

Study of Minority Over-Representation in the Texas Juvenile Justice System

Final Report

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CHAPTER 1: Overview of Disproportionate Minority Contact in the Juvenile Justice System

Evidence of DMC at the State and National Levels

The evidence is clear that minority juveniles are disproportionately over-represented in the justice system both nationally and in the State of Texas. The biennial Census of Juveniles in Residential Placement (JRP Census), conducted by the U.S. Bureau of the Census for the Office of Juvenile Justice and Delinquency Prevention, documents the extent of the problem.¹ This one-day census of juveniles in custody has been conducted on a single day during mid-October every two years since 1997. The most recent survey for which data have been released occurred on October 24, 2001. Though the census does not capture information on juveniles held in adult prisons or jails, juveniles detained in both public and private residential facilities in every state are included in the count.

**Table 1. Juvenile Representation in the General vs. Detained Population
for the US and Texas, 2001**

	Percent of the Juveniles in the...	
	U.S. General Population	U.S. Detained Population
Anglo	63%	40%
African American	14%	39%
Hispanic	16%	17%
All Minorities Combined	37%	60%
	Texas General Population	Texas Detained Population
Anglo	45%	28%
African American	13%	32%
Hispanic	40%	39%
All Minorities Combined	55%	72%

¹ The population used to calculate custody rate includes juveniles age 10 through upper age of original juvenile court jurisdiction in each state. In the majority of states this is age 17. In 3 states upper age is 15, and in 10 states (including Texas) upper age is 16. Mixed race-ethnicity were not analyzed separately, but were included in all minorities, calculated as all non-white. Hispanic includes juveniles of both Black Hispanic and White Hispanic ethnicity.

Though according to the 2000 US Census minority youth comprise over one third (37 percent) of the adolescent population of the United States, they represent nearly two-thirds (60 percent) of youth confined in local detention and state correctional systems.² Table 2 illustrates that custody rates are highest for African Americans, though they have declined somewhat in recent years. For every 100,000 black juveniles living in the US, 916 were in a residential facility on the date of the 2001 census – a decline from 1,004 in 1999.³ Custody rates for Hispanic juveniles declined, as well, from 485 per 100,000 in 1999 to 373 in 2001. Anglo juvenile custody rates in both time periods remained at 212 per 100,000.

Table 2. Juvenile Custody Rate (per 100,000) for the US and Texas, 2001

	United States	Texas
Anglo	212	236
African American	916	940
Hispanic	373	382
All Minorities Combined	551	489

These findings are sustained in Texas, as well. Table 1 illustrates that minorities make up 55 percent of the state population between the ages of 10 and 16 (US Census, 2000) – the oldest age for juvenile court jurisdiction. Yet 72 percent of juveniles in custody are non-white. Mirroring national trends, Texas custody rates per 100,000 have declined slightly for both African American (965 in 1999; 940 in 2001) and Hispanic adolescents (391 in 1999; 382 in 2001). Still, African American juveniles in Texas are detained at a rate 3.9 times greater than for Anglo juveniles. Hispanic juveniles are detained at 1.6 times the rate of Anglos.

Table 3 looks at the problem another way. The evidence from Texas shows disproportionality exists not only in terms of juveniles in custody, but also in terms of

² “Census of Juveniles in Residential Placement, 2001.” Conducted by the US Census Bureau on behalf of the US Department of Justice, Office of Juvenile Justice and Delinquency Prevention.

³ Sickmund, M. (June 2004). “Juveniles in Corrections,” US Department of Justice, Office Juvenile Justice and Delinquency Prevention (for the 1999 figures), and the 2001 JRP Census for those figures.

Table 3. Differences in Proportionality between the Texas Juvenile Population the TJPC Population, CY 2002

	Total Number in Category	Anglo	African American	Hispanic	Other Race
Texas Population (age 10-16)	2,374,979	45%	13%	40%	2%
Referred to TJPC	105,910	33%	23%	43%	1%
Cases with Adjudicated Dispositions*	30,285	31%	25%	43%	1%
Disposed to TYC	2,615	27%	33%	39%	1%

* Includes cases disposed to adjudicated probation, TYC, and certified as an adult.

initial referral and differential rates of progression through the system. While only 13 percent of the state population between age 10 and 16 is African American, they represent 23 percent of TJPC referrals and 33 percent of cases disposed to the Texas Youth Commission (TYC). Conversely, though 45 percent of the general population is Anglo, the proportion declines with further penetration into the system. They comprise only 33 percent of TJPC referrals and 27 percent of TYC-committed cases. Hispanic juveniles are proportionally represented at all stages of justice processing.

Federal Legislative Response

The issue of disproportionate minority confinement (DMC) first gained attention nationally in 1988 in a report to Congress by the Coalition for Juvenile Justice entitled “A Delicate Balance.” In that same year, Congress amended the Juvenile Justice and Delinquency Prevention Act of 1974, requiring each state to develop a plan to reduce the proportion of minority juveniles in detention facilities to correspond with their representation in the general population. The JJDP Act of 1992 designated this as a “core requirement” and tied State compliance to funding eligibility.

In 2002, the JJDP Act again modified requirements relating to minority overrepresentation. States were charged with developing “juvenile delinquency prevention efforts and system improvement efforts designed to reduce, without

establishing or requiring numerical standards or quotas, the disproportionate number of juvenile members of minority groups who come into contact with the juvenile justice system.” The focus was also expanded to encompass not only disproportionate minority “confinement,” but also disproportionate minority “contact” with all decision points in the juvenile justice system. In addition to delinquency prevention initiatives, the legislation also required states to implement system improvement efforts to assure all juveniles are treated equally.⁴

Policy Response in Texas

As awareness and concern for overrepresentation of minorities in the justice system increased at the national level, in Texas the Office of the Governor, Criminal Justice Division (CJD) took the lead in mobilizing a response for Texas. CJD has increased grantee accountability for addressing DMC in juvenile prevention programs funded through their office. In addition, CJD has sponsored three major initiatives to better understand and confront minority overrepresentation. First, in 1996, CJD contracted with the Public Policy Research Institute (PPRI) at Texas A&M University to examine the evidence regarding the causes of disproportionality.

