.7	3.9	15.4	3.9	29.8
% of prime contractor	0.0	22.6	12.9	51.6	12.9	100.0
% of grp members in prime category	0.0	87.5	36.4	32.0	21.1	29.2
Maintenance contractors						**Total**
total received	1	1	3	17	8	30
% of total	1.0	1.0	2.9	16.4	7.7.	28.8
% of maint.enance contractors	3.3	3.3	10.0	56.7	26.7	100.0
% of grp members in maint. category	5.6	12.5	27.3	34.0	42.1	28.3
Subcontractors - construction						**Total**
total received	17	0	4	15	7	43
% of total	16.4	0.0	3.9	14.4	6.7	41.3
% of subcontractor	39.5	0.0	9.3	34.9	16.3	100.0
% of group members in sub category	94.4	0.0	36.4	20.0	36.8	40.6

TABLE 3.11: Operating Areas of TxDOT Construction/Maint. Contractors, Skilled Craftspersons, Non-College Trained, by Race/Ethnic/Gender Group

Group II: Skilled Craftspeople; N = 106						
	African-American	**Anglo Male**	**Anglo Female**	**Asian/ Pacific**	**Hispanic**	**Native American**
total received	9	56	17	1	15	5
% of total	8.5	52.8	16.0	0.9	14.2	4.7
Note: groups above do not include 3 individuals listed as other"						
Prime contractors - construction; N = 31						
total received	1	23	3	0	2	0
% of total	0.9	21.7	2.8	0.0	1.9	0.0
% of prime contractors	3.2	74.2	9.7	0.0	6.5	0.0
% of grp members in prime category	11.1	41.1	17.6	0.0	13.3	0.0
Maintenance contractors; N = 30						
total received	1	17	5	1	4	2
% of total	0.9	16.0	4.7	0.9	3.8	1.9
% of maint. contractor	3.3	56.7	16.7	3.3	13.3	6.7
% of grp members in maint. category	11.1	30.4	29.4	100.0	26.7	40.0
Subcontractors - Construction; N = 43						
total received	7	14	9	0	9	3
% of total	6.6	13.2	8.5	0.0	8.5	2.8
% of subcontractor	16.3	32.6	20.9	0.0	20.9	7.0
% of group members in sub category	77.8	25.0	52.9	0.0	60.0	60.0

Note: Two (2) Anglo males did not clearly identify themselves along the three categories above

Tables 3.8 and 3.9 describe the "pure" engineering group, while Tables 3.10 and 3.11 look at the "pure" skilled crafts group. The reader should bear in mind that areas of work - prime, or general, construction contracting, maintenance contracting, and subcontracting in construction - are self described. For example, many of the firm owners categorized as maintenance contractors (Groups F and G) consider themselves

as owners of construction firms. In fact, a majority of owners in Group F see themselves as prime contractors in construction. Of course, this self-description does not necessarily apply to work these firms perform or wish to perform for TxDOT.

Tables 3.8 through 3.11 examine differences among contractors at the occupational level (i.e. engineers vs. skilled crafts), first by survey group, and then by race/ethnic/gender group within each occupational category. Selected summary data follows:

- Engineers:
  - 60.5% worked as prime contractors;
  - 12.4% worked as maintenance contractors;
  - 25.9% worked as subcontractors
- Skilled Craftspeople:
  - 29.8% worked as prime contractors;
  - 28.9% worked as maintenance contractors;
  - 41.3% worked as subcontractors

Immediately we observe that engineers in this sample are twice as likely to be prime contractors, while craftspeople are 58% more likely to be subcontractors. This finding lends modest support to the notion that most prime contractors are engineers, whereas subcontractors started off as skilled craftspeople.

Differences across survey groups. Looking across survey groups *among engineers*, we observe that survey group

B: comprises 8.2% of prime contractors, 0.0% of maintenance, and 23.8% of subcontractors.

C: comprises 61.2% of prime contractors, 0.0% of maintenance, and 19.1% of subcontractors.

D: comprises 4.1% of prime contractors, 0.0% of maintenance, and 14.3% of subcontractors.

F: comprises 16.3% of prime contractors, 40.0% of maintenance, and 23.8% of subcontractors.

G: comprises 10.2% of prime contractors, 60.0% of maintenance, and 19.1% of subcontractors.

Notice also that over 55% of certified DBE engineers in our sample work as subcontractors, compared to less than 12% of pre-qualified bidders. This suggests that

some potential for growth exists among DBE contractors. Morevoer, most female engineers are members of survey group G, essentially a maintenance category.

Looking across the same survey groups *among skilled craftspeople*, we observe that group

B: comprises 0.0% of prime contractors, 3.3% of maintenance, and 39.5% of subcontractors.

C: comprises 22.6% of prime contractors, 3.3% of maintenance, and 0.0% of subcontractors.

D: comprises 12.9% of prime contractors, 10.0% of maintenance, and 9.3% of subcontractors.

F: comprises 51.6% of prime contractors, 56.7% of maintenance, and 34.9% of subcontractors.

G: comprises 12.9% of prime contractors , 26.7% of maintenance, and 16.3% of subcontractors.

One striking result is that over 94% of certified DBE craftspeople work as subcontractors, while over 87% of pre-qualified bidders with craft backgrounds work as prime contractors. This finding should be kept in mind when we examine ethnic categories, below. Further, most female contractors in these two "pure" groups are concentrated in groups F and G. Also remarkable is that over half of prime contractors in the craft group come from group F, suggesting perhaps that many Anglo firms currently not performing construction work for the TxDOT would like to do so.

Differences across racial/ethnic gender lines. Among college-educated engineers, and using categories relevant to the current DBE program, we notice that:

Anglo Males: comprise 75.0% of prime contractors, 40% of maintenance contractors, and 47.6% of subcontractors.

Anglo Females: comprise 6.25% of prime contractors, 20.0% of maintenance contractors, and 9.5% of subcontractors.

African Americans: comprise 6.25% of prime contractors, 10.0% of maintenance contractors, and 19.1% of subcontractors.

Hispanics: comprise 4.2% of prime contractors, 20.0% of maintenance contractors, and 19.1% of subcontractors.

For owners with craft backgrounds and bereft of a college education, we find that:

Anglo Males:	comprise 74.2% of prime contractors, 56.7% of maintenance contractors, and 32.6% of subcontractors.
Anglo Females:	comprise 9.7% of prime contractors, 16.7% of maintenance contractors, and 20.9% of subcontractors.
African Americans:	comprise 3.2% of prime contractors, 3.3% of maintenance contractors, and 16.3% of subcontractors.
Hispanics:	comprise 6.5% of prime contractors, 13.3% of maintenance contractors, and 20.9% of subcontractors.

In the absence of more in-depth investigation, several tentative conclusions may be offered at this point. First, whether among college educated engineers or craftworkers with high school diplomas, about three-quarters of those who describe themselves as prime contractors in construction are Anglo males. Second, if we combine the results along survey group lines with the results along ethnic lines, then it appears that Anglo craftspeople, especially males, can work their way up to general contractor status, while this avenue remains limited to minorities, and essentially closed to certified DBE craftspeople. Finally, since the 25% of Anglo craftspeople and the 20% of group F craftspeople make up, respectively, 32.6% and 34.9% of their groups' subcontractors, then it also appears that Anglo males are a minority in the subcontracting area.

Reasons for these conclusions are many, but here we can proffer two as a catalyst, perhaps, for further discussion: i) the disproportionate dominance of Anglos, and Anglo males in particular, among prime contractors results from deep-seated problems of educational segregation along lines of race, ethincity, and gender, documented extensively in the literature, and ii) the minority status of Anglo males in subcontracting, the spur of numerous hostile complaints towards DBE's and government officials in our survey comments, may result both from market conditions that exclude minorities as a group from meaningful positions in the construction industry, and also from program designs that may inadvertently shunt DBE's almost completely into less lucrative subcontracting. Thus small Anglo subcontractors compete against women and minority-owned firms for subcontracts and some small prime contracts, while general contractors, essentially white male-owned and members of group C (Pre-qualified bidders), compete strictly amongst themselves for general contracts and not against DBE's. This last hypothesis is supported by the evidence presented utilization report, published in a separate volume of this study.

TABLE 3.12: Previous Occupation and Ethnic, Racial, and Gender Background

Group/oc-cupation	African American	Anglo male	Anglo Female	Asian	Hispanic	Native American	Total
officials/ managers	7	39	48	3	31	6	138
% of total	1.93	10.75	13.22	0.83	8.54	1.93	38.02
% of occupational total	5.07	28.26	34.78	2.17	22.46	5.07	100.0
% of ethnic group	20.00	30.71	51.06	27.27	40.26	53.85	
professionals	6	10	12	6	13	1	48
% of total	1.65	4.52	5.43	1.65	3.58	0.28	13.22
% of occupational total	12.5	20.83	25.00	12.5	27.08	2.08	100.00
% of ethnic group	17.14	7.87	12.77	54.55	16.88	7.69	
technicians	2	5	7	0	3	0	17
% of total	0.55	1.38	1.93	0.00	0.83	0.00	4.68
% of occupational total	11.76	29.41	41.18	0.00	17.65	0.00	100.00
% of ethnic group	5.71	3.94	7.45	0.00	3.90	0.00	
sales	0	0	1	1	1	0	3
% of total	0.00	0.00	0.28	0.28	0.28	0.00	0.83
% of occupational total	0.00	0.00	33.3	33.3	33.3	0.00	100.00
% of ethnic group	0.00	0.00	1.06	9.09	1.30	0.00	
clerical	0	0	12	0	0	0	12
% of total	0.00	0.00	3.31	0.00	0.00	0.00	3.31
% of occupational total	0.00	0.00	100.00	0.00	0.00	0.00	100.00
% of ethnic group	0.00	0.00	12.77	0.00	0.00	0.00	
craft	16	58	14	0	22	5	117
% of total	4.41	15.98	3.86	0.00	6.06	1.38	32.23
% of occupational total	13.68	49.57	11.97	0.00	18.80	4.27	100.00
% of ethnic group	45.71	45.67	14.89	0.00	28.57	38.46	
operative	4	11	0	1	6	0	23
% of total	1.10	3.03	0.00	0.28	1.65	0.00	6.34
% of occupational total	17.39	47.83	0.00	4.35	26.09	0.00	100.00
% of ethnic group	11.43	8.66	0.00	9.09	7.79	0.00	
laborers	0	4	0	0	1	0	5
% of total	0.00	1.10	0.00	0.00	0.28	0.00	1.37
% of occupational total	0.00	80.00	0.00	0.00	20.00	0.00	100.00
% of ethnic group	0.00	3.15	0.00	0.00	1.30	0.00	
total	**35**	**127**	**94**	**11**	**77**	**12**	**363**
% of total	**9.64**	**34.99**	**25.90**	**3.03**	**21.21**	**3.31**	**100.00**

NOTE: These figures do not include 56 responses which could not be harmonized with the occupational scheme provided by the Census Bureau and used by the EEOC.

We now turn to survey data that draws immediately upon the discussion of occupational distributions, and how occupational segregation may limit the potential numbers of DBE's. One segment of the questionnaire queried contractors who had

worked previously for other firms about the last job they held before leaving to become entrepreneurs. Table C lists the results:

In a sense, the data are skewed, overemphasizing the shares of women and minorities in the last occupation and under-emphasizing that for white men, because the sample of N = 363 includes a substantial amount of responses from owners in survey group A. This is the group consisting of certified DBE professionals and/or miscellaneous firms, a group that has no true counterpart in the non-DBE lists compiled by TxDOT, since the list of non-DBE's are those of eligible bidders, while architectural and engineering services and such are generally not bid directly to the TxDOT. Thus the share for Anglo women, 25.9%, is much higher than the figures of 8.6% and 16% for this group in Tables 3.9 and 3.11, respectively (engineers and skilled crafts). The biases do not affect the validity of the results tabulated above within the frame of reference of the survey groups; however, they overstate the success of DBE's and Anglo women in particular in gaining access to entrepreneurial opportunities in highway construction, *as opposed to highway construction-related*, industries.

Despite these biases, we can nonetheless see that the occupational categories of officials/managers, professionals, and crafts are by far the three gateways to entrepreneurship. To start their businesses, over 38% of responding owners left jobs in management, over 13% left professional jobs, and over 32% left jobs in crafts. Thus, well over 8 out of 10 business owners in fields relevant to TxDOT procurement have backgrounds in these fields.

TABLE 3.13: Previous Occupation and Ethnic, Racial, and Gender Background, Top Three Prior Occupations

	African American	Anglo male	Anglo Female	Asian	Hispanic	Native American	Total
officials/managers	20.00	30.71	51.06	27.27	40.26	53.85	38.02
professionals	17.14	7.87	12.77	54.55	16.88	7.69	13.22
craft	45.71	45.67	14.89	0.00	28.57	38.46	32.42
Total % of ethnic group	**82.85**	**84.25**	**78.72**	**81.82**	**85.71**	**100.00**	**83.66**

When we extract, in Table 3.13, the three fields from Table 3.12, we see that the overall levels hold across ethnic groups, except for the small sample of Native Americans, in which *all* business owners came from these three occupational groups. For the other groups, perhaps the most striking results are the importance of management jobs for Anglo women, professional jobs for Asians, and crafts for Anglo

men and for African Americans. Except for African Americans, the top two white-collar fields account for 50% of work experience for prospective minority/female entrepreneurs. For blacks, the figure approaches 40%. One peculiar sidelight is that for Anglo women, clerical positions account for nearly 13% of last jobs held, the same proportion as for professionals. For no other group does an entrepreneur come from the clerical ranks. For all minority groups, though, the observed importance of better-paying jobs serving as preparation for the entrepreneurial world cannot be overstated, because historical and current exclusion, complete or partial, from these fields in the construction industry buttresses a particularly high barrier to present and future participation in TxDOT procurement.

STATE EMPLOYMENT IN 1977

In 1980 the Texas Advisory Committee to the United States Commission on Civil Rights published a multi-volume report entitled the *Status of Civil Rights in Texas.* The third volume of this set analyzed employment patterns at state, county and municipal levels. Table 3.14 shows an aspect of these patterns.