Second, in 2002, at the recommendation of the Governor’s Juvenile Justice Advisory Committee, CJD sponsored the development of a Risk Assessment Instrument to standardize decision-making regarding the use of detention for juveniles during the pre-trial phase. The Criminal Justice Department at Texas State University at San Marcos was asked to construct and validate the instrument which specifies a single set of detention criteria for juveniles of all race-ethnicities. The instrument has been constructed and is currently being evaluated in a number of major probation departments including Dallas, Denton, Harris, and Travis Counties.

⁴ “A Report on the Delicate Balance to the President, the Congress, and the Administrator of the Office of Juvenile Justice and Delinquency Prevention.” (January 1989). Presented by the National Coalition of State Juvenile Justice Advisory Groups. See also, Hsia, H.(2004). “A Disproportionate Minority Contact (DMC) Chronology: 1988 to Date.” Available at <http://ojjdp.ncjrs.org/dmc/about/chronology.html> on 5/9/2005.

In a third recent DMC reduction initiative, CJD asked PPRI to update the 1997 study findings using more recently available data and more sophisticated analytical techniques to assess the nature of overrepresentation in Texas. This exercise culminated in the research reported herein. The following sections review the findings of the original 1997 study as well as the methodological limitations that stimulated the current investigation.

Overview of the 1997 DMC Study

The 1997 research examined the role of race and offense-related factors in predicting the progression of juveniles through four phases of the juvenile justice system.⁵ These included: (1) the decision whether to detain a juvenile at intake; (2) the decision whether to make an informal adjustment diverting the juvenile, or forward the case to the prosecutor; (3) the prosecutor's decision whether to prosecute, defer prosecution, or drop the case; and (4) the court's decision whether to place a juvenile in a secure placement as opposed to some other disposition.

Findings indicated that, at every stage except detention at intake, offense-related factors and not race determined juvenile processing decisions. However, this conclusion alone was unsatisfying. Basic questions remained unanswered about the reasons why minorities remain over-represented in the population of juvenile offenders. In an effort to shed light on the causal factors, a second phase of the study surveyed professionals working closely with juvenile offenders. A sample of 526 probation officers, district and county attorneys, judges, law enforcement personnel, private attorneys, and TYC staff were asked their beliefs regarding the causes of minority overrepresentation in the justice system. It was the collective opinion of these individuals that minority juveniles experience greater exposure to family, social, economic, and environmental risk factors, increasing the likelihood that they will become involved in delinquent behavior.

While this initial investigation provided useful early evidence regarding minority overrepresentation in Texas, conclusions were constrained by several important factors.

⁵ Menon, R. (April, 1997). "Juvenile Justice in Texas: Factors Correlated with Processing Decisions," Public Policy Research Institute, Texas A&M University, College Station, Tx.

At the time of the study, there was no central repository of juvenile justice records at the statewide level. The research was therefore based on data from only three (two urban and one rural) Texas counties representing only a portion of the entire state. In addition, inconsistencies in local data collection procedures and variable definitions made it difficult to standardize analyses across the study sites.

Second, in the 1997 analysis, the best data available to study statewide disproportionality were aggregate juvenile arrest⁶ and referral⁷ statistics.⁸ Because individual-level information about juveniles was not available in a statewide sample, the contribution of characteristics other than race-ethnicity in predicting justice involvement could not be evaluated on a large-scale basis. Though data were available to control for a limited number of individual-level risk factors in the three county-level analyses, differences in data collection practices and a large number of missing values called the reliability of the information into question.

Third, opinion data from juvenile justice professionals was the primary evidence used in the 1997 study to explain the causes of minority overrepresentation. The opinions provided were from credible, well-informed sources including juvenile probation officers, district and county attorneys, judges, law enforcement personnel, private attorneys, and Texas Youth Commission personnel. Nonetheless, the impact of family, social, economic, and environmental factors on minority justice involvement was established only through expert opinion. The study reported here offers a means to quantify the effects of theoretically relevant variables using more objective, quantitative analytic approaches.

⁶ Aggregate arrest statistics were derived from the Uniform Crime Reports (UCR) data obtained from the Texas Department of Safety.

⁷ Aggregate referral statistics were derived from the Texas Juvenile Probation Commission (TJPC).

⁸ In the 1997 study, disproportionality was documented using a "Disproportionate Representation Index" (DRI) computed as follows: # of offenses committed by race x gender group/# of offenses by gender divided by population of ethnic x gender group/gender population. The value "1" indicates that the percentage of members of a racial/ethnic/gender group that are offenders is the same as the percentage in the population. Numbers less than 1 reflect under representation, while numbers greater than 1 indicate overrepresentation.

A final limitation of the 1997 study was its inability to comment upon processes that operate before minority juveniles are referred to the justice system. The initial study was able to conclude that, at least in the three counties examined, race does not appear to be a significant factor in juvenile case processing. However, it was not able to address whether system bias might occur prior to the arrest or referral, as might occur if minorities are more frequently stopped for questioning or more frequently arrested rather than being warned. A key innovation of the current study is that it begins tracking students while they are enrolled in school, before any involvement in the justice system. As a result, it is possible to explore the factors preceding justice involvement more rigorously.

Organization of the Report

This investigation was designed to address the limitations of past research and improve the quality of information currently available to policymakers seeking solutions. Data sources and sample construction are addressed in Chapter 2. The methodology used for analysis is presented in Chapter 3. Chapters 4 through 7 describe results associated with four stages of juvenile processing from initial contact through court outcomes. Chapter 8 illustrates the actual numbers of juveniles by race-ethnicity projected to be impacted by some of the leading risk factors including sex, discipline history, and economic disadvantage. Finally, Chapter 9 provides a summary of key aspects of the study and reviews the main conclusions and implications of the findings.

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CHAPTER 2: Construction of the Dataset

Data Sources

Research results are based on records from databases maintained by two state agencies, the Texas Education Agency (TEA) and the Texas Juvenile Probation Commission (TJPC). Both the TEA and TJPC datasets represent the most comprehensive, complete, and high-quality data currently available. Though local data collection and entry processes cannot be completely controlled, these state agencies provide consistent data standards which school districts and juvenile probation offices are expected to follow. Well-established variable definitions supported by training and technical assistance initiatives promote a high level of consistency in the information available across counties and school districts statewide state.

Data Available from the Texas Juvenile Probation Commission

The TJPC's Caseworker MIS system contains data for juvenile offenders from all juvenile probation departments in Texas. De-identified individual-level records were obtained for 90,981 juveniles who had a referral from 1999 through 2003. In addition to juvenile demographics and assessment scores, Caseworker contains information about each referral such as the offense characteristics, case disposition, supervision level, sanctions assigned, out-of-home placements, and detention events.

Although comprehensive juvenile history is available in the database, a decision was made to focus analysis on juveniles' first offense. This heuristic approach allows a pure examination of the effect of race and ethnicity in justice processing without the complexities introduced by consideration of past criminal involvement. By including only first offenses, criminal history was removed as a competing explanation for justice outcomes.

Data Available from the Texas Education Agency

TEA's Public Education Information Management System (PEIMS) contains data on virtually every student enrolled in a public educational institution statewide. PEIMS data are reported annually by over 7,000 schools in nearly 1,200 districts. TEA records describe students' demographic characteristics (i.e., age, grade, sex, and race-ethnicity), economic status, disciplinary history, school attendance rate, English language proficiency, special education assignment, and district urbanicity.

To reduce the volume of student data downloaded from TEA, selection criteria were adjusted to correspond with the birth cohorts of juvenile probationers. Since about 90 percent of juvenile cases represented in the TJPC dataset were born between September 1, 1986 and August 31, 1991, the PEIMS data request was focused to include students in the corresponding school enrollment date range. Using this process, individual-level student data (with personal identifiers removed) were acquired for approximately 2 million public school students enrolled in grades 8-12 during the 1999 school year. Separate fall and spring compilations of the TEA data had to be combined because critical variables were contained in each. After completing this exercise, 1,723,774 unique student records were available for analysis.

All students included in this original sample were tracked over a five-year period, but students enrolling in later years were not added to the study. Because the sample included students graduating from 1999 through 2003, younger individuals had a longer period during which they were classified as juveniles. For instance if two different juveniles are aged 12 and 16 in 1999, the study will only detect justice involvement for the 16-year-old for one year. The 12-year-old, by contrast, will be monitored for justice involvement over a five year period. As a consequence, the younger the juvenile in 1999, the longer they are in the study, making it more likely that an initial referral to the justice system will be detected. For this reason, the estimated effect of age on an initial referral to the juvenile justice system was negatively biased.

Approach for Matching the TEA and TJPC Datasets

One of the first significant challenges of the study was to join the PEIMS and Caseworker records so that individual juveniles could be tracked from the general school population through a juvenile probation referral, if one occurred. Because TEA could not legally share personal identifiers needed to perform the match, MIS staff at that agency completed the operation internally and returned the joined PEIMS-Caseworker records to the research team. Records were matched on Social Security Number, last name, first four letters of first name, date of birth, and sex.

Combining individual records in different agency datasets is ordinarily challenging. Name changes, mis-spellings, typographical errors, student transition from a state-assigned ID number to a legally assigned Social Security Number, and information inaccurately reported by the juvenile or their family may all prevent different records for the same individual from being correctly united. Furthermore, the dropout rate is higher among juveniles involved in delinquency, creating a subset of individuals who exist in the TJPC dataset, but not in the TEA files. In light of these issues, the research team was pleased to locate a school record for the majority of juvenile probationers in the sample (52.1 percent).

Table 4. Comparison of Ethnic Distribution of Texas Juveniles across Samples

	Anglo	Hispanic	African American	Other
2000 Texas Population Age 10-16 (n = 2,374,979)	45%	40%	13%	2%
1999 TEA-TJPC Matched Sample (n = 47,405)	47%	36%	14%	3%
1999 TEA-TJPC Analyzed Sample (n = 27,248)	48%	36%	14%	2%

Construction of the Final Analysis Sample

As noted above, 1,723,774 students were represented in the 1999 combined spring and fall TEA dataset. Of the 90,981 juveniles with a justice referral between 1999 and 2003, 47,405 (over half) were successfully located in these TEA records. However, data elements essential for the analysis were missing for about 20,000 of these cases, reducing the matched TEA-TJPC sample available for analysis to 27,248 juveniles.

Loss of data does not compromise the validity of research findings as long as the cases that are retained are representative of the population being studied. It would be of concern, however, if data loss was systematic, resulting in the under-representation or exclusion of any particular sub-group (e.g., by race-ethnicity, sex, age, or other group). Table 4 illustrates that, even though all potential study cases were not available for analysis, the proportion of cases in each ethnic group remained stable at each phase of matching, and at all times mirrored ethnic distributions present in the overall Texas population (based on 2000 US Census data). This finding increases confidence in the validity of the study sample.

CHAPTER 3: Methodological Approach

Use of Multivariate Methods

The evidence presented in Chapter 1 clearly establishes that ethnic and racial minorities are present in the juvenile justice system at rates that exceed their representation in the general population. However, results presented below indicate that the role of race is diminished after considering other factors such as juveniles' sex, socio-economic status, language, special education status, school performance, discipline history, and community urbanicity. Multivariate methodologies make it possible to hold these influential elements statistically constant, allowing the comparison of juveniles who are identical in all characteristics except race-ethnicity. Using a multivariate approach, Hispanic rather than African American juveniles are shown to have the highest probability of contact with the justice system. This is true despite the large discrepancy observed for African Americans based on aggregate population data alone (see Table 1, Chapter 1).