TABLE 3.14: Participation Rates of Various Groups in State of Texas Employment, 1977 (Percentages)

	ANGLO MALE	ANGLO FEMALE	HISPANIC	BLACK	OTHER
TOTAL	40.0	34.4	13.5	11.6	0.5
Office Administration	61.7	26.3	7.7	3.6	0.6
Professionals	49.1	34.4	10.7	5.1	0.7
Technical	54.2	25.4	10.7	9.2	0.4
Crafts	78.4	1.8	16.2	5.3	0.1
Protective Services	81.0	3.9	7.5	7.4	0.2
Clerical	5.2	67.4	17.7F	9.3F	0.5
Para-Professional	15.8	39.9	14.0	29.6F	0.7
Service Maintenance	27.9	21.4	21.2	28.8	0.6

SOURCE: Texas Advisory Committee, *Status of Civil Rights in Texas, Vol.III,* p.71.

The data show that State jobs tended to be "traditionally male or female," similarly to patterns in private industry. Minorities and women were again

concentrated in low-paying, low-status jobs, with little impact upon policy formation and decision-making (TAC, p.82).

Table 3.15 shows disparities across all state agencies and at the Highway Department in particular. Participation rates for Anglos outstrip those of the industry with which it works. Though an occupational breakdown of Highway Department employment was not listed, we can assume that if the Department follows state patterns, then the percentage of black administrators, for instance, was at most 3.6%, but in view of patterns in the private sector construction (in which the percentage of black administrators in 1980 was 2.0%), it was probably much lower, even negligible. Data on county and municipal employment in Texas in street and highway divisions show similar patterns (TAC, pp.88-90, and Appendix D and E, Tables 2 and 1, respectively).

TABLE 3.15: Distributions of Group Employment in the Texas Public Sector - January, 1978

STATE WORKFORCE - State agencies with 25 or more employees (Percentages)

	ALL GROUPS	ANGLO	HISPANIC	BLACK	OTHER
TOTAL	100.0	74.3	13.5	11.6	0.00
Male	50.9	40.0	6.7	3.9	.03
Female	49.1	34.4	6.8	7.7	.03

HIGHWAY DEPARTMENT

	ALL GROUPS	ANGLO	HISPANIC	BLACK	OTHER
TOTAL	13,969	11,444	1,909	584	32
Male	12,471	10,100	1,818	524	29
Female	1,498	1,344	91	60	3

Percentages - HIGHWAY DEPARTMENT

	ALL GROUPS	ANGLO	HISPANIC	BLACK	OTHER
Total	100.0	83.6	13.9	4.3	0.2
Male	89.3	73.7	13.3	3.8	0.2
Female	10.7	9.8	0.7	0.4	0.0

SOURCE: TAC, Status of Civil Rights in Texas, Vol. III.

SUMMARY

In Part Three we have demonstrated that extreme patterns of occupational segregation continue to exist in the construction industry for minorities and women.

Each group has made some progress in certain categories, but for the most part stubborn disparities seem to be closing slowly. For minorities, the crafts remain the main avenue to respectable employment, whereas the situation in white collar occupations remains stifling. For Anglo women, improvement has occurred at the professional level, but craft representation remains near zero. In terms of the generalizations mentioned at the beginning of the section, all groups, especially Anglo women, potentially have better opportunities at entering the construction business from the managerial end, whereas minorities seem to have a better shot at becoming subcontractors. Initial treatment of data from a survey of TxDOT contractors supports the hypothesis, reflected in the EEOC general construction data, that prime contracting remains the preserve of white males, especially engineers, while subcontracting experiences tough competition.

PART FOUR: MINORITY EDUCATIONAL OPPORTUNITIES

The major explanatory factor left out to this point has been the question of education. What has been minority access to all levels of education in the history of Texas, what has the quality of education been, and what is the current status quo? Moreover, what has been the access to training in construction-oriented crafts and the penetration of civil engineering programs across the state.? Once we answer these questions, perhaps we can address the prospects of improved economic opportunities.

INTRODUCTION

Nowhere do the two main minority groups of Texas share such a common experience as in the history of educational segregation. For this reason, we will present jointly their experience, while making note of any differences. In general, access to educational facilities within a state and region notorious for its underinvestment in human capital has been extremely limited during the course of most of the state's history. Improved opportunities were won slowly and only with herculean effort by members of the minority communities, aided by the more favorable constitutional interpretation of federal courts beginning in the 1950s and by the civil rights legislation of the 1960s. The painful course of the struggle merits a relatively brief summary, however, in order for us to appreciate the disadvantaged position of minority business enterprise.

EDUCATION TO 1920

Public education in general was not offered on a statewide basis until after the Civil War. Despite an absence of laws in Texas against the education of slaves (unlike in other Southern states), white opposition ensured a 95% illiteracy rate for slaves. Schools set up by the Freedmen's Bureau were segregated from the beginning, as freedmen were happy to have any schools and whites were of course opposed to integration (Foner, pp.144-149). However, local whites refused to support Negro schools. Freedmen, then, were forced to contribute some of their wages to support the Bureau's schools. As this base proved to be insufficient, the Bureau arranged for Northern benevolent societies to send and often to support teachers for these schools (ibid., and Hornsby, 1962, p.10). Freedmen's schools faced not only white resentment

but often Klan-inspired violence (Hornsby, p. 21), and Northern white female teachers were castigated for extending courtesies to and "mixing" with Negroes (ibid., p.29). Nonetheless, from the late 1860s to the end of Reconstruction in Texas in 1873, thousands of children of all races were educated, though Negro schools often were temporary. In 1868-69, compulsory attendance was enforced under the direction of Joseph Welch, the superintendent of the Freedman's Schools in Texas. School enrollment reached a peak of 129,542 in 1873 - 56% of all children, 25-33% of whom were black. Illiteracy (in a very limited sense, probably measured as the ability to sign one's name) among blacks thus dropped to 75% in 1880 (Barr, Ch.3).

The Redemption of 1873 (the end of Reconstruction in Texas and Republican rule), however, saw an end to state support for public schools. Democratic governors refused to support the funding of new buildings. Furthermore, though the Constitution of 1875 dedicated nearly half of the public domain (i.e. 10-12 million acres) to the public school fund, this was exhausted by 1885, having been auctioned to railroad companies (Woodward, 1971, p.117). Local taxes supported public schools after 1881; however, in counties with black majorities, no schools were established. Most black schools had to meet in churches or barns. While there were three times more white than black students in Texas, the white children enjoyed over six times as many schools (Barr, p.99). In 1905, white schools included 914 libraries with 150,000 books, whereas blacks were left with 82 libraries containing 8000 books. In spite of these difficulties, the black illiteracy rate had fallen to 38% in 1900.

Little data exist on the extent of separate or integrated schools for Mexicans in Texas. A Spanish school was established in El Paso in 1862. Until 1880, though, only upper-class Mexicans attended school in San Antonio (Johnson, 1932, p.41). According to William Knox, while Mexicans and Anglos mixed freely in some public schools in San Antonio in the 1870s, small numbers of upper class Mexicans attended church schools and most of the rest of the population attended schools in the Mexican district. The most common type of school for Texas Mexicans in the 1880s in Texas was a one-room building with one underpaid teacher, exactly the same case as with Negro schools (Johnson, pp.43-44).

In the realm of higher education, state-supported Prairie View A&M was founded in 1878. From its founding, Prairie View struggled to obtain funds and expand its curriculum. Throughout much of its existence, and throughout much of the existence of most historically black colleges in Texas (such as Wiley, Tillotson, Bishop,

Quinn, Mary Allen, and Huston colleges), the school functioned as a normal school, both training teachers for Negroes and providing remedial education, due to the utter inferiority of primary and secondary education for blacks. The curriculum was relegated to areas acceptable to whites -agricultural, industrial, and mechanical trades. The 19 black high schools in the state featured underpaid teachers, unsuitable textbooks, and low attendance rates. (Barr, Ch. 5).

While segregation of the races at the elementary and secondary level was written into the Constitution of 1875 in Texas, segregation *policy* was followed in higher education until the 1896 *Plessy v. Ferguson* decision, which led to legal encoding of such policy (US Commission on Civil Rights, 1981, p.4).

EDUCATION 1920-1970

While the Texas state laws called for public and free schools for all children, as just noted they also segregated white from black children. Segregation of Mexican children was not ensconced in state law, but often by local custom or county ordinances (Manuel, 1930, p.58). In face of these barriers, the struggle for improved educational facilities for minorities in Texas took on new life during the 1920s. Two forces operated: i) the founding of the NAACP nationally (the previous decade) and of black teacher organizations in Texas led to pressure on local governments to increase expenditures on Negro schools; ii) the mass immigration of Mexicans to Texas awakened many to the problem of education for Spanish-speaking children.

Advances were made for Negro schools between 1920 and 1930. The illiteracy rate fell to 13.4%. Prairie View gradually added more college-level courses, and despite opposition from the president of Texas A&M (the flagship school of the system), Prairie View achieved accreditation as a college in 1926 and created a division of arts and sciences in 1931. Expenditure on children increased from 55% to 85% of Anglo expenditure, the highest in the South. Average expenditure figures should be treated with caution, as there were widespread instances of misuse of public funds - that is, money allocated based on the total population of children in the district would be used disproportionately on white schools - and thus Negro and Mexican children would suffer (Barr, p.157; Taylor, p.377; p.437).

Furthermore, schools for Negroes and Mexicans still lagged far behind those for whites. In 1924 over 75% of black schools had little or no equipment nor a library. Nearly two-fifths of black schools had no textbooks. Statewide, black teachers made

about 75% of an Anglo teacher's salary, but in 1938 the gap worsened to less than 62% of Anglo pay - Negro teachers bore the brunt of the Great Depression's effects on school finances (Barr, pp.159-160).

Similar problems afflicted Mexican schools. The strictest segregation occurred in rural districts with relatively high concentrations of Mexicans. Though predominately in South Texas, Mexicans moved into Travis and Caldwell counties in Central Texas, as well as to the large cities, during the 1920s (Manuel, p.45). In Lockhart, the seat of Caldwell county - which had the highest density of rural Mexicans in the state (Johnson, p.50) - strict segregation of Mexican and Anglo children was enforced through all grades. Other school districts segregated from grades 1 to 6 - the Mexican children never seemed to go to high school, according to local officials (Manuel, p.75). Some farmers in Dimmitt County saw education for Mexican children a charity rather than a duty; evidently state law did not apply to Mexicans (Taylor, p.377). In counties with Mexican populations too small for the Anglos to contemplate building separate schools, Anglo intimidation sometimes kept Mexicans away from attending the white schools (Manuel, p.72).

As with Negro schools, Mexican schools were housed in inferior buildings with underpaid and often hapless, ill-trained teachers. Unlike Negro schools, Mexican schools served either as a dumping ground for incompetent teachers or a training school for young Anglo teachers. Until the 1930s, at least, English was used *exclusively* in Mexican schools, even though over 90% of the children spoke *no* English. Manuel's comprehensive study found that at best, 50% of Mexican children attended public school, versus 95% of Anglos (pp.96-97).

TABLE 4.1: Percentage Enrollment, Anglo and Mexican Children, 1928.

	ANGLO	MEXICAN
1st grade	16	45-50
1st 3 grades	38.5	70-75
high school	20.5	3-4

SOURCE: Manuel, p.103

The state of minority education on the eve of the Great Depression can be summarized with statistics constructed by Manuel in 1930. For the school year 1927-1928; Manuel found that the vast majority of Mexican children never made it past the

6th grade. Percentages for Negroes lie between the other two groups listed in Table 4.1 (p.103). Manuel also reported a survey of 38,538 students of college rank in Texas. Of these, 188 or 0.5% were Mexican (including 34 Mexican nationals). He estimated that of 40-45,000 college students in Texas, 250 were Mexican, and 2,000-2,500 were black. The ratios of those in higher education relative to the scholastic population were: Anglo, 4%; Black, 0.85%, and Mexican, 0.14% (p.106).

After 1930, we have better, more systematic data for comparing the educational levels of Anglos, African Americans, and Mexican Americans in Texas. In 1940, 80% of blacks completed no more than 8 years of schooling, compared to about 51% for "whites" -including Mexican Americans (Stiles, p.77). Table 15 below breaks the data down further.

TABLE 4.2: Educational levels of Anglo, Black, and Mexican Americans Adults 25 years and older in Texas, 1950 -1990.

	Year	*none*	*8 (or less)*	*9—2*	*>12*	*median*
Anglo	1950	.2	8.1	43.2	17.5	10.0
	1960	1.1	31.2	46.5	21.2	11.5
	1970	0.8	21.4	51.3	26.5	11.3
	1980	N/A	13.0	47.6	39.3	12.7
Black	1950	5.9	66.3	22.2	5.6	7.0
	1960	5.4	54.8	31.4	8.4	8.1
	1970	3.3	40.3	45.8	10.6	9.7
	1980	N/A	25.3	50.8	24.0	12.1
Spanish-	1950	27.8	60.2	9.9	2.0	3.6
Surnamed	1960	22.9	56.8	16.1	4.2	6.1
	1970	14.6	47.4	28.6	9.5	7.2
	1980*	N/A	51.2	33.2	13.7	8.5

SOURCE: 1950-1960,Browning and McLemore, p.30 ;1970-1980 US Census Bureau, *General Social and Economic Characteristics, Texas, Table 99.*

NA = Not Available, thus 8 (or less) includes none

* 1980 figures are for Mexicans only = 91.3% of Hispanic origin population

We can plainly see from Table 15 that relative gains were made between minorities on the one hand, and Anglos on the other during the 1950s, but that the disparities were still quite substantial. In 1960 black median years of schooling comprised only 70% of the Anglo median, while Mexican Americans made only 53% of the Anglo median. The statistical explanation, of course, can be found in the phenomenal concentrations of black adults with 8 or less years of school and the nearly 80% of Mexican American adults with little (8 or less) or no formal education. Browning and McLemore found that the educational level of minority groups in Texas exhibited a strong inverse relationship to their concentration in the local population in cities across the state - a result which for Mexican Americans at least mirrors the extent of their segregation over 30 years previously.