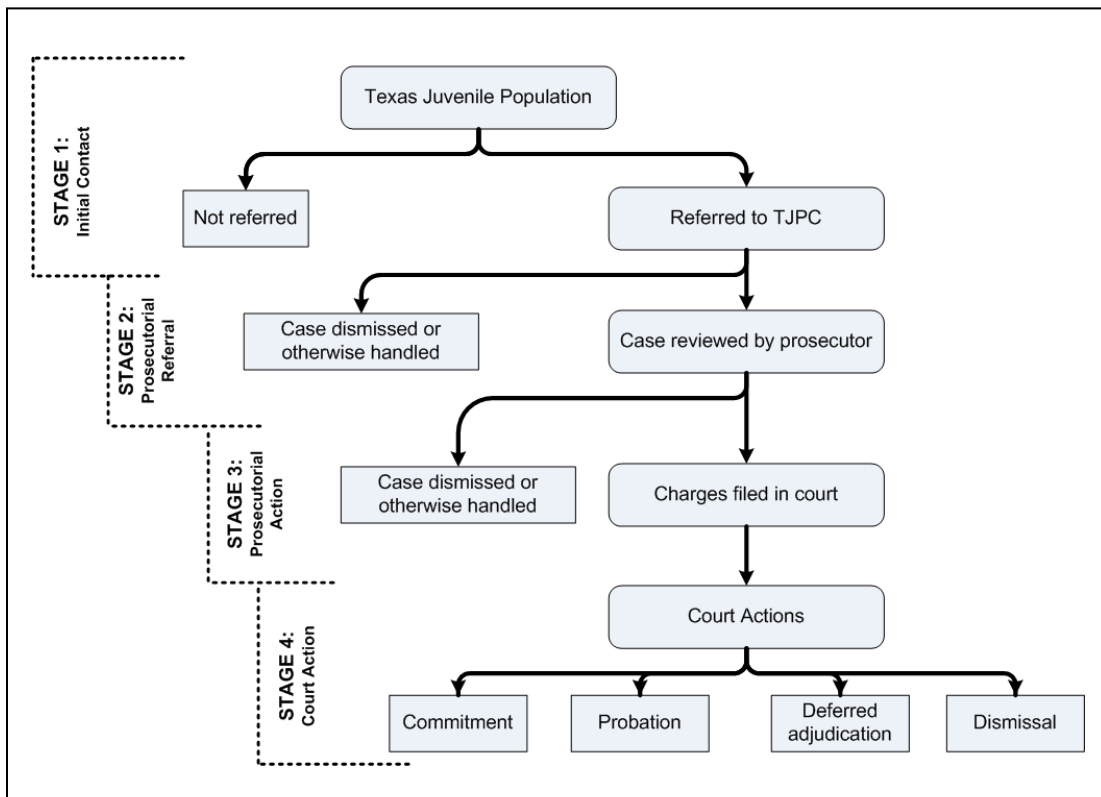
In comparison to conclusions based on simple frequencies and comparisons of proportions, multivariate methods elucidate the complex and overlapping relationships between individual's personal characteristics. As an example, adolescents who are poor, experience language or cultural barriers, or have learning disabilities may be more likely to become involved in juvenile crime. These same adolescents may also be more likely to belong to traditionally disadvantaged minority groups. Absent multivariate approaches, it is difficult to determine how much of their over-representation in the justice system is due to racial identity alone and how much is due to social and economic factors. By considering all of these factors together through multivariate methods, this study has been able to distinguish the separate effects of each characteristic examined.

Conceptual and Statistical Models

The research is conceptualized around a multi-stage model of progression through the justice system assuming that the effect of race-ethnicity as well as other factors may differ at various decision points. The four major choice points modeled are represented in Figure 1. They include:

- (1) progression from school to a TJPC referral;
- (2) progression from a TJPC referral to prosecutor's review of the case;
- (3) progression from prosecutor's review to the filing of a formal charge; and
- (4) in charged cases, progression to one of four potential outcomes (dismissal, deferred adjudication, prosecution, or commitment).

Figure 1. Multi-Stage Model of Progression through the Juvenile Justice System



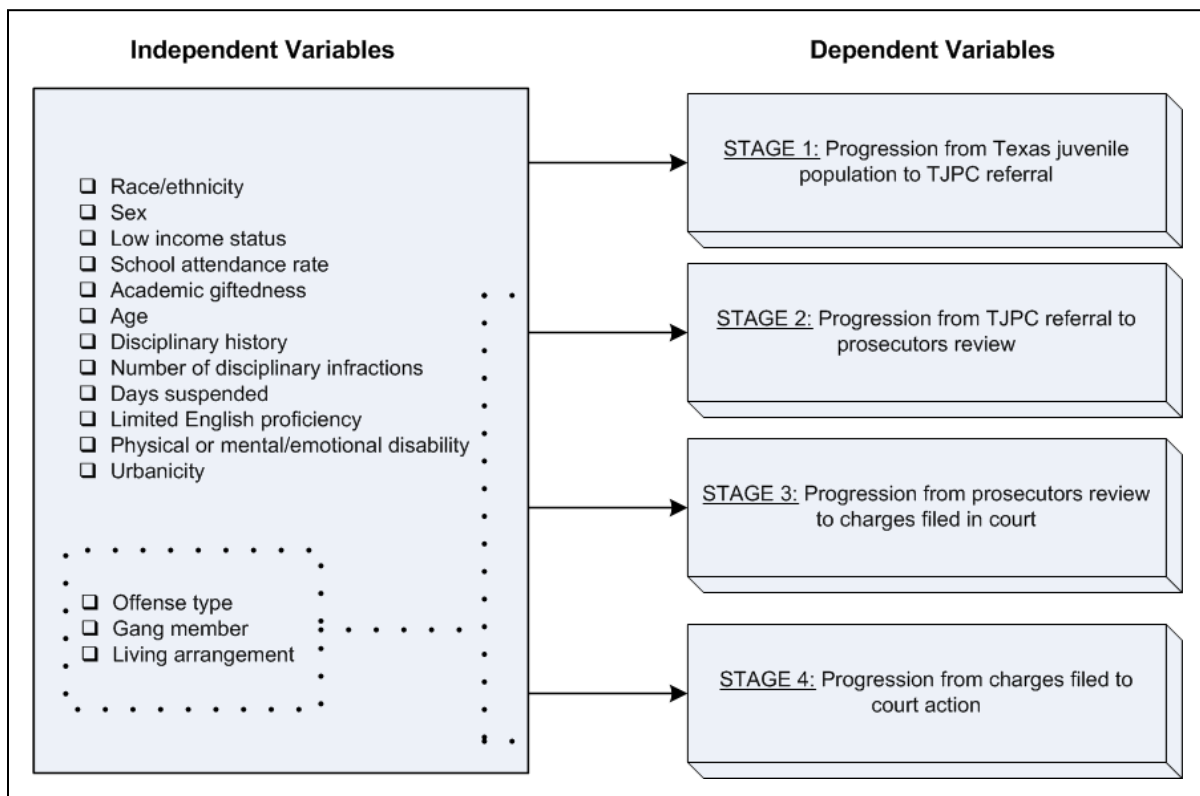
Dependent Variables

For purposes of statistical modeling, choices made by justice officials at each stage of processing were defined as the dependent variables because they represent the outcomes of interest. The only possible outcomes are either dichotomous "yes/or no" values

(Stages 1 through 3) or multichotomous (Stage 4). In either instance, outcomes take on discrete values that cannot be meaningfully put into a numerical ordering.

Logistic regression models are the appropriate statistic for this type of estimation.⁹ Results from these models are most understandable when they are translated into probabilities¹⁰ such that the likelihood of an outcome occurring falls between 0 percent and 100 percent. Throughout the report, the tables and graphical figures included in the narrative convey simplified translations of results into commonly understood probabilities. Full statistical results from each model are available for technical audiences in Appendix A.

Figure 2. Overview of Research Model



⁹ For a detailed account of these models, see Long, J.S. and J. Freese, (2003). “Regression Models of Categorical Dependent Variables in Stata,” Stata Press.

¹⁰ The raw results from logistic regression models are expressed in terms of the estimated effect of each independent variable on the logged-odds ration of categories of the dependent variable.

Independent Variables

While dependent variables (i.e., progression from one stage to the next) are the outcomes of interest, independent variables are the factors that are believed to influence those outcomes. The independent variables considered in this study, illustrated in Figure 2, were selected primarily based on theory. That is, there are logical reasons why these factors are expected to influence juveniles' experience in the justice system.

However, many theoretically relevant variables that would have contributed a great deal to the study were unavailable. It would have been helpful, for instance, to have access to reliable information about adolescents' family relationships, degree of supervision, history of substance use, history of abuse, attitudes toward law enforcement, and other measures associated with delinquency in the research literature. Nonetheless, the present study offers considerable insight into the problem of disproportionate minority representation based on a number of highly relevant juvenile characteristics that could be obtained.

Table 5. "Simple Categorical" Independent Variables

Variable Name	2 Potential Response Categories	Stages the IV is Modeled
Sex	Male vs. Female	1, 2, 3, 4
Low Income Status	Qualified for free/reduced lunch vs. Not qualified	1, 2, 3, 4
Academic Giftedness	In the gifted/talented program vs. Not in the program	1, 2, 3, 4
Limited English Proficiency	Designated as LEP vs. Not designated as LEP	1, 2, 3, 4
Disciplinary Contact	At least 1 disciplinary incident in school vs. No disciplinary incidents	1, 2, 3, 4
Gang Member	Self-report gang membership vs. not reported	2, 3, 4

For purposes of model construction, independent variables were organized into three classes. “Simple Categorical” independent variables are those that have only two possible categories into which each case can be classified. In these instances, the model estimated the difference between individual cases *with* the characteristic in question versus the same cases *without* that characteristic while holding all other independent variables constant. Variables in this group are shown in Table 5.

Table 6. “Complex Categorical” Independent Variables

Variable Name	3+ Potential Response Categories	Stages the IV is Modeled
Race-Ethnicity	Anglo, African American, Hispanic, Other	1, 2, 3, 4
Disability Status	Physical disability Mental or emotional disability No disability	1, 2, 3, 4
Urbanicity*	ISD located in large urban MSA ISD located in medium or small urban MSA ISD not located in an MSA	1, 2, 3, 4
Offense Type	Felony Misdemeanor Crisis intervention	2, 3, 4
Living With (at the time of the offense)	Both parents Mother only Father only Grandparents Other adult Unsupervised	2, 3, 4

*NOTE: Urbanicity was measured in terms of the size of the Metropolitan Statistical Area (defined by the US Census) in which the juvenile’s school district was located. With this approach, the entire multi-county area comprising a large urban center is treated as a single urban complex even though the actual population of some member counties may be relatively small. This method avoids the fallacy of misconstruing counties as “rural” based on their population alone.

The second type of independent variables, “Complex Categorical,” have three or more mutually exclusive categories into which each case can potentially be classified. When examining this type of independent variable, one category is designated as the “baseline value” and other categories are compared against it. For instance, racial-ethnic categories

included Anglo, African American, Hispanic, and Other. For analysis purposes, Anglo juveniles were treated as the baseline, the probability of a juvenile placement in all other ethnic categories were estimated relative to that standard. To test for statistically significant effects, all possible pairs of categories were compared against each other to see if any of the individual categories were statistically distinguishable at each stage of case processing. Variables in the Complex Categorical group are illustrated in Table 6.

The final category was comprised of “Continuous” independent variables that take on a value from low to high along a continuum (see Table 7). School attendance rate, for instance, could potentially range from 0 percent if the student was absent every day to 100 percent in the event of perfect attendance. The impact of continuous variables is examined by calculating the impact per one-unit increase on the probability of an individual juvenile advancing to the next stage of processing.