THE 1960'S AND DESEGREGATION

By 1952 teacher salaries for African Americans had attained 96% of the Anglo average, as the State attempted to avoid coming desegregation. The response of the Texas legislature to the desegregation orders of the mid-1950s was to pass even stronger segregation laws in 1957. No community could desegregate until a referendum was held on the question. The *Brown* decision of 1954, and the "finding" of the Texas Supreme Court in 1956 that Texas laws and the Texas Constitution *were indeed subordinate to US Supreme Court decisions* had given some impetus to integration, but this momentum was halted by both the legislature and isolated incidents of white mob violence (Stiles, pp. 114-118). By 1960, most integrated school districts had small black populations. In large school districts, court orders were needed to force school boards to act. Houston flaunted its resistance, admitting 11 blacks to all-white schools out of 5000 who applied (ibid., p.125). In 1964, 10 years after *Brown*, only 373 of 809 districts with biracial populations had begun to desegregate. The vast majority of whites saw few blacks in school: only 5% of blacks attended schools with whites (Barr, p.209).

The Civil Rights and Voting Rights Acts of 1964 and 1965 revived integration efforts. Seventy-five percent of black pupils attended school in nominally desegregated districts, but most went to all-black schools. In 1970, 87% of blacks in San Antonio, 92% of blacks in Houston, and 97% of blacks in Dallas were taught at primarily black schools. Not until May 1969 were the 1957 segregation laws

overturned, thanks in part to a reapportionment of Texas house seats in favor of urban areas.

For Mexican Americans, the pattern seemed to follow that of African Americans with a period of delay. Victims not only of segregation but of "deculturization," Mexican Americans were plagued by high dropout rates (Romero, Ch. 13). At least as late as 1968, high school students were suspended or detained for speaking Spanish in school hallways (for example, in El Paso - US Commission on Civil Rights, 1968). Chicanos boycotted the Houston public schools in 1970 when an integration plan took no notice of Mexicans. In 1968, a group of Mexican American families in Corpus Christi brought suit against the local school district in order to force desegregation. Only after protracted litigation did the school board respond to court orders (TAC, 1977).

In rural South Texas, segregation came under strain as the number of small farmers declined and the amount of corporate farm ownership increased. As mechanization took hold and out-migration progressed, independent growers in both the Winter Garden and the Lower Valley fought a losing battle against rising costs. When the guest worker program from Mexico was terminated in 1964, Midwestern agribusiness intensified recruiting efforts among Chicanos. Just as with blacks in East Texas, the Texas Mexican community responded to market forces either by moving out of the state or to the cities. The shift in control of local wealth meant much less interest in propping up the prevailing social order (Montejano, pp. 271-274). The most significant event, however, in the defeat of de facto Jim Crow in rural South and West Texas was the extension of the Voting Rights Act in 1975 to include the Mexican Americans of the Southwest. Political integration, at least, took place in the counties in which segregation had been strongest (ibid., pp. 292-297).

Segregation in primary and secondary education was not merely that of children. In 1977 the Texas Education Agency (TEA) and local school boards were almost as strong an enclave of Anglo dominance as was the Highway Department. Out of 7256 school board members across Texas, 92.6% were Anglo, 6.5% were Hispanic, and 0.96% were African American (TAC, 1980, Vol.III, App.F, Table 2). At the statewide level, school enrollment was 59% Anglo, 25% Hispanic, and 15% black in 1977. However, the TEA staff employed 83.2% Anglos, 10.5% Hispanics, and 6.1% blacks, while the group composition of the State School Board was 87.5% Anglo, 8.3% Hispanic, and only 4.2% black. Of over 1000 school districts, only 31 had minority

superintendents and one had a female (*ibid.*, pp.175-178). Minorities tend to be in the more responsible administrative positions only when the district is one in which minorities are over 50% of the enrollment.

For both groups, significant advances have been made in the amount of schooling adults 25 years and older have obtained. Table 15 above indicates that both the 1960s and especially the 1970s saw increases in educational attainment. The median years of schooling for African-Americans has grown by 73% since 1950, and the Mexican median by roughly 135%, closing the respective gaps to 95% and 67% of the Anglo median. However, the Mexican figure, still far below that of the Anglo median, only grew 18% in the 1970s. More tellingly, while 68.3% of non-Hispanic white adults over 25 have graduated from high school in 1980, only 51.3% of blacks have and only a mere 33.4% of Mexican Americans have made it out of high school successfully (US Census, 1980, *GSEC*, Texas, Table 99). On the other hand, the table supports the notion that significantly more members of minority groups have better access to opportunity than in previous decades. The analysis of recently-released data from the 1990 Census is still preliminary and as yet do not permit the same tabulations as in Table 15. Nonetheless, the new data suggest that progress at most levels continues. Lastly, none of these figures addresses the question of the quality of education received by all students, but especially that by African Americans and Mexican Americans. In fact, these numbers, taken at face value, assume quality to be the same, a premise historically invalid and currently debatable.

HIGHER EDUCATION

As sweeping changes in agriculture, migration patterns, and segregation took place in the two generations since WWII, attention has shifted somewhat to issues affecting the middle if not upper rungs of the occupational ladder. That is, now that the majority of African and Mexican Americans are no longer living in poverty (albeit precariously for significant numbers), and as we demonstrated in the last section more people are obtaining education, a focus on minority business development has emerged, especially within the last twenty years.

Often it is alleged that qualified minorities are not to be found in technical fields - such as engineering - nor in skilled positions - such as minority construction contractors. To have an informed opinion of the matter, we should consider the degree

of penetration by minorities of higher education facilities, on the one hand, and the state of vocational training, on the other.

As in other fields, higher education saw significant advances in minority access between 1940 and 1970. Desegregation of graduate level programs began in 1950 with the *Sweatt v. Painter* decision against the University of Texas. Undergraduate integration did not begin until 1955 at UT and at SMU. Protracted litigation did not prevent Texas from maintaining, in 1959, eleven state institutions with "a policy of complete exclusion of black students" (US Commission on Civil Rights, 1981, p.7).

UT experienced significant white opposition as the Board of Regents refused to desegregate housing until 1964. In 1956, the first class entering the "integrated" UT campus had 104 blacks out of a total student population of 20,000 - or 0.52%. Black enrollment skyrocketed by 44% to 300 students out of 40,000 at UT in 1972 (Duren, 1979). The figure today stands at roughly 3%. In 1961, the first black Ph.D. was graduated from UT.

Not until the 1960s did the other major universities of Texas desegregate. Given the pace of desegregation at UT, there is no reason to believe that the other schools moved more quickly. If so, then it should be clear that lack of access to the most prestigious of Texas' major universities continued through the 1970s (if not longer). In fact, as late as 1981 the US Department of Education found that Texas was one of several Southern states in violation of Title VI of the Civil Rights Act of 1964 "for having failed to eliminate vestiges of former *de jure* segregation within their public higher education systems" (Us Commission on Civil Rights, 1981, p. 44 n.) This effectively rules out a significant amount of black (and probably Mexican American) engineers and architects relative to the total student population graduating from the first post-war generation. By 1980, in fact, while 20.3% of Anglos had graduated from college, only 9.1% of blacks and 4.8% of Mexicans in Texas have 4 or more years of college (US Census, 1980, GSEC, Texas, Table 99). During the 1980s, opposition to any affirmative action programs in higher education stiffened considerably.

CIVIL ENGINEERING

At this point we should discuss the state of minority and female participation in civil engineering programs. This, of course, is the engineering sub-discipline crucial to the operation of highway construction general contracting firms and also of highway departments. An historical footnote which exemplifies the interrelatedness of

education, segregation, and highway construction employment issues is that Gibb Gilchrest, State Highway Engineer for the Highway Department between 1928 and 1938, became Dean of Engineering at Texas A&M, and later its President and the Chairman of the Board of Regents - all at a time of complete exclusion of blacks from Texas A&M.

Limited data available from the Texas Higher Education Coordinating Board for 1989-1991 are shown below in Table 4.3. The most striking features of the table are i) the dominance of white males in the field; ii) the significant underrepresentation of Anglo women and Hispanics; iii) the utter lack of black civil engineering majors and graduates iv) the overwhelming Anglo presence at the leading engineering schools in Texas. This last observation demonstrates the lingering effects of past segregation. Thus the reasons for low numbers of African Americans, Hispanics, and women in the high paying jobs in construction are deeply rooted. The long term exclusion of minorities from Texas institutions of higher learning is keenly felt in the engineering discipline. Especially disturbing is that, while the figures for women and Hispanics have improved substantially in recent years, the share for African Americans has not. Not measurable in this data is the extent to which a degree from one of these three universities is held in higher regard than one from, say, Prairie View, UT-El Paso, or the University of Houston. If most job opportunities for civil engineers in construction accrue to graduates of the top three schools, then minorities will be disproportionately disadvantaged by such an educational hierarchy. Indeed, the improving numbers for Hispanics have not translated into proportional gains in professional positions in the industry. The situation is plainly critical for black Texans.

TABLE 4.3: Civil Engineering Degrees Conferred and Declared Majors at Selected Texas Universities, 1989-1991.

Degrees Conferred (all levels)

	Anglo Male	*Anglo Female*	*Black*	*Hispanic*	*Asian*
Texas Tech	94	13	3	8	1
Texas	240	46	3	36	10
Texas A&M	451	83	6	35	10
Total	*785*	*142*	*12*	*79*	*21*
State Total	*982*	*169*	*39*	*158*	*65*
percent	(69.4)	(11.9)	(2.8)	(11.2)	(4.6)
share of group total at 3-universities					
	(79.9)	(84.0)	(30.8)	(50.0)	(32.3)

DECLARED MAJORS - FALL 1991

	Anglo Male	*Anglo Female*	*Black*	*Hispanic*	*Asian*
Texas Tech	180	29	4	22	1
Texas	337	80	25	83	24
Texas A&M	686	130	17	113	20
Total	1203	239	46	218	45
State Total	1697	345	148	531	87
percent	(60.2)	(12.2)	(5.3)	(18.8)	(3.1)
share of group total at 3-universities					
percent	(70.9)	(69.3)	(31.1)	(41.1)	(51.7)

In addition, Native Americans claimed 3 degrees and declared 11 majors.

SOURCE: Texas Higher Education Coordinating Board, Unpublished Data

Previous sections of this paper have shown that construction was historically not only "man's work," but also "white man's work" when it comes to the better jobs. The cycle of discrimination has yet to be broken. The 1991 Equal Opportunity in Engineering Annual Report of the UT College of Engineering showed that although minority enrollment in engineering increased throughout the 1980s, degrees conferred showed no real upward trend (p. 14).

The discouraging conclusion to be drawn from Table 4.3 is that unless the efforts being made by public institutions and private organizations to recruit and retain minority students in civil engineering are improved, the field and by extension the

better jobs in construction will remain bereft of equal opportunity. A recent Transportation Research Board (TRB) report showed that nationally, white males constitute 75% of undergraduate majors in civil engineering. White females obtained 13.3% of the 7,688 bachelor of science degrees awarded in civil engineering in 1989; blacks received 2.2%, Hispanics 3.5% and Asians 4.5% of these diplomas. In fact, percentage increases compared to 1980 totals were due more to overall enrollment declines among white males and foreign students than to large absolute gains in minority graduates (Mason, Tarris, and Zaki, 1992, p.10). Except for the Hispanic totals, the major universities in Texas do not deviate substantially from these averages.

The TRB report listed several problems for increased minority and female participation in the profession, all of which are applicable to Texas. Differential treatment on the job and negative socialization were mentioned as primary among the causes of low participation of females. The image problem for the profession has led women to increasingly favor medicine, law, or business to engineering. Relative poverty and inferior primary and secondary education has damaged the chances for minority participation. Moreover, only 20% of minority undergraduates complete their degrees, compared to 70% of white males (*ibid.*, p.6). The authors concluded by advocating a comprehensive "enhancement effort" aimed at enlarging the civil engineering pool, including efforts at all stages of educational development (*ibid.*, p.18).

At the University of Texas, an analysis of minority student performance showed that black and Hispanic graduation rates were significantly lower than that of white students, at both four and five-year rate. In 1990, over 81% of African American students received "Ds" or "Fs" in engineering courses, the worst performance of all major fields. Attrition rates in the first year have increased to nearly 25% for both blacks and Hispanics, while remaining at about 16% for Anglos. Finally, of the students enrolled in a introductory physics class, 24.1% of Anglos received a poor or failing grade, compared to 44.6% of both Hispanics and African Americans. The authors conclude that attrition and graduation rates will not improve unless instructional programs that effectively address the poor academic performance of minorities are created (Hanson and Norman, 1991).

INITIAL ANALYSIS OF SELECTED DATA FROM THE SURVEY OF TXDOT CONSTRUCTION AND MAINTENANCE CONTRACTORS

The survey of TxDOT contractors asked those entrepreneurs who had attended college from which institutions they received their degrees. Tables giving the results of these questions can be found towards the end of the Appendix.

One of the more impressive results, as shown in the Appendix Table A.15, is that for Anglo women and for all minority groups save Native Americans, 50% or more of the college graduates across the survey groups lie within Group A, the professional service-dominated category, and not within strictly-construction oriented fields.

Among other findings, Appendix Tables A.16–A.18 show that for all ethnic groups, out of state institutions and Texas institutions *besides* the main state-supported universities (called "other Texas") play substantial roles in the educational backgrounds of TxDOT contractors. For certified DBE's supplying professional services (group A), an out of state education is the most usual, especially for Asian-Americans. At least 50% of Anglo women, Asian-Americans, African-Americans and Native Americans went to other Texas and out of state institutions for their educations. On the other hand, for Anglo males and Hispanics, Texas A&M and UT-Austin were the two most important universities, accounting for at least 40% of educational backgrounds. However, two-thirds of the Hispanics at Texas A&M worked in professional services. That is, the prominence of Texas A&M and UT-Austin in construction-specific fields (groups B-G) is demonstrated by their top rankings as the most-often attended institutions for these groups of contractors. Indeed, there is an exact match of the ranking of universities between category C (the pre-qualified contractors), prime contractors overall, and Anglo males. This match reinforces the hypothesis, laid out at the end of Part Three, of Anglo male dominance of prime contracting in construction.

VOCATIONAL TRAINING AND APPRENTICESHIP

When pondering the state of vocational education in Texas, we should note that vocational training across the United States was (is) inadequate (Marshall and Briggs, 1967). The large percentage of graduates from vocational training programs working outside their fields has led some to doubt the utility of vocational training and the relevance of the vocational education curriculum to labor market demands (Romero,

p.115). Nonetheless, the situation for minorities has historically been worse. Obstacles faced by minorities at primary and secondary levels of education are replicated in vocational training. In January 01965, the first African American was admitted to the apprenticeship program at San Jacinto High School in Houston. The attitude of the principal was that the white students would walk out *en masse*. The US Civil Rights Commission report from December 1968 is replete with examples of exclusion from or inferiority of vocational education for Mexican Americans in South Texas.

The looming shortage of trained workers has been of concern to the construction industry for some time. The apprenticeship programs of unions, which combine classroom theory, skill development, and on the job training typically over a four-year period, have been criticized for the length of time needed to train skilled craftsmen. Some authors claim that "task training" of workers in open shop construction is more flexible and reflective of demand at the job site (Crandall, 1977). Open shop firms tend to use more unskilled and semiskilled labor than skilled labor, relative to union firms (Bourdon and Levitt, 1980, p.49). Nonetheless, it was recognized by several authors that at least in the seventies, the levels of training for all workers, and especially for minorities, was inadequate (Crandall, and Business Roundtable, 1982). One study noted that non-union apprentices were less typically minority than union apprentices (Bourdon and Levitt, p.60).

Herbert Northrup argues that the primarily on-the-job training found in open shop construction has historically been favorable to minorities. He criticizes reliance on apprenticeship data as misleading, since it ignores the more typical task-training programs. In task-training, a worker is assigned to a journeyman who takes more time to teach the novice. If the novice does not advance quickly enough, then he becomes a semiskilled "helper" rather tan an apprentice or trainee. The result is a more specialized labor force with less broadly applicable skills. On the one hand, training journeymen is more difficult, but on the other hand open shop firms avoid having skilled craftsmen perform tasks beneath their level (Northrup, pp.412-413).

In Texas, of course, highway construction has been open shop. Prevailing wages have been documented to be non-union rates, allowing firms in Texas to avoid the imposition of the Davis-Bacon Act (Northrup, ch. 6). Since 1968 the Associated General Contractors, Heavy-Highway branch has operated US Department of Labor, Office of Federal Contract Compliance-approved training and affirmative action programs. Since the mid 1970s the Bureau of Apprenticeship and Training has

accepted AGC-sponsored programs as well. Evidence suggests that the AGC was commended in the 1980s by the Reagan Administration for meeting hiring goals on federal-aid projects (AGC, 1988).

In fact, Northrup found that between 1974 and 1981, the minority composition on these projects increased, often in the higher-paying occupations. The increase from 4% to 10% of managers being minority is a figure "undoubtedly reflecting the results of the minority set-aside program" (p.561). The relatively high share of minorities in on the job trainees - about 50% - in a group of states dominated by Texas has led the author to conclude that this share augurs "well for future work for minorities in this sector" - that is, the highway sector (p.568). Moreover, Northrup argues that despite underutilization of minorities, open shop construction is more hospitable to minority employment and well-placed to deal with minority training issues (p.572). Before attempting to judge the accuracy of Northrup's statements, we should look at some training and apprenticeship data.

TEXAS APPRENTICESHIP AND TRAINING DATA (PRELIMINARY TREATMENT)

The AGC of Texas has identified seven crafts as those utilized by the Texas heavy-highway industry: electricians, pipefitters and plumbers, painters, ironworkers, carpenters, operating engineers (operators and mechanics), and cement masons. Three data sets will be consulted: 1979 data from the EEOC on apprentices, which includes both union and nonunion firms, 1992 data from the BAT about apprentices within the "Texas construction industry," and AGC data of on-the job-trainees in their unilateral programs.

TABLE 4.4: Apprenticeship data, United States, Texas, 1979 Total, Minorities, and Women

TOTAL	*All Groups*		*All Minority*	
	US	*Texas %*	*US*	*Texas %*
Total	107,980	10.94	20,747	14.33
Male	103,994	10.76	19,848	14.24
Female	3,986	15.53	899	16.46
Graduates				
Total	14,665	16.20	2,614	21.84
Male	14,516	15.72	2,590	20.89
Female	149	24		
Dropouts				
Total	15,059	16.89	4,043	13.55
Male	14,273	17.10	3,800	13.58
Female	786	12.98	243	13.17
Applicants				
Total	148,634	25.33	33,633	47.37
Male	137,508	22.40	30,241	41.40
Female	11,126	61.43	3392	

SOURCE: EEOC, 1979

In 1979, Texas placed relatively well in the number of apprentices, both overall and for minorities. The high amount of minorities in these apprenticeship programs, and the low numbers of females, are reflected in the relative participation rates in manual occupations discussed in Part Three and also supports the notion of relative openness of the Texas construction industry to minority employment. More detailed breakdowns are available upon request.

The 7 crafts listed in the AGC "manpower" booklet accounted for 80% of the total apprentices in the country. Thus, the patterns apparent in the overall data are probably replicated in these crafts as well. One discordant feature of the 1979 EEOC data, broken down by SMSA, is that of the over 32,000 applicants in the Houston area, over 5% were Asians, but only 0.3% of the apprentices were as well. Without further research, the meaning of this disparity is unknown.

TABLE 4.5: On the Job Trainees in Highway and Heavy Construction, Texas, 1979-1992

13 year totals

	Enrolled	*Graduated*	*Grad. Rate*
Total	18,513	6,049	32.7%
"Others"	6,674	2,099	31.5%
Females	1,464	497	33.9%
Blacks	1,561	433	27.7%
Hispanics	8,814	3,020	34.3%

SOURCE: Associated General Contractors, 1993

Unpublished data from the AGC provide a time series from 1979 to 1992 for the AGC-sponsored training program. Table 4.5 lists the 13-year totals of the program. Notice the Hispanics make up almost 48% of the enrollment - a figure that helps to explain the predominance of Hispanics in the Texas construction blue collar workforce seen in Part Three. The low numbers of blacks and females (presumably Anglo) are not as encouraging. Moreover, the yearly figures are lower by a factor of 10 from the 1979 totals of apprentices discussed above -indicating that training levels may indeed be inadequate to labor demands. On the other hand, a fairer comparison may be the following: the totals from 1990-1992 show 5,251 enrollees and 1758 graduates. Apprentice data obtained from the BAT for the same period show a total of 3566 apprentices active in 6 of the 7 relevant crafts, and 954 graduates (BAT, 1993). If these two data sets are separate (and they may not be), then training levels between the apprentices and the task-oriented programs seem to be on a par. Further investigation is needed on this point.

A final comparison looks at the amount of apprentices/trainees versus employment in the EEOC data. In 1990, Texas construction firms employed 12,406 craftspeople, 10,397 operatives, and 5,726 laborers. The exact share of highway firms in the EEOC data is difficult to gauge exactly. The total employment figures for the highway sector may or may not be higher. If they are not too much lower, though, then it is an open question as to whether AGC training efforts alone, however commendable, are sufficient enough to meet both labor demand and affirmative action goals. Again, further investigation is needed. On the other hand, if training levels are indeed adequate, then it is extremely puzzling as to why more Hispanics are not

entering managerial positions after working up through the ranks. It may be that the training provided is so task-specific that the prospect of developing the all-around skills needed for either advancement or for entrepreneurial ventures is not being provided, or that the advancement is not being offered. For other groups, especially African Americans, the entrenched problems of access and recruitment show no sign of giving way. Without a more rigorous treatment, these last statements remains speculative.

SUMMARY

Training programs in Texas highway construction have been operative for over 20 years. Historically, vocational training provided by schools has been inadequate for all groups and worse for minorities. While it is difficult to measure the efficacy of the programs sponsored by the AGC, it seems apparent that the number of skilled Hispanic workers continues to grow, possibly creating a large pool of future contractors. Training efforts, taken at face value, are a bright spot for the industry. However the obstacles faced particularly by minorities in the state's educational system remain as dogged as ever. Higher education especially has seen little progress during the 1980s. Moreover, despite a long history of training efforts, the ranks of the better-paid occupations in the Texas construction industry remain Anglo-dominated.

Over a century of legal exclusion from educational opportunities and of embedded job segregation, certain parties complain about the lack of qualified businessmen when discussing minority (and women) enterprise plans. The possibilities seem to be the following: i) If in actuality there is a relative lack of construction contractors, the long history of deep-seated discrimination stifled their emergence at least until the 1970s if not beyond. Even if one accepted on faith that access to business and engineering training has been equal in the last 25 years (which is contrary to what we have demonstrated), we posit that generations of human and institutional behavior are not so easily overcome; ii) if one can be encouraged by some of the aggregate numbers presented here (particularly those showing progress), then more qualified minorities are in the construction community that some would like to admit, and the existence of a state-funds goals programs would further enhance minority progress, as suggested (in regards to the federal program) almost 10 years ago by Northrup. To the extent that the open shop construction industry in Texas has been open to minorities, then it would indeed be unfortunate if

> the fight over minority business set asides has created bitterness and could probably have diminished interest in furthering minority employment programs (Northrup, p. 548).

Although this section has ended on an ambiguous note with calls for further research, perhaps it will be helpful to review the history of white attitudes towards blacks and Mexicans in the state of Texas. In this manner we hope to gain some insight as to why discrimination has lasted for so long.

PART FIVE: ANGLO ATTITUDES

Of course, the history of bigotry in Texas goes back to the days of slavery for negative attitudes toward African Americans and to the days of colonization for those against Texas Mexicans. It is probably safe to say that white racism, whatever its origins, was at its most ugly and brutal when perceived threats to the Anglo political and economic order occurred. Barr documents the legacy of anti-black violence, from the lawless days after the Civil War, to the terror campaigns of the Klan - especially powerful in East Texas with significant but minority black populations - to the frenzy of lynchings that occurred in the late 19th and early 20th centuries. Texas had the dubious distinction of being third in the nation with 100 lynchings between 1900-1910. The festive crowd of 10,000 in Waco in 1909 that beat, stabbed, mutilated, hanged and burned a suspected black criminal justified its behavior as necessary to strike fear in the hearts of blacks and "to keep them in their places" (Barr, p.136). De Leon (1983) narrates the story of the 19th century Texas border region, and its history not only of lawlessness but of vicious Anglo vigilantism, often aided or led by Texas Rangers, that raided and pillaged Tejano villages whenever a Mexican scare arose (De Leon, ch. 7 and 8).

The depravities just mentioned had their counterparts in institutional arrangements. In the late 19th century, white men's associations were formed to prevent blacks from voting. Their counterparts were formed in South Texas with the arrival of the commercial farmers and the concomitant wave of immigration from Mexico. The alleged fear, of course, was that one boss politician "could buy up the Mexican and Negro votes" (Montejano, p.143). With the passage of the Poll Tax in 1902, the formation of White Man's Primary Associations in various counties - and the consequent collusion by authorities in the exclusion of all non-white voters from the primaries - the first two decades saw a substantial disfranchisement of blacks and Texas Mexicans. Black registered voters fell from 100,000 in 1900 to 5000 by 1920. There are no reliable figures for Texas Mexicans since no one officially counted them as a separate group. Political battles were thus left to white factions to fight out.

It is perhaps an intellectual conceit to believe that bigotry is at its worse in the lower and/or uneducated classes. To be sure, Taylor's study of rural Dimmit County

contains field notes of interviews with white farmers, their wives, ranchers, and others replete with comments such as:

> When you educate the Mexican he is pretty close to the white man. The Mexican has not the bodily odor and is not so black as the Negro, so people are less favorable to the education of the Mexicans than the Negroes because education removes the differences (p.378);

or

> One difficulty in educating the Mexican is that he is treacherous, and education would simply make him more intelligently treacherous (p.438).

One should remember, though, that pseudo-scientific theories of white supremacy of Gobineau and Spencer were conceived in the latter part of the 19th century and continued to have wide influence through most of the first part of the 20th century. We thus have a democracy of prejudice amongst the Anglo population. Johnson, in an otherwise relatively progressive report of the history of education of Texas Mexicans, asserts baldly that of the Tejanos living in Texas after 1836, "many...who remained in Texas...were ignorant, slothful, and venal" (p.36). The same author notes that *The University of Texas Bulletin's Report on Illiteracy in Texas* (1923) defended the right of American and "clean and high-minded" Mexican children (a small minority) to refuse to go to school with the "dirty 'greaser' type of Mexican child" (pp.64-65). Johnson's report closed by optimistically advocating a new course of study that dispensed with an "English-only" method of instruction to improve opportunity for Mexican children, but also called for further research to discover both why "people" view Mexicans as "lazy, contemptible, untrustworthy or deceptive" and *also* what "causes antagonism" between Anglos and Mexican Americans (p.117).

In a less subtle vein, virulent anti-black sentiment was considered worthy of a Master's degree at the University of Texas in 1937. In a thesis entitled "The History of Bowie County," the author argued that:

> In Bowie County, as in all the Southern States, the Ku Klux Klan protected the weak and oppressed. Their special mission was to protect the women during the dark days of Reconstruction, when the South was invaded by unscrupulous carpetbaggers who made the ignorant, vicious negro and undesirable men dangerous. It was a movement of desperate men, challenging fate and swearing that life, liberty, and the pursuit of happiness should be theirs and their children's at any cost. Thus, by vigorous but cautious action, the turbulent negroes whose minds had been inflamed by Yankee emissaries were either driven from the county or inspired with a wholesome respect for the white population...(Chandler, 1937, p.50).

Some of these "emissaries," of course, were the teachers sent to educate the children of freedmen. Many of the county histories written during the 1920s and 1930s generally refer in this manner to Reconstruction, one adding that the period denied political rights to "citizens" but gave them to the "impudent" freedmen (Atkinson, 1929, p.128).

In the 1950s, most Texas teachers were opposed but resigned to desegregation, 74% believing that equal opportunity could be obtained in separate schools. They feared loss of support for public schools (Digby, 1955). In 1948, 66% of white Texans were opposed to equal rights for blacks (Barr, p.184). In 1955, whites were opposed to integration in public schools by a four to one margin, while 53% were opposed to the integration of universities (Stiles, p.84). When highway construction eliminated some low-income housing districts in Texas' cities in the late 1960s, Governor Preston Smith offered that "some people like to live in slums" (Barr, p.222).