Table 7. “Continuous” Independent Variables

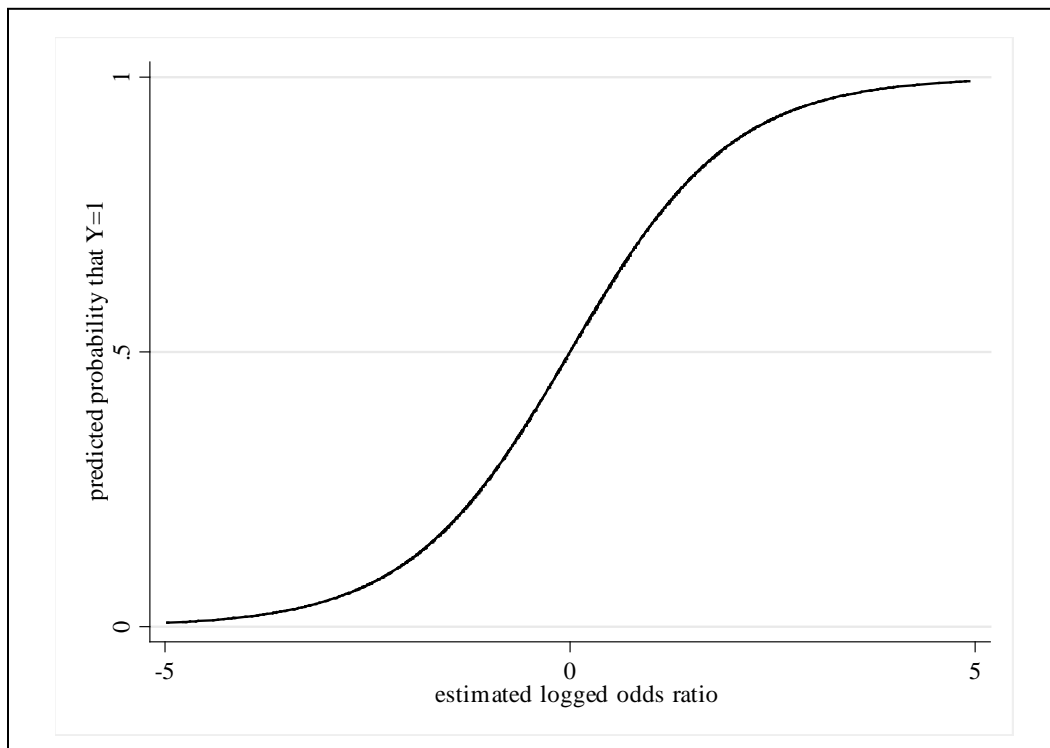
Variable Name	Responses along a Continuum	Stages the IV is Modeled
School Attendance Rate	Range: 0% to 100%	1, 2, 3, 4
Age	Range: 10 to 16	1, 2, 3, 4
Number of Disciplinary Infractions	Range: 0 to 66	1, 2, 3, 4
Number of Days Suspended	Range: 0 to 1,080	1, 2, 3, 4

Format for Reporting Results

Throughout this report, a two-stage approach has been used to describe study findings. First, logistic regression methods were used to determine whether the independent variables have a statistically significant influence on the probability that a juvenile would progress from one justice stage to the next. However, raw results from these models are complex to explain. They are expressed as an estimated effect of each independent variable on the logged-odds ratio of the dependent variable categories.

In order to communicate the meaning of the results more clearly, the research team first statistically constructed a hypothetical individual that, given all the control variables, would have a 50 percent chance of moving to the next stage.¹¹ Then, the independent variable of interest (e.g., race-ethnicity, income status, discipline history) was introduced to the model to see how it increased or decreased this baseline probability. Each statistically significant variable was then expressed in terms of the maximum percentage increase or decrease it could potentially have on an individual's chance of progressing to the next stage.

Figure 3. The Logit Function



¹¹ It is worth noting that, although the maximum effect of an independent variable is calculated for a hypothetical case where the probability of an initial referral is otherwise 50 percent, very few of the actual cases on which our empirical model was estimated were even close to a 50 percent calculated probability of an initial referral. Out of over two million juveniles whose cases were analyzed, just over 1.3 percent actually had an initial referral. Thus, the event being modeled was rare with very low predicted probabilities. See for example, King, G. and L. Zeng, (2001). "Logistic Regression in Rare Events Data," *Political Methodology*, pp. 137-163.

The fact that the hypothetical individual begins with a 50 percent chance of progressing to the next juvenile justice stage is important because that is key to finding the maximum effect the independent variable being tested might potentially have. Figure 3 shows why this is the case. Movement up and down the vertical axis shows increases or decreases in the predicted likelihood of an event occurring (e.g., moving to the next juvenile justice stage). On the horizontal axis, movement to the right or left simulates increases or decreases in independent variable values.

After all independent variables are statistically set to yield a 50/50 probability of progressing to the next level, if an independent variable added to the equation (e.g., sex, ethnicity, number of disciplinary infractions) is estimated to have a positive effect, the hypothetical individual moves to the right on the horizontal scale, with corresponding upward movement on the vertical axis. Conversely, an independent variable estimated to have a negative effect results in a move to the left on the horizontal scale, and the vertical probability line is shown as declining.

Figure 3 shows that shifts in the horizontal scale result in the greatest movement in the vertical scale when probability is initially set at .5 or 50 percent. Juveniles with initial risk characteristics closer to the extreme positive or negative end of the horizontal axis would experience a smaller change in probability on the vertical axis. Thus, by testing the impact of each independent variable on the likelihood of a juvenile moving to the next stage when this probability equals 0.5, the results express the maximum possible effect from any individual variable.

CHAPTER 4: Factors Influencing Stage One Progression from the Statewide Juvenile Population to an Initial Juvenile Justice Referral

The first stage of case processing modeled is “Initial Contact with the Justice System.” This analysis explores factors that predict the transition from the general school population into the juvenile justice system. This study is significant for the insight it provides into these processes that operate before a referral actually occurs. Most research involving juvenile offenders focuses on youth that have already had contact with the system. While this approach can be useful, it provides very few answers about how juveniles that experience justice involvement differ from those that do not.

If data are available for offenders alone, it is only possible to compare the proportion of offenders vs. non-offenders by overall group characteristics. These might include total proportions by race-ethnicity, gender, socio-economic status, family circumstances, etc. Yet, this study illustrates that reliance on these types of aggregate comparisons can lead to misleading conclusions. Even though the proportion of minority juveniles in the Texas justice system exceeds the proportion in the general population (see Tables 1 through 3, Chapter 1), the multivariate analyses conducted here found factors other than race account for much of this discrepancy. This crucial finding would be impossible to ascertain without a sample including individual-level information about both juvenile offenders and non-offenders.

Table 8 presents the risk characteristics most closely associated with a first-time juvenile justice referral.¹² Independent variables are listed in the first column, roughly in order of effect size. The second column indicates each variable type (i.e., Simple Categorical, Complex Categorical, or Continuous). The third column shows the estimated maximum impact of each statistically significant independent variable on a juvenile’s probability of an “Initial Referral.”

¹² Full statistical results are presented in Appendix A, Table 1.