There is some historical evidence of white denial of any problem. In 1917, an M.A. thesis at the University of Texas claimed that "Texas...is treating the negro schools with considerable fairness" and then went on to describe the transfer of funds meant for Negro children to Anglo schools and the inequality of teacher salaries for Negroes (Platt, pp.8-9). In a text for young teenagers entitled *Workers and Wealth of Texas* (Stigler and Tardy, 1935), the authors cite a Negro work song about the boll weevil and observe that

> This song was chanted by negro cotton pickers as they joyfully crawled down the rows of cotton. There were both men and women, the latter trailed by pickaninnies... (p.20).

Later, in a response to why Negroes "like to pick cotton," the narrator opined:

> ...there is something about a cotton patch that seems to appeal to most negroes. They look upon cotton picking as play, as a kind of game, rather than work. Each tries to pick more than his friend, and, besides, they often have a good time singing their folk songs... (pp.23-24).

In rather more sophisticated studies, ignorance of or refusal to accept school segregation as being a problem permeates the discussion. Stewart's study of Negro businesses in Houston is a perfect case. In his recommendations for improving the business acumen of Negro entrepreneurs, he lays great emphasis upon improving the curriculum at Texas Southern University, the newly founded black university. Nowhere in his complaints does he imagine that the lack of access to white business schools (with better facilities, etc.,) or current racism as obstacles to the Negro businessman: "The future of Negro business is in the hands of Negro businessmen" (p.135). In 1969, William Slaton argued that the degree of racial discrimination in Texas was "much less" than in the past. What used to be overt acts are merely "habits." "The feeling of prejudice is not there any more, just the actions" (Slaton, p.198) *(An unwitting description of institutional racism, perhaps).* In mentioning technical assistance programs and business training for blacks, the author made no mention of any role for Texas' flagship schools.

Also from 1969 we have a report noteworthy not for its scholarly investigation but for the fact that it was considered worthy of graduation. An MBA report at UT-Austin argued that the problem of the economic status of blacks was caused by of deep social ills "inherent in the Negro subculture," and was not primarily economic in nature. The author's analysis of typical entrepreneurial personalities demonstrated to him that the vast majority of African Americans did not possess a "need for achievement," something that arises from a correct upbringing by mothers imbued with the Protestant work ethic. The legacy of dependence from slavery and the unstable family patterns of low income groups have resulted in most black families being "hedonistic," with an "unrestrained desire to consume" reflected in unwillingness to participate in capitalistic activity. The author, citing a University of Michigan study, argues that since two-thirds of the businessmen interviewed began their careers as "poor" (self-described), obtained capital from often illicit sources, and more often than not did not finish high school, then lack of education, lack of access to banks, and poverty are not barriers to entry into business for blacks. Instead, the

problems lie within black culture, and won't be mitigated until more blacks accept "*white* values of honesty, integrity, and work" (Gammon, 1969 - italics added). Given that this report was at least tolerated at the flagship university of the state just over 20 years ago indicates the depth of the chasm in attitudes that needs to be overcome.

Attitudes, culture, and tradition apart, this writer believes that some compelling economic interest probably lies at the heart of long-standing discriminatory practices. We described in Part Two Wright's thesis that job discrimination was "efficient" over the long term. Elsewhere in that text the author mentions that the combination of linking the farm wage with the industrial unskilled labor wage and of cutting off occupational mobility of blacks enabled industrialists to maximize profits while "obtaining white labor at the black wage" (Wright, p.183). Wright also points out that:

> The belief that the South as a region would not capture the returns on investments in education, especially for blacks, was one reason why industrial employers so often joined planters in opposing increases in spending on schools (p.176).

Speaking of South Texas vegetable district, a school superintendent wrote that

> ...the Mexican does all the grubbing. If a man has very much sense or education either, he is not going to stick to this kind of work. So you see it is up to the white population to keep the Mexicans on his knees in an onion patch or in new ground. This does not mix well with education (Manuel, p.77).

In other words, offering alternatives to the labor force is not conducive to working the fields or harvesting the crops. As to why the compulsory attendance law was rarely enforced in rural districts, officials in Karnes County (southeast of San Antonio) explained that to do so would be impractical since the Mexicans were so "abjectly poor" that monetary fines would be useless, or that the jails would become overcrowded, exciting the "superstitious " Mexican population to the point that

> There would have been a general exodus of Mexicans from the country. Planted crops would have been deserted by the hundreds. The fields would have grown up in weeds and credit merchants, looking to the harvest months of the fall for collections, would have had to close their doors in bankruptcy (Johnson, p.61).

In short, the exigencies of keeping a cheap labor force within the bounds of a Southern regional economy, of which Texas was part, took precedence over the law. Education of the poor, and especially of blacks and Mexicans, would "spoil" them, inducing a desire on their part to leave the state. When they did leave, mechanization finally took hold, and those left behind were displaced. When the out-migration commenced and was in full swing, the segregationist wall wavered and finally fell before federal court orders, national legislative acts, and minority group pressure.

Due to centuries-old patterns of oppression of African Americans and Mexican Americans, discrimination is with us today. Women have faced an entirely different set a barriers, resulting in distinct patterns of job segregation along gender lines. While disparities in occupations and education have lessened, large gaps remain. Construction is an industry that exemplifies the most obdurate problems facing reformers today: slow overall progress, impressive gains in certain occupations, but retrenchment in the 1980s. We hope that this overview has provided both a grasp of the economics and the institutions underlying the historical dimensions of the problem, and also of the job that remains to be done. To the extent that the DBE program on federal-aid projects has been successful in increasing minority and female occupational advancement and employment, then a program for state-funded projects could only enhance these projects. To paraphrase one author, perhaps groups opposed to DBE programs should stop wasting money on lawsuits and, instead, creature programs which envision greater participation of minorities in construction (Murphy, 1977, p.405).

In Texas, where the vicious cycle of job segregation and educational opportunity remains strong, the data indicate that Anglos, males in particular, still begin life and career with a decided and tremendous group advantage. It is incumbent, then, for society to attempt to institutionalize opportunity for the all groups not fortunate enough to enjoy these advantages.

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APPENDIX: DISTRIBUTIONS DERIVED FROM EEOC AND DECENNIAL CENSUS DATA AND PRESENTATION OF SELECTED RESULTS FROM THE SURVEY OF TXDOT CONSTRUCTION AND MAINTENANCE CONTRACTORS

The tables in this Appendix provide specific data regarding occupational distributions and participation rates by race, gender, and ethnic group. Appendix tables A.1 through A.3 and A.5 through A.13 are derived from raw data for Texas published in the United States Equal Employment Opportunity Commission's *Job Patterns for Minorities and Women in Private Industry* (EEOC, 1970; EEOC, 1980; EEOC, 1990). Appendix tables A.4 and A.14 are derived from raw data for Texas from the 1990 decennial census (United States Bureau of the Census, 1992). Relative participation rates were calculated by dividing participation rates in construction by those for all industries. Occupational Disparity rates were calculated by dividing a group's participation rate in a specific occupational category in construction by the overall group participation in construction. Tables of relative participation rates and occupational disparity rates are available upon request.

This appendix also contains several tables presenting selected results from this study's own survey of TxDOT construction and maintenance contractors. These are Tables A.15 through A.18, referred to in Part Four of this volume.

TABLE A.1: Texas Occupational Distribution - All Industries, 1970

Group/ Sex	*Total Employ- ment*	*Officials & mgrs*	*Profess- ional*	*Technic- ians*	*Sales*	*Clerical*	*Craft*	*Opera- tives*	*Laborer*	*Service*
Total	1.0000	0.0900	0.0864	0.0516	0.0884	0.1715	0.1554	0.2069	0.0826	0.0672
Male	1.0000	0.1200	0.1035	0.0556	0.0775	0.0604	0.2144	0.2215	0.0978	0.0492
Female	1.0000	0.0256	0.0497	0.0430	0.1117	0.4101	0.0287	0.1754	0.0499	0.1060
White	1.0000	0.1131	0.1081	0.0584	0.1002	0.1980	0.1704	0.1694	0.0447	0.0378
Male	1.0000	0.1492	0.1293	0.0658	0.0886	0.0680	0.2353	0.1848	0.0512	0.0279
Female	1.0000	0.0319	0.0605	0.0416	0.1261	0.4898	0.0237	0.1359	0.0292	0.0603
Minority	1.0000	0.0180	0.0187	0.0304	0.0515	0.0885	0.1086	0.3239	0.2011	0.1593
Male	1.0000	0.0233	0.0183	0.0217	0.0407	0.0354	0.1455	0.3432	0.2521	0.1198
Female	1.0000	0.0081	0.0194	0.0468	0.0717	0.1886	0.0425	0.2849	0.1075	0.2330
Black	1.0000	0.0108	0.0123	0.0291	0.0335	0.0774	0.0885	0.3253	0.2112	0.2120
Male	1.0000	0.0135	0.0095	0.0152	0.0270	0.0308	0.1229	0.3557	0.2721	0.1532
Female	1.0000	0.0054	0.0178	0.0570	0.0466	0.1710	0.0193	0.2639	0.0887	0.3303
Hispanic	1.0000	0.0225	0.0168	0.0306	0.0668	0.0967	0.1274	0.3296	0.1975	0.1121
Male	1.0000	0.0298	0.0172	0.0264	0.0533	0.0392	0.1668	0.3384	0.2397	0.0891
Female	1.0000	0.0095	0.0162	0.0380	0.0905	0.1974	0.0583	0.3143	0.1233	0.1525

Asian	1.0000	0.0342	0.3291	0.0649	0.1033	0.1216	0.0915	0.0906	0.0792	0.0855
Male	1.0000	0.0457	0.3686	0.0772	0.0970	0.0457	0.1304	0.0603	0.1040	0.0711
Female	1.0000	0.0106	0.2478	0.0397	0.1162	0.2778	0.0116	0.1530	0.0281	0.1152
Amind	1.0000	0.0932	0.0825	0.0416	0.0975	0.1563	0.1546	0.2521	0.0792	0.0430
Male	1.0000	0.1167	0.1017	0.0442	0.0570	0.0540	0.2195	0.2745	0.1025	0.0300
Female	1.0000	0.0421	0.0409	0.0362	0.1855	0.3788	0.2454	0.0136	0.2033	0.0285

TABLE A.2: Texas Occupational Distribution - All Industries 1980

Group/ Sex	*Total Employ- ment*	*Officials & mgrs*	*Profess- ional*	*Technic- ians*	*Sales*	*Clerical*	*Craft*	*Opera- tives*	*Laborer*	*Service*
Total	1.0000	0.1146	0.0905	0.0592	0.1008	0.1586	0.1309	0.1801	0.0768	0.0885
Male	1.0000	0.1558	0.1011	0.0602	0.0848	0.0417	0.1937	0.2061	0.0918	0.0649
Female	1.0000	0.0487	0.0735	0.0576	0.1263	0.3455	0.0305	0.1387	0.0529	0.1263
White	1.0000	0.1490	0.1160	0.0666	0.1126	0.1717	0.1374	0.1419	0.0449	0.0598
Male	1.0000	0.1996	0.1295	0.0702	0.0962	0.0420	0.2005	0.1681	0.0516	0.0424
Female	1.0000	0.0625	0.0930	0.0605	0.1405	0.3939	0.0293	0.0971	0.0335	0.0897
Minority	1.0000	0.0399	0.0351	0.0430	0.0753	0.1303	0.1168	0.2630	0.1459	0.1507
Male	1.0000	0.0524	0.0339	0.0366	0.0579	0.0411	0.1777	0.2958	0.1867	0.1179
Female	1.0000	0.0226	0.0366	0.0519	0.0994	0.2535	0.0327	0.2179	0.0896	0.1958
Black	1.0000	0.0344	0.0310	0.0477	0.0629	0.1513	0.1103	0.2541	0.1290	0.1793
Male	1.0000	0.0456	0.0255	0.0333	0.0454	0.0464	0.1763	0.3262	0.1678	0.1335
Female	1.0000	0.0211	0.0375	0.0648	0.0837	0.2756	0.0320	0.1687	0.0829	0.2336
Hispanic	1.0000	0.0418	0.0241	0.0360	0.0860	0.1150	0.1249	0.2758	0.1658	0.1306
Male	1.0000	0.0535	0.0241	0.0347	0.0662	0.0362	0.1834	0.2840	0.2093	0.1085
Female	1.0000	0.0236	0.0241	0.0380	0.1167	0.2377	0.0338	0.2630	0.0980	0.1650
Asian	1.0000	0.0467	0.2083	0.0824	0.0589	0.0980	0.0721	0.2201	0.0886	0.1249
Male	1.0000	0.0688	0.2409	0.0887	0.0540	0.0409	0.1084	0.1926	0.1002	0.1056
Female	1.0000	0.0176	0.1655	0.0740	0.0654	0.1731	0.0244	0.2563	0.0733	0.1503
Amind	1.0000	0.1284	0.0851	0.0566	0.1055	0.1697	0.1399	0.1559	0.0634	0.0954
Male	1.0000	0.1609	0.0865	0.0623	0.0988	0.0859	0.1877	0.1728	0.0698	0.0754
Female	1.0000	0.0639	0.0824	0.0454	0.1187	0.3365	0.0450	0.1223	0.0505	0.1353