**Table 8. Model of Initial Referral:
Maximum Estimated Effects for All Independent Variables Tested***

Independent Variable	Variable Type	Maximum Effect
Disciplinary History	Simple Categorical	+23.4%
Number of Disciplinary Infractions	Continuous	+1.5%
Number of Days Suspended	Continuous	+0.1%
Age	Continuous	-20.6%
Male	Simple Categorical	+18.7%
Academic Giftedness	Simple Categorical	-14.1%
Economically Disadvantaged	Simple Categorical	+11.1%
Mental or Emotional Disability	Complex Categorical	+8.7%
Physical Disability	Complex Categorical	-12.3%
No Disability	Complex Categorical	Baseline
Rural Area	Complex Categorical	-5.5%
Large Urban Metro Area	Complex Categorical	-2.1%
Small- to Mid-Size Urban Metro Area	Complex Categorical	Baseline
Limited English Proficiency	Simple Categorical	-4.6%
Hispanic	Complex Categorical	+3.5%
African American	Complex Categorical	+2.7%
Other Minority	Complex Categorical	-30.2%
Anglo	Complex Categorical	Baseline
Percent of School Days Present	Continuous	-0.6%

*All differences reported are statistically significant at the $p < 0.05$ level. "NS" indicates there was no statistically significant difference between groups.

Race-Ethnicity as a Predictor of Initial TJPC Contact

When all other independent variables are taken into account, study findings show that race-ethnicity does exert a statistically significant impact on the likelihood that a juvenile will receive a TJPC referral. However, the actual influence of race-ethnicity is relatively

small and is substantially lower than initially appears to be the case based on aggregate statistics.

Considering race-ethnicity alone (see Table 3, Chapter 1), African American juveniles appear in the TJPC population (23 percent) at nearly 2 times the rate they are represented in the general population (13 percent). Hispanic juveniles appear in both populations at approximately the same rate (43 percent and 40 percent respectively), and Anglo youth are underrepresented among TJPC referrals (33 percent vs. 45 percent in the general population). Based on these aggregate statistics, observers might conclude that the color of a youth's skin is a major influence on decision-making by justice officials.

However, after holding constant the individual risk factors included in the research model, different findings are obtained. Among otherwise identical juveniles, being African American increases the likelihood of an initial justice referral by a maximum of 2.7 percent. Being Hispanic raises the probability by a maximum of 3.5 percent relative to the Anglo comparison group. Thus, although it remains a fact that disproportionately more African American juveniles are referred to the justice system, most of this result is attributable to factors other than race-ethnicity.

It is also important to note that aggregate statistics show African American youth being far more likely to receive a justice referral than are Hispanics. Using a more robust multivariate strategy the opposite is found to be true. After holding constant factors other than race-ethnicity, being Hispanic emerges as a more significant predictor of initial referral than does being African American. Membership in any other non-white minority group (i.e., other than Hispanic or African American) actually reduces the probability of a TJPC referral by as much as 30.2 percent.

Table 9 provides a pair-wise comparison of all statistically significant differences between racial-ethnic groups. The table can be understood by reading the probability of an initial referral for the racial-ethnic category named in each row with categories named in the columns. Thus, reading the first row as an example, Anglo juveniles are as much

as 2.7 percent less likely than African Americans and up to 3.5 percent less likely than Hispanics to have an initial justice referral. Compared to African Americans, being Hispanic increases the probability of a juvenile referral by 0.08 percent. The effect of race-ethnicity is strongest among the “Other Minority” category. Students in this group are a maximum of 30.2 to 32.4 percent less likely to have an initial referral compared to any other racial-ethnic group.

**Table 9. Model of Initial Referral:
Pair-wise Comparisons across Ethnic Categories*
(Row Relative to Column)**

	Anglo	Black	Hispanic	Other Minority
Anglo		-2.7%	-3.5%	+30.2%
Black	+2.7%		-0.8%	+31.9%
Hispanic	+3.5%	+0.8%		+32.4%
Other Minority	-30.2%	-31.9%	-32.4%	

* Each cell reports the maximum estimated effect of being the ethnic category of that row compared to the ethnic category of the column. All differences reported are statistically significant at the $p < 0.05$ level. “NS” indicates there was no statistically significant difference between groups.

Other Factors Predicting an Initial TJPC Contact

Juveniles’ behavior at school proved to be the most influential determinant of first contact with the justice system. Holding all other risk factors statistically constant, students involved in one or more disciplinary incidents were 23.4 percent more likely to encounter a referral than those with no school disciplinary contact. Not surprisingly, the more severe the disciplinary history, the higher probability of a referral. Each additional disciplinary infraction increased the likelihood of justice involvement by a maximum of 1.5 percent. Each day a juvenile was suspended from school elevated the probability by up to 0.1%. Still, there was a clear “threshold effect” so that even a single contact with school discipline authorities greatly increased a student’s chance of a TJPC referral.¹³

¹³ There remain unanswered questions about a possible relationship between race and school discipline referrals. It is not known whether minority youth at the middle and high school level are more likely to be singled out for disciplinary action based on race alone. While it is possible to explore the question further with the current dataset, because the entire organization of the records would need to be reconfigured, it is

One result that might seem surprising is the strong negative relationship between age and referral. The risk of a juvenile referral was shown to decline significantly as students grow older. Table 8 shows that each additional year of age can reduce the probability of a juvenile referral by as much as 20.6 percent. As discussed in Chapter 2, however, most of this finding is likely to be an artifact of the data. Because the study sample involves five-year tracking of a single cohort of 8th through 12th grade students enrolled in school in 1999, younger juveniles were followed for more years. There is a greater likelihood that a first offense would be registered for younger study participants during the timeframe of the study simply because they were monitored over a longer period.

Furthermore, students in later grades included in the study have, by definition, stayed in school. Students who have remained in school to senior high school are less likely to get in trouble compared to classmates who dropped out of school (and hence out of the study sample) in earlier grades. Thus, the older students remaining in school at the time of the study were at lower risk of justice involvement. While the results show a strong negative relationship between age and initial TJPC referral, limitations of the dataset make it difficult to clearly specify the role of age controlling for other variables in the study. It may well be that youth who have trouble with the law tend to have initial contact during the pre-teen or early teen years. However, the construction of the sample in the current study makes this effect difficult to confirm or quantify.

The third most important determinant of justice involvement is sex. Holding all other risk factors statistically constant, being male can increase the risk of an initial referral as much as 18.7 percent compared to being female. This means that, even when two juveniles are alike in every way, girls stand a better chance of being spared a formal referral, and boys are much more likely to be processed through the justice system.

beyond the scope of the present study. However, this remains an area in which future research can and should be targeted.