TABLE A.3: Texas Occupational Distribution - All Industries 1990

Group/ Sex	*Total Employ-ment*	*Officials & mgrs*	*Profess-ional*	*Technic-ians*	*Sales*	*Clerical*	*Craft*	*Opera-tives*	*Laborer*	*Service*
Total	1.0000	0.1149	0.1386	0.0673	0.1167	0.1633	0.1032	0.1322	0.0655	0.0982
Male	1.0000	0.1531	0.1445	0.0696	0.0918	0.0467	0.1665	0.1648	0.0833	0.0797
Female	1.0000	0.0660	0.1311	0.0645	0.1485	0.3128	0.0222	0.0904	0.0426	0.1219
White	1.0000	0.1508	0.1783	0.0726	0.1197	0.1699	0.1098	0.0987	0.0376	0.0628
Male	1.0000	0.1977	0.1857	0.0776	0.0939	0.0438	0.1734	0.1301	0.0477	0.0501
Female	1.0000	0.0857	0.1679	0.0655	0.1554	0.3449	0.0214	0.0551	0.0237	0.0804
Minority	1.0000	0.0462	0.0627	0.0574	0.1109	0.1508	0.0907	0.1964	0.1188	0.1662
Male	1.0000	0.0583	0.0568	0.0525	0.0874	0.0529	0.1517	0.2385	0.1592	0.1428
Female	1.0000	0.0328	0.0691	0.0627	0.1368	0.2585	0.0237	0.1500	0.0744	0.1918
Black	1.0000	0.0426	0.0564	0.0667	0.0980	0.1851	0.0809	0.1724	0.1031	0.1947
Male	1.0000	0.0539	0.0461	0.0526	0.0775	0.0666	0.1462	0.2480	0.1482	0.1608
Female	1.0000	0.0326	0.0654	0.0791	0.1159	0.2888	0.0237	0.1064	0.0637	0.2244
Hispanic	1.0000	0.0456	0.0396	0.0461	0.1244	0.1316	0.1007	0.2202	0.1363	0.1556
Male	1.0000	0.0562	0.0354	0.0462	0.0960	0.0445	0.1606	0.2439	0.1771	0.1402
Female	1.0000	0.0320	0.0450	0.0460	0.1608	0.2432	0.0240	0.1898	0.0840	0.1753
Asian	1.0000	0.0625	0.2915	0.0893	0.0768	0.0942	0.0640	0.1550	0.0785	0.0881
Male	1.0000	0.0855	0.2933	0.1003	0.0646	0.0446	0.0980	0.1561	0.0766	0.0808
Female	1.0000	0.0344	0.2893	0.0758	0.0918	0.1550	0.0223	0.1536	0.0808	0.0971
Amind	1.0000	0.1183	0.1272	0.0951	0.1117	0.1794	0.1123	0.1168	0.0492	0.0901
Male	1.0000	0.1481	0.1147	0.0944	0.0853	0.1026	0.1764	0.1428	0.0581	0.0776
Female	1.0000	0.0757	0.1450	0.0962	0.1494	0.2893	0.0206	0.0795	0.0364	0.1079

TABLE A.4: Texas Occupational Distribution - All Industries 1990

Group/ Sex	*Total Employ- ment*	*Officials & mgrs*	*Profess- ional*	*Technic- ians*	*Sales*	*Clerical*	*Craft*	*Opera- tives*	*Laborer*	*Service*
Total	1.0000	0.1221	0.1358	0.0388	0.1287	0.1641	0.1219	0.1012	0.0446	0.1429
Males	1.0000	0.1299	0.1158	0.0408	0.1223	0.0699	0.2037	0.1422	0.0685	0.1071
Females	1.0000	0.1127	0.16	0.0364	0.1364	0.2781	0.0229	0.0516	0.0156	0.1863
Anglo	1.0000	0.1514	0.1627	0.0427	0.1426	0.1724	0.1178	0.0779	0.0294	0.1033
Male	1.0000	0.1638	0.1431	0.0468	0.1443	0.0658	0.1989	0.1156	0.0444	0.0775
Females	1.0000	0.1363	0.1865	0.0376	0.1405	0.3019	0.0193	0.0321	0.0111	0.1348
Black	1.0000	0.0678	0.0944	0.0348	0.0939	0.1744	0.0814	0.1393	0.0632	0.2509
Male	1.0000	0.0655	0.0652	0.03	0.0685	0.104	0.1449	0.2178	0.1123	0.1921
Females	1.0000	0.0698	0.1205	0.0392	0.1166	0.2374	0.0245	0.0691	0.0193	0.3036
Hispanic	1.0000	0.0625	0.0698	0.026	0.1036	0.1395	0.1566	0.1521	0.0823	0.2078
Males	1.0000	0.061	0.0503	0.0244	0.0815	0.0675	0.2479	0.19	0.122	0.1557
Female	1.0000	0.0645	0.0969	0.0283	0.1342	0.2392	0.0302	0.0997	0.0272	0.2799
Amind	1.0000	0.1017	0.1096	0.0424	0.1172	0.1549	0.1439	0.1165	0.0463	0.1678
Male	1.0000	0.0964	0.0912	0.0424	0.1051	0.0741	0.2306	0.1624	0.0694	0.1283
Females	1.0000	0.1082	0.1323	0.0423	0.1321	0.2544	0.0372	0.0599	0.0179	0.2164
Asian	1.0000	0.1145	0.2068	0.077	0.1388	0.1051	0.0919	0.099	0.0282	0.1388
Male	1.0000	0.1248	0.2221	0.0866	0.1295	0.0711	0.119	0.1009	0.0338	0.1122
Females	1.0000	0.1017	0.1878	0.065	0.1502	0.1473	0.0582	0.0966	0.0213	0.1718

TABLE A.5: Texas Occupational Distribution – Construction, 1970

Group/ Sex	*Total Employ-ment*	*Officials & mgrs*	*Profess-ional*	*Technic-ians*	*Sales*	*Clerical*	*Craft*	*Opera-tives*	*Laborer*	*Service*
Total	1.0000	0.0795	0.0516	0.0434	0.0059	0.0597	0.3534	0.1846	0.2054	0.0165
Male	1.0000	0.0826	0.0539	0.0440	0.0058	0.0197	0.3742	0.1941	0.2162	0.0094
Female	1.0000	0.0266	0.0128	0.0348	0.0071	0.7259	0.0064	0.0266	0.0259	0.1338
White	1.0000	0.1113	0.0730	0.0582	0.0083	0.0809	0.4095	0.1436	0.0963	0.0190
Male	1.0000	0.1182	0.0780	0.0600	0.0083	0.0260	0.4428	0.1538	0.1026	0.0102
Female	1.0000	0.0277	0.0123	0.0362	0.0073	0.7442	0.0069	0.0208	0.0196	0.1254
Minority	1.0000	0.0104	0.0052	0.0114	0.0008	0.0139	0.2316	0.2734	0.4421	0.0111
Male	1.0000	0.0103	0.0050	0.0113	0.0008	0.0070	0.2349	0.2759	0.4469	0.0079
Female	1.0000	0.0138	0.0184	0.0184	0.0046	0.5069	0.0000	0.0968	0.1014	0.2350
Black	1.0000	0.0070	0.0024	0.0062	0.0003	0.0108	0.2004	0.2840	0.4706	0.0184
Male	1.0000	0.0069	0.0021	0.0061	0.0002	0.0063	0.2034	0.2857	0.4750	0.0143
Female	1.0000	0.0105	0.0211	0.0105	0.0105	0.3053	0.0000	0.1684	0.1789	0.2842
Hispanic	1.0000	0.0127	0.0070	0.0149	0.0012	0.0160	0.2527	0.2663	0.4230	0.0062
Male	1.0000	0.0126	0.0069	0.0148	0.0012	0.0075	0.2560	0.2693	0.4280	0.0037
Female	1.0000	0.0164	0.0164	0.0246	0.0000	0.6639	0.0000	0.0410	0.0410	0.1967
Asian	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Male	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Female	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Amind	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Male	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Female	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

TABLE A.6: Texas Occupational Distribution – Construction, 1980

Group/ Sex	*Total Employ- ment*	*Officials & mgrs*	*Profess- ional*	*Technic- ians*	*Sales*	*Clerical*	*Craft*	*Opera- tives*	*Laborer*	*Service*
Total	1.0000	0.0983	0.0479	0.0285	0.0111	0.0667	0.3380	0.2154	0.1820	0.0121
Male	1.0000	0.1029	0.0487	0.0281	0.0094	0.0142	0.3664	0.2282	0.1925	0.0095
Female	1.0000	0.0494	0.0393	0.0325	0.0289	0.6262	0.0355	0.0786	0.0693	0.0401
White	1.0000	0.1358	0.0664	0.0382	0.0159	0.0905	0.3755	0.1871	0.0806	0.0100
Male	1.0000	0.1461	0.0693	0.0389	0.0140	0.0191	0.4178	0.2014	0.0845	0.0090
Female	1.0000	0.0537	0.0428	0.0329	0.0314	0.6608	0.0372	0.0734	0.0494	0.0185
Minority	1.0000	0.0311	0.0149	0.0110	0.0025	0.0239	0.2709	0.2661	0.3638	0.0158
Male	1.0000	0.0312	0.0146	0.0102	0.0019	0.0063	0.2809	0.2727	0.3718	0.0103
Female	1.0000	0.0281	0.0217	0.0307	0.0166	0.4521	0.0268	0.1047	0.1699	0.1494
Black	1.0000	0.0251	0.0088	0.0086	0.0030	0.0419	0.2880	0.2840	0.3078	0.0328
Male	1.0000	0.0249	0.0085	0.0067	0.0021	0.0120	0.3066	0.2967	0.3193	0.0233
Female	1.0000	0.0283	0.0126	0.0346	0.0157	0.4497	0.0346	0.1101	0.1509	0.1635
Hispanic	1.0000	0.0302	0.0086	0.0094	0.0023	0.0167	0.2676	0.2638	0.3906	0.0109
Male	1.0000	0.0303	0.0085	0.0089	0.0018	0.0042	0.2749	0.2684	0.3964	0.0066
Female	1.0000	0.0282	0.0117	0.0282	0.0188	0.4343	0.0235	0.1080	0.1948	0.1526
Asian	1.0000	0.1004	0.4633	0.1429	0.0039	0.0811	0.1081	0.0579	0.0425	0.0000
Male	1.0000	0.1106	0.4766	0.1532	0.0043	0.0255	0.1191	0.0638	0.0468	0.0000
Female	1.0000	0.0000	0.3333	0.0417	0.0000	0.6250	0.0000	0.0000	0.0000	0.0000
Amind	1.0000	0.1415	0.0341	0.0098	0.0098	0.0585	0.3220	0.2878	0.1317	0.0049
Male	1.0000	0.1474	0.0368	0.0105	0.0105	0.0053	0.3474	0.3053	0.1316	0.0053
Female	1.0000	0.0667	0.0000	0.0000	0.0000	0.7333	0.0000	0.0667	0.1333	0.0000

TABLE A.7: Texas Occupational Distribution - Construction, 1990

Group/ Sex	*Total Employ- ment*	*Officials & mgrs*	*Profess- ional*	*Technic- ians*	*Sales*	*Clerical*	*Craft*	*Opera- tives*	*Laborer*	*Service*
Total	1.0000	0.1058	0.0481	0.0348	0.0157	0.0771	0.3070	0.2573	0.1417	0.0126
Male	1.0000	0.1100	0.0451	0.0359	0.0121	0.0159	0.3418	0.2766	0.1531	0.0095
Female	1.0000	0.0720	0.0723	0.0256	0.0447	0.5654	0.0289	0.1034	0.0507	0.0371
White	1.0000	0.1441	0.0683	0.0458	0.0222	0.1003	0.3177	0.2238	0.0722	0.0057
Male	1.0000	0.1538	0.0663	0.0486	0.0177	0.0191	0.3628	0.2477	0.0786	0.0054
Female	1.0000	0.0813	0.0816	0.0271	0.0513	0.6259	0.0254	0.0689	0.0303	0.0081
Minority	1.0000	0.0373	0.0119	0.0152	0.0041	0.0356	0.2878	0.3172	0.2661	0.0248
Male	1.0000	0.0371	0.0097	0.0148	0.0027	0.0106	0.3068	0.3247	0.2773	0.0163
Female	1.0000	0.0407	0.0407	0.0204	0.0223	0.3618	0.0407	0.2192	0.1193	0.1348
Black	1.0000	0.0297	0.0151	0.0282	0.0109	0.0539	0.2305	0.3492	0.2420	0.0406
Male	1.0000	0.0291	0.0110	0.0271	0.0058	0.0137	0.2544	0.3658	0.2653	0.0278
Female	1.0000	0.0338	0.0468	0.0364	0.0494	0.3584	0.0494	0.2234	0.0649	0.1377
Hispanic	1.0000	0.0377	0.0066	0.0097	0.0019	0.0285	0.3066	0.3088	0.2799	0.0203
Male	1.0000	0.0376	0.0054	0.0098	0.0017	0.0094	0.3222	0.3138	0.2867	0.0134
Female	1.0000	0.0389	0.0271	0.0085	0.0068	0.3587	0.0355	0.2217	0.1624	0.1404
Asian	1.0000	0.1135	0.2432	0.0973	0.0054	0.1243	0.1297	0.2324	0.0378	0.0162
Male	1.0000	0.1088	0.2653	0.1088	0.0068	0.0408	0.1497	0.2653	0.0476	0.0068
Female	1.0000	0.1316	0.1579	0.0526	0.0000	0.4474	0.0526	0.1053	0.0000	0.0526
Amind	1.0000	0.0773	0.0331	0.0221	0.0055	0.0387	0.3757	0.3260	0.1105	0.0110
Male	1.0000	0.0793	0.0244	0.0244	0.0061	0.0061	0.4146	0.3293	0.1098	0.0061
Female	1.0000	0.0588	0.1176	0.0000	0.0000	0.3529	0.0000	0.2941	0.1176	0.0588

TABLE A.8: Texas All Industry Participation Rates - 1970

Group/ Sex	*Total Employ-ment*	*Officials & mgrs*	*Profess-ional*	*Technic-ians*	*Sales*	*Clerical*	*Craft*	*Opera-tives*	*Laborer*	*Service*
Total	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Male	0.6824	0.9096	0.8175	0.7351	0.5985	0.2405	0.9414	0.7308	0.8081	0.4993
Female	0.3176	0.0904	0.1825	0.2649	0.4015	0.7595	0.0586	0.2692	0.1919	0.5007
White	0.7575	0.9514	0.9476	0.8572	0.8588	0.8749	0.8306	0.6203	0.4098	0.4256
Male	0.5240	0.8686	0.7839	0.6686	0.5255	0.2078	0.7931	0.4680	0.3247	0.2171
Female	0.2335	0.0828	0.1636	0.1885	0.3332	0.6671	0.0356	0.1534	0.0825	0.2093
Minority	0.2425	0.0486	0.0524	0.1428	0.1412	0.1251	0.1694	0.3797	0.5902	0.5744
Male	0.1584	0.0410	0.0336	0.0665	0.0730	0.0327	.1483	0.2627	0.4834	.2822
Female	0.0841	0.0076	0.0189	0.0763	0.0682	0.0925	0.0230	0.1158	.1095	0.2914
Black	0.1179	0.0141	0.0167	0.0664	0.0447	0.0532	0.0671	0.1854	0.3014	0.3717
Male	0.0788	0.0118	0.0087	0.0232	0.0241	0.0142	0.0623	0.1354	0.2594	0.1795
Female	0.0391	0.0023	0.0081	0.0432	0.0206	0.0390	0.0049	0.0499	0.0420	0.1922
Hispanic	0.1183	0.0295	0.0231	0.0703	0.0894	0.0667	0.0970	0.1885	0.2827	0.1973
Male	0.0753	0.0250	0.0150	0.0386	0.0454	0.0172	0.0808	0.1232	0.2186	0.0999
Female	0.0430	0.0045	0.0080	0.0316	0.0440	0.0495	0.0161	0.0653	0.0641	0.0974
Asian	0.0023	0.0009	0.0089	0.0029	0.0027	0.0017	0.0014	0.0010	0.0022	0.0030
Male	0.0016	0.0008	0.0067	0.0024	0.0017	0.0004	0.0013	0.0005	0.0020	0.0017
Female	0.0008	0.0001	0.0022	0.0006	0.0010	0.0012	0.0001	0.0006	0.0003	0.0013
Amind	0.0040	0.0041	0.0038	0.0032	0.0044	0.0036	0.0039	0.0048	0.0038	0.0025
Male	0.0027	0.0035	0.0032	0.0023	0.0017	0.0009	0.0038	0.0036	0.0034	0.0012
Female	0.0012	0.0006	0.0006	0.0009	0.0026	0.0028	0.0020	0.0001	0.0031	0.0005

TABLE A.9: Texas All Industry Participation Rates - 1980

Group/ Sex	*Total Employ- ment*	*Officials & mgrs*	*Profess- ional*	*Technic- ians*	*Sales*	*Clerical*	*Craft*	*Opera- tives*	*Laborer*	*Service*
Total	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Male	0.6151	0.8363	0.6872	0.6256	0.5176	0.1618	0.9103	0.7037	0.7351	0.4509
Female	0.3849	0.1637	0.3128	0.3744	0.4824	0.8382	0.0897	0.2963	0.2649	0.5491
White	0.6842	0.8902	0.8776	0.7703	0.7640	0.7405	0.7183	0.5390	0.4003	0.4625
Male	0.4321	0.7526	0.6185	0.5124	0.4125	0.1143	0.6618	0.4031	0.2903	0.2071
Female	0.2522	0.1376	0.2591	0.2580	0.3515	0.6262	0.0565	0.1359	0.1101	0.2554
Minority	0.3158	0.1098	0.1224	0.2297	0.2360	0.2595	0.2817	0.4610	0.5997	0.5375
Male	0.1831	0.0837	0.0687	0.1132	0.1052	0.0474	0.2485	0.3005	0.4449	0.2439
Female	0.1327	0.0262	0.0537	0.1164	0.1308	0.2121	0.0332	0.1605	0.1548	0.2936
Black	0.1341	0.0403	0.0459	0.1081	0.0837	0.1279	0.1130	0.1892	0.2251	0.2717
Male	0.0728	0.0290	0.0205	0.0409	0.0328	0.0213	0.0980	0.1317	0.1589	0.1097
Female	0.0613	0.0113	0.0254	0.0671	0.0509	0.106	0.0150	0.0574	0.0662	0.1619
Hispanic	0.1655	0.0604	0.0441	0.1006	0.1412	0.1200	0.1579	0.2533	0.3571	0.2442
Male	0.1008	0.0471	0.0269	0.0590	0.0662	0.0230	0.1412	0.1588	0.2745	0.1235
Female	0.0647	0.0133	0.0172	0.0416	0.0749	0.0970	0.0167	0.0945	0.0826	0.1206
Asian	0.0126	0.0051	0.0290	0.0176	0.0074	0.0078	0.0069	0.0154	0.0145	0.0178
Male	0.0072	0.0043	0.0191	0.0107	0.0038	0.0018	0.0059	0.0077	0.0093	0.0085
Female	0.0055	0.0008	0.0100	0.0068	0.0035	0.0059	0.0010	0.0078	0.0052	0.0093
Amind	0.0040	0.0034	0.0034	0.0037	0.0038	0.0038	0.0031	0.0029	0.0039	0.0036
Male	0.0024	0.0033	0.0023	0.0025	0.0023	0.0013	0.0034	0.0023	0.0022	0.0020
Female	0.0012	0.0007	0.0011	0.0009	0.0014	0.0025	0.0004	0.0008	0.0008	0.0018

TABLE A.10: Texas All Industry Participation Rates - 1990

Group/ Sex	*Total Employ-ment*	*Officials & mgrs*	*Profess-ional*	*Technic-ians*	*Sales*	*Clerical*	*Craft*	*Opera-tives*	*Laborer*	*Service*
Total	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Male	0.5616	0.7483	0.5853	0.5803	0.441	0.1606	0.9055	0.7001	0.7149	0.4560
Female	0.4384	0.2517	0.4147	0.4197	0.5581	0.8394	0.0945	0.2999	0.2851	0.5440
White	0.6571	0.8623	0.8450	0.7079	0.6740	0.6834	0.6986	0.4906	0.3777	0.4199
Male	0.3820	0.6572	0.5117	0.4403	0.3074	0.1024	0.6417	0.3760	0.2782	0.1947
Female	0.2751	0.2051	0.3333	0.2676	0.3666	0.5810	0.0569	0.1146	0.0995	0.2252
Minority	0.3429	0.1377	0.1550	0.2921	0.3260	0.3166	0.3014	0.5094	0.6223	0.5801
Male	0.1797	0.0912	0.0736	0.1400	0.1345	0.0582	0.2639	0.3241	0.4367	0.2613
Female	0.1632	0.0466	0.0814	0.1521	0.1915	0.2584	0.0375	0.1853	0.1856	0.3188
Black	0.1348	0.0499	0.0549	0.1336	0.1133	0.1528	0.1056	0.1759	0.2124	0.2673
Male	0.0629	0.0295	0.0209	0.0491	0.0418	0.0256	0.0891	0.1180	0.1424	0.1030
Female	0.0719	0.0204	0.0339	0.0844	0.0714	0.1272	0.0165	0.0579	0.0700	0.1644
Hispanic	0.1835	0.0728	0.0524	0.1256	0.1956	0.1478	0.1790	0.3057	0.3819	0.2906
Male	0.1031	0.0504	0.0264	0.0707	0.0848	0.0281	0.1603	0.1902	0.2789	0.1471
Female	0.0804	0.0224	0.0261	0.0549	0.1108	0.1197	0.0187	0.1154	0.1031	0.1435
Asian	0.0212	0.0115	0.0446	0.0281	0.0140	0.0122	0.0131	0.0249	0.0254	0.0190
Male	0.0117	0.0087	0.0247	0.0174	0.0065	0.0032	0.0111	0.0138	0.0137	0.0096
Female	0.0095	0.0029	0.0199	0.0107	0.0075	0.0091	0.0021	0.0111	0.0118	0.0094
Amind	0.0034	0.0035	0.0031	0.0048	0.0032	0.0037	0.0037	0.0030	0.0025	0.0031
Male	0.0020	0.0026	0.0016	0.0028	0.0015	0.0012	0.0034	0.0022	0.0018	0.0016
Female	0.0014	0.0009	0.0015	0.0020	0.0018	0.0025	0.0003	0.0008	0.0008	0.0015

TABLE A.11: Texas Construction Participation Rates - 1970

Group/ Sex	*Total Employ- ment*	*Officials & mgrs*	*Profess- ional*	*Technic- ians*	*Sales*	*Clerical*	*Craft*	*Opera- tives*	*Laborer*	*Service*
Total	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Male	0.9433	0.9810	0.9860	0.9546	0.9320	0.3114	0.9990	0.9918	0.9929	0.5402
Female	0.0567	0.0190	0.0140	0.0454	0.0680	0.6886	0.0010	0.0082	0.0071	0.4598
White	0.6845	0.9588	0.9684	0.9171	0.9558	0.9266	0.7932	0.5326	0.3208	0.7878
Male	0.6322	0.9405	0.9560	0.8736	0.8912	0.2751	0.7922	0.5267	0.3158	0.3902
Female	0.0523	0.0182	0.0125	0.0435	0.0646	0.6515	0.0010	0.0059	0.0050	0.3976
Minority	0.3155	0.0412	0.0316	0.0829	0.0442	0.0734	0.2068	0.4674	0.6792	0.2122
Male	0.3112	0.0405	0.0300	0.0810	0.0408	0.0364	0.2068	0.4651	0.6771	0.1500
Female	0.0044	0.0008	0.0016	0.0019	0.0034	0.0370	0.0000	0.0023	0.0022	0.0622
Black	0.1271	0.0111	0.0058	0.0181	0.0068	0.0229	0.0720	0.1955	0.2911	0.1415
Male	0.1251	0.0109	0.0051	0.0176	0.0034	0.0131	0.0720	0.1937	0.2894	0.1085
Female	0.0019	0.0003	0.0008	0.0005	0.0034	0.0098	0.0000	0.0017	0.0017	0.0329
Hispanic	0.1885	0.0301	0.0257	0.0648	0.0374	0.0505	0.1348	0.2720	0.3881	0.0707
Male	0.1860	0.0296	0.0249	0.0634	0.0374	0.0232	0.1348	0.2714	0.3876	0.0415
Female	0.0025	0.0005	0.0008	0.0014	0.0000	0.0273	0.0000	0.0005	0.0005	0.0293
Asian	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Male	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Female	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Amind	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Male	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Female	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

TABLE A.12: Texas Construction Participation Rates - 1980

Group/ Sex	*Total Employ-ment*	*Officials & mgrs*	*Profess-ional*	*Technic-ians*	*Sales*	*Clerical*	*Craft*	*Opera-tives*	*Laborer*	*Service*
Total	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Male	0.9144	0.9569	0.9298	0.9021	0.7769	0.1954	0.9910	0.9687	0.9674	0.7160
Female	0.0856	0.0431	0.0702	0.0979	0.2231	0.8046	0.0090	0.0313	0.0326	0.2840
White	0.6421	0.8868	0.8890	0.8620	0.9186	0.8716	0.7132	0.5579	0.2845	0.5321
Male	0.5707	0.8478	0.8252	0.7794	0.7166	0.1631	0.7054	0.5336	0.2651	0.4230
Female	0.0715	0.0390	0.0638	0.0826	0.2020	0.7085	0.0079	0.0244	0.0194	0.1091
Minority	0.3579	0.1132	0.1110	0.1380	0.0814	0.1284	0.2868	0.4421	0.7155	0.4679
Male	0.3437	0.1091	0.1046	0.1227	0.0603	0.0323	0.2856	0.4352	0.7023	0.2930
Female	0.0142	0.0040	0.0064	0.0153	0.0212	0.0961	0.0011	0.0069	0.0132	0.1749
Black	0.0843	0.0215	0.0155	0.0254	0.0228	0.0529	0.0718	0.1111	0.1426	0.2287
Male	0.0786	0.0199	0.0140	0.0184	0.0147	0.0141	0.0712	0.1082	0.1378	0.1510
Female	0.0058	0.0017	0.0015	0.0070	0.0081	0.0388	0.0006	0.0029	0.0048	0.0777
Hispanic	0.2652	0.0815	0.0476	0.0877	0.0537	0.0665	0.2099	0.3247	0.5691	0.2377
Male	0.2574	0.0793	0.0457	0.0801	0.0407	0.0163	0.2094	0.3208	0.5609	0.1405
Female	0.0077	0.0022	0.0019	0.0076	0.0130	0.0502	0.0005	0.0039	0.0083	0.0972
Asian	0.0047	0.0048	0.0453	0.0235	0.0016	0.0057	0.0015	0.0013	0.0011	0.0000
Male	0.0043	0.0048	0.0423	0.0229	0.0016	0.0016	0.0015	0.0013	0.0011	0.0000
Female	0.0004	0.0000	0.0030	0.0006	0.0000	0.0041	0.0000	0.0000	0.0000	0.0000
Amind	0.0037	0.0053	0.0026	0.0013	0.0033	0.0033	0.0035	0.0050	0.0027	0.0015
Male	0.0034	0.0052	0.0026	0.0013	0.0033	0.0003	0.0035	0.0049	0.0025	0.0015
Female	0.0003	0.0002	0.0000	0.0000	0.0000	0.0030	0.0000	0.0001	0.0002	0.0000

TABLE A.13: Texas Construction Participation Rates - 1990

Group/ Sex	*Total Employ-ment*	*Officials & mgrs*	*Profess-ional*	*Technic-ians*	*Sales*	*Clerical*	*Craft*	*Opera-tives*	*Laborer*	*Service*
Total	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Male	0.8887	0.9242	0.8327	0.9182	0.6830	0.1836	0.9895	0.9553	0.9602	0.6713
Female	0.1113	0.0758	0.1673	0.0818	0.3170	0.8164	0.0105	0.0447	0.0398	0.3287
White	0.6415	0.8735	0.9115	0.8435	0.9069	0.8343	0.6639	0.5579	0.3268	0.2933
Male	0.5557	0.8075	0.7658	0.7767	0.6262	0.1377	0.6568	0.5350	0.3084	0.2382
Female	0.0858	0.0659	0.1457	0.0669	0.2808	0.6966	0.0071	0.0230	0.0183	0.0551
Minority	0.3585	0.1265	0.0885	0.1565	0.0931	0.1657	0.3361	0.4421	0.6732	0.7067
Male	0.3330	0.1167	0.0669	0.1415	0.0568	0.0459	0.3327	0.4203	0.6518	0.4331
Female	0.0255	0.0098	0.0216	0.0149	0.0363	0.1197	0.0034	0.0217	0.0215	0.2736
Black	0.0817	0.0229	0.0257	0.0661	0.0568	0.0571	0.0613	0.1109	0.1395	0.2638
Male	0.0722	0.0199	0.0165	0.0562	0.0268	0.0128	0.0598	0.1026	0.1352	0.1594
Female	0.0095	0.0030	0.0093	0.0100	0.0300	0.0443	0.0015	0.0083	0.0044	0.1043
Hispanic	0.2677	0.0954	0.0365	0.0747	0.0331	0.0989	0.2674	0.3213	0.5290	0.4331
Male	0.2531	0.0900	0.0283	0.0711	0.0268	0.0308	0.2657	0.3087	0.5122	0.2697
Female	0.0146	0.0054	0.0082	0.0036	0.0063	0.0681	0.0017	0.0126	0.0168	0.1634
Asian	0.0046	0.0049	0.0232	0.0128	0.0016	0.0074	0.0019	0.0041	0.0012	0.0059
Male	0.0036	0.0037	0.0201	0.0114	0.0016	0.0019	0.0018	0.0038	0.0012	0.0020
Female	0.0009	0.0012	0.0031	0.0014	0.0000	0.0055	0.0002	0.0004	0.0000	0.0039
Amind	0.0045	0.0033	0.0031	0.0028	0.0016	0.0022	0.0055	0.0057	0.0035	0.0039
Male	0.0041	0.0030	0.0021	0.0028	0.0016	0.0003	0.0055	0.0052	0.0031	0.0020
Female	0.0004	0.0002	0.0010	0.0000	0.0000	0.0019	0.0000	0.0005	0.0003	0.0020