Academic performance, as measured by a “gifted” designation in the PEIMS database, was also highly influential. Students with a strong academic record have up to a 14.1 percent lower chance of a TJPC referral compared to students who are not gifted. Students from a background of economic disadvantage are as much as 11.2 percent more likely to be referred to TJPC compared to students who do not qualify for free or reduced lunch. It is likely that this finding reflects the many challenges of poor families raising and supervising adolescents in an environment of impoverishment. It may also result from the increased ability of more affluent families to bring greater legal and other resources to bear on preventing formal processing when their children encounter trouble with the law.

Results of this study also contribute information about the dramatic over-representation of juveniles with disabilities in the justice system. While the prevalence of disabilities among school-age children in the United States is 9 percent, the federal Office of Special Education Programs (OSEP) conservatively estimates the rate within the juvenile justice system is at least 32 percent.¹⁴ The multivariate analysis of Texas’ data reported herein confirms that, all other things being equal, juveniles with a mental or emotional disability are as much as 8.7 percent more likely to experience justice involvement. The presence of a physical disability, by contrast, has the opposite effect, reducing the likelihood of a justice referral (-12.5% maximum effect) compared to individuals with no disability.

Limited English proficiency, which might be viewed as a proxy for acculturation, was associated with a maximum 4.7 percent lower chance of an initial TJPC referral. This finding suggests that juveniles who are new to this country or less culturally integrated may be less likely to take chances with the law.

¹⁴ Quinn, M. M., Rutherford, R. B., & Leone, P. E. (2001, February). *Students with Disabilities in Correctional Facilities*. Arlington, VA: Eric Clearinghouse on Disabilities and Gifted Education, <http://ericec.org/digests/e621.html>

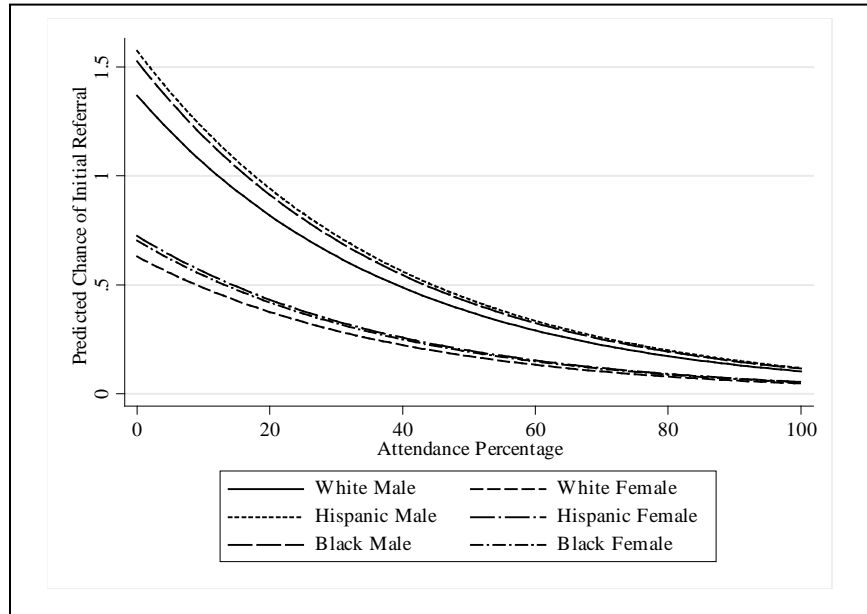
Juveniles from mid-sized urban communities are the most likely to receive a TJPC referral compared to otherwise identical students in either larger urban centers (-5.6 percent maximum effect) or remote rural communities (-2.1 percent maximum effect). The large volume of juveniles processed in major metro areas may create incentives to channel youth away from over-burdened formal referral systems. Conversely, in rural areas, the relatively small number of juveniles processed may make it more feasible to arrange alternatives to formal referral for first-time offenders. Interestingly, though urban juveniles are less likely have an initial referral, later chapters show those who do enter urban justice systems are subject to more aggressive case review and prosecution.

Finally, students with higher recorded school attendance are significantly less likely to experience juvenile involvement. Every one percentage point increase in attendance rate reduces the chance of a juvenile referral by as much as 0.6 percent. Since most students attended school most of the time, this risk factor has a practical impact for a relatively small percentage of students. Nonetheless, among these low-attending students, less frequent school attendance is associated with a significantly increased likelihood of an initial TJPC referral.

Graphic Depiction of Race-Ethnicity vs. Other Referral Risk Factors

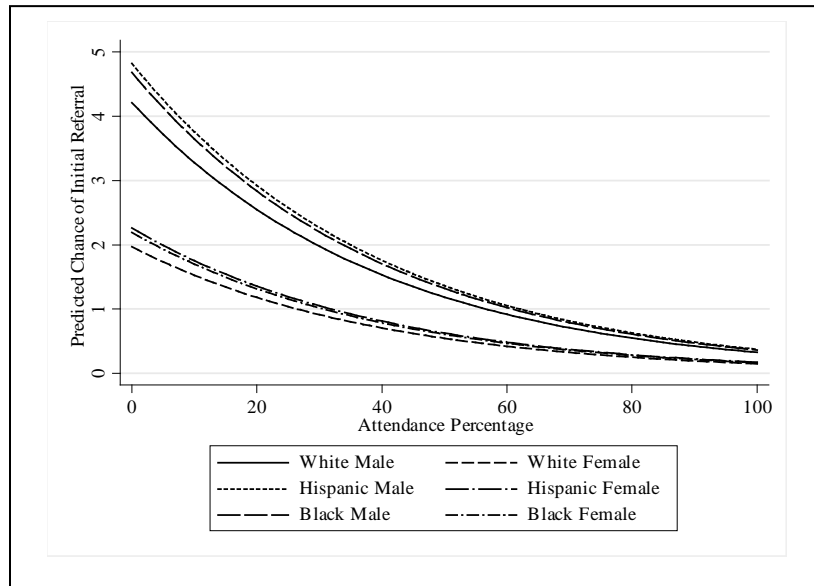
Figures 4 through 6 provide an additional way to show the influence of race-ethnicity compared to other factors in predicting a juvenile's initial contact with the justice system. The vertical axis in each graphic displays