TABLE A.14: Texas All Industry Participation Rates 1990

Group/ Sex	*Total Employ-ment*	*Officials & mgrs*	*Profess-ional*	*Technic-ians*	*Sales*	*Clerical*	*Craft*	*Opera-tives*	*Laborer*	*Service*
Total	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
All	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Males	0.5474	0.5823	0.4668	0.5756	0.5203	0.2331	0.9149	0.7691	0.8419	0.4101
Females	0.4526	0.4177	0.5332	0.4244	0.4797	0.7669	0.0851	0.2309	0.1581	0.5899
Anglo	0.6519	0.8079	0.7812	0.7158	0.7222	0.6847	0.6301	0.5018	0.4294	0.4712
Male	0.3576	0.4795	0.3769	0.4311	0.4011	0.1433	0.5835	0.4086	0.3563	0.1939
Female	0.2942	0.3284	0.4043	0.2847	0.3212	0.5414	0.0465	0.0933	0.0731	0.2774
Black	0.1083	0.0601	0.0753	0.0971	0.079	0.1151	0.0723	0.149	0.1536	0.1901
Male	0.0512	0.0274	0.0246	0.0395	0.0272	0.0324	0.0608	0.1101	0.1289	0.0688
Female	0.0571	0.0327	0.0507	0.0576	0.0518	0.0827	0.0115	0.039	0.0247	0.1213
Hispanic	0.2162	0.1106	0.1112	0.145	0.1741	0.1838	0.2779	0.325	0.3991	0.3143
Males	0.1255	0.0627	0.0465	0.079	0.0795	0.0516	0.2554	0.2357	0.3437	0.1367
Female	0.0907	0.0479	0.0647	0.066	0.0946	0.1322	0.0225	0.0893	0.0553	0.1775
Amind	0.0039	0.0033	0.0032	0.0043	0.0036	0.0037	0.0046	0.0045	0.0041	0.0046
Male	0.0022	0.0017	0.0015	0.0024	0.0018	0.001	0.0041	0.0035	0.0034	0.0019
Females	0.0018	0.0016	0.0017	0.0019	0.0018	0.0027	0.0005	0.001	0.0007	0.0027
Asian	0.0188	0.0176	0.0286	0.0372	0.0202	0.012	0.0141	0.0183	0.0119	0.0182
Male	0.0104	0.0106	0.017	0.0232	0.0105	0.0045	0.0101	0.0104	0.0079	0.0082
Females	0.0084	0.007	0.0116	0.014	0.0098	0.0075	0.004	0.008	0.004	0.0101

TABLE A.15: College Institutions and Ethnic, Racial, and Gender Background

Group/institution	African American	Anglo male	Anglo Female	Asian	Hispanic	Native American	Total
Lamar							
total	0	1	1	0	2	0	4
% of total	0.00	0.46	0.46	0.00	0.93	0.00	1.85
Group A	0	0	1	0	1	0	2
% of sub-total	0.00	0.00	1.14	0.00	1.14	0.00	2.27
Grps. B-G	0	1	0	0	1	0	2
% of sub-total	0.00	0.78	0.00	0.00	0.78	0.00	1.56
% of ethnic group	0.00	1.37	2.33	0.00	4.26	0.00	
Prairie View * includes one individual described as "other" in Group A							
total	5	1	0	0	1	0	8
% of total	2.31	0.46	0.00	0.00	0.46	0.00	3.70
Group A	2	0	0	0	1	0	4
% of sub-total	2.27	0.00	0.00	0.00	1.14	0.00	4.55
Grps. B-G	3	1	0	0	0	0	4
% of sub-total	2.34	0.78	0.00	0.00	0.00	0.00	3.12
% of ethnic group	20.83	1.37	0.00	0.00	2.13	0.00	
Texas A&I							
total	1	2	1	0	3	0	7
% of total	0.46	0.93	0.46	0.00	1.39	0.00	3.24
Group A	0	0	0	0	2	0	2
% of sub-total	0.00	0.00	0.00	0.00	2.27	0.00	2.27
Grps. B-G	1	2	1	0	1	0	5
% of sub-total	0.78	1.56	0.78	0.00	0.78	0.00	3.91
% of ethnic group	4.17	2.74	2.33	0.00	6.38	0.00	
Texas A&M							
total	0	17	5	0	12	0	35
% of total	0.00	7.87	2.31	0.00	5.56	0.00	16.2
Group A	0	0	1	0	8	0	9
% of sub-total	0.00	0.00	1.14	0.00	9.09	0.00	10.23
Grps. B-G	0	17	4	0	4	0	26
% of sub-total	0.00	13.28	3.13	0.00	3.12	0.00	20.31
% of ethnic group	0.00	23.29	12.33	0.00	25.53	0.00	
Texas Tech							
total	0	8	4	0	0	0	12
% of total	0.00	3.70	1.85	0.00	0.00	0.00	5.56
Group A	0	0	4	0	0	0	4
% of sub-total	0.00	0.00	4.55	0.00	0.00	0.00	4.55
Grps. B-G	0	8	0	0	0	0	8
% of sub-total	0.00	6.25	0.00	0.00	0.00	0.00	6.25
% of ethnic group	0.00	10.96	9.30	0.00	0.00	0.00	
Univ. of Houston * includes one individual described as "other" in Groups B-G							
total	3	5	3	4	1	1	18
% of total	1.39	2.31	1.39	1.85	0.46	0.46	8.33
Group A	1	0	3	4	0	1	9
% of sub-total	1.14	0.00	3.41	4.55	0.00	1.14	10.23
Grps. B-G	2	5	0	0	1	0	9
% of sub-total	1.56	3.91	0.00	0.00	0.78	0.00	7.03
% of ethnic group	12.5	6.85	6.98	26.67	2.13	11.11	

TABLE A.15: College Institutions and Ethnic, Racial, and Gender Background, cont'd

Group/institution	African American	Anglo male	Anglo Female	Asian	Hispanic	Native American	Total
U. Texas - Arlington							
total	1	4	1	1	0	1	8
% of total	0.46	1.85	0.46	0.46	0.00	0.46	3.70
Group A	1	0	0	1	0	0	2
% of sub-total	1.14	0.00	0.00	1.14	0.00	0.00	2.27
Grps. B-G	0	4	1	0	0	1	6
% of sub-total	0.00	3.13	0.78	0.00	0.00	0.78	4.69
% of ethnic group	4.17	5.48	2.33	0.67	0.00	11.11	
U. Texas - Austin							
total	2	13	0	2	11	1	31
% of total	0.93	6.02	0.00	0.93	5.09	0.46	14.35
Group A	0	0	2	2	8	1	13
% of sub-total	0.00	0.00	2.27	2.27	9.09	1.14	14.77
Grps. B-G	2	13	0	0	3	0	18
% of sub-total	1.56	10.16	0.00	0.00	2.34	0.00	14.06
% of ethnic group	8.33	17.81	4.65	13.33	23.40	11.11	
U. Texas- El Paso							
total	0	1	1	0	3	0	5
% of total	0.00	0.46	0.46	0.00	1.39	0.00	2.31
Group A	0	0	0	0	2	0	2
% of sub-total	0.00	0.00	0.00	0.00	2.27	0.00	2.27
Grps. B-G	0	1	1	0	1	0	3
% of sub-total	0.00	0.78	0.78	0.00	0.78	0.00	2.34
% of ethnic group	0.00	1.37	2.33	0.00	6.38	0.00	
U. Texas - San Antonio							
total	0	1	0	0	0	0	1
% of total	0.00	0.46	0.00	0.0	0.00	0.00	0.46
Group A	0	0	0	0	0	0	0
% of sub-total	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Grps. B-G	0	1	0	0	0	0	1
% of sub-total	0.00	0.78	0.00	0.00	0.00	0.00	0.78
% of ethnic group	0.00	1.37	0.00	0.00	0.00	0.00	
Other Texas University * includes one individual described as "other" in GroupsA							
total	5	8	11	0	6	3	34
% of total	2.31	3.70	5.09	0.00	2.78	1.39	15.74
Group A	1	0	3	0	3	0	8
% of sub-total	1.14	0.00	3.41	0.00	3.41	0.00	9.09
Grps. B-G	4	8	8	0	3	3	26
% of sub-total	3.13	6.25	6.25	0.00	2.34	2.34	20.31
% of ethnic group	20.83	10.96	25.58	0.00	12.77	33.33	
Out of State University * includes one individual described as "other" in Group A							
total	7	12	14	8	8	3	53
% of total	3.24	5.56	6.48	3.70	3.70	1.39	24.54
Group A	7	0	11	6	6	2	33
% of sub-total	7.95	0.00	12.5	6.82	6.82	2.27	37.5
Grps. B-G	0	12	3	2	2	1	20
% of sub-total	0.00	9.38	2.34	1.56	1.56	0.78	15.62
% of ethnic group	29.17	16.44	32.56	53.33	17.02	33.33	
Total, all schools							
Total, A	**12**	**0**	**25**	**13**	**31**	**4**	**88**
% of ethnic group	**50.00**	**0.00**	**58.14**	**86.67**	**65.96**	**44.44**	**100.00**
Total, B-G	**12**	**73**	**18**	**2**	**16**	**5**	**127**
% of ethnic group	**50.00**	**100.00**	**41.86**	**13.33**	**34.04**	**55.56**	**100.00**
ethnic total	**24**	**73**	**43**	**15**	**47**	**7**	

TABLE A.16: College Institutions across Construction and Maintenance Categories

Group/institution	B	C	D	F	G	Total
Lamar						
total	0	0	0	0	2	2
% of group total	0.00	0.00	0.00	0.00	7.41	
% of overall total	0.00	0.00	0.00	0.00	1.56	1.56
Prairie View						
total	0	1	0	0	3	4
% of group total	0.00	2.43	0.00	0.00	11.11	
% of overall total	0.00	0.78	0.00	0.00	2.34	3.13
Texas A&I						
total	1	0	0	2	2	5
% of group total	5.89	0.00	0.00	7.14	7.41	
% of overall total	0.78	0.00	0.00	1.56	1.56	3.91
Texas A&M						
total	3	11	5	5	2	26
% of group total	17.65	26.83	33.33	17.86	7.41	
% of overall total	2.34	8.59	3.91	3.91	1.56	20.31
Texas Tech						
total	0	2	2	4	0	8
% of group total	0.00	4.88	13.33	14.29	0.00	
% of overall total	0.00	1.56	1.56	3.13	0.00	6.25
Univ. of Houston						
total	1	3	0	3	2	9
% of group total	5.88	17.65	0.00	10.71	7.41	
% of overall total	0.78	2.34	0.00	2.34	1.56	7.03
U. Texas - Arlington						
total	0	0	2	2	2	6
% of group total	0.00	0.00	13.33	7.14	7.41	
% of overall total	0.00	0.00	1.56	1.56	1.56	4.69
U. Texas - Austin						
total	2	11	0	2	3	18
% of group total	11.76	26.83	0.00	7.14	11.11	
% of overall total	1.56	8.59	0.00	1.56	2.34	14.06

TABLE A.16: College Institutions across Construction and Maintenance Categories, cont'd

Group/institution	B	C	D	F	G	Total
U. Texas- El Paso						
total	1	0	1	1	0	3
% of group total	5.88	0.00	6.67	3.57	0.00	
% of overall total	0.78	0.00	0.78	0.78	0.00	2.43
U. Texas - San Antonio						
total	0	1	0	0	0	1
% of group total	0.00	2.43	0.00	0.0	0.00	0.00
% of overall total	0.00	0.78	0.00	0.00	0.00	0.78
Other Texas University						
total	6	4	3	4	9	26
% of group total	35.29	9.76	20.00	14.28	33.33	
% of overall total	4.69	3.13	2.34	3.13	7.03	20.31
Out of State University						
total	3	8	2	5	2	20
% of group total	17.65	19.51	13.33	17.86	7.10	
% of overall total	2.34	6.25	1.56	3.91	1.56	15.63
Group Total	**17**	**41**	**15**	**28**	**27**	

TABLE A.17: Top Three Institutions by Ethnic Group

	African American	Anglo male	Anglo Female	Asian	Hispanic	Native American	Overall
Group A		NA					
1	Out of State;	NA	Out of State	Out of State	UT; Tex as A&M (tie)	Out of State	Out of State
2	Prairie View	NA	Texas Tech	Houston	Out of State	NA	UT - Austin
3	NA	NA	Houston; Other Texas (tie)	UT - Austin		NA	Texas A&M; Houston (tie)
Groups B-G							
1	Other Texas	Texas A&M	Other Texas	Out of State	Tex as A&M	Other Texas	Texas A&M; Other Texas (tie)
2	Prairie View	UT - Austin	Texas A&M	NA	UT; Other Texas (tie)	Arlington Out of State (tie)	Out of State
3	Houston; UT - Austin (tie)	Out of State	Out of State	NA		NA	

TABLE A.18: Top Three Institutions by Survey Category

	B	C	D	F	G	Prime contractor	Overall
1	Other Texas	Texas A&M; UT - Austin (tie)	Texas A&M	Texas A&M; Out of State (tie)	Other Texas	Texas A&M	Texas A&M; Other Texas (tie)
2	Other Texas; Texas A&M (tie)		Other Texas		Prairie View; UT-Austin (tie)	UT - Austin	Out of State
3		Out of State	Houston; Tech; Out of State (tie)	Other Texas		Out of State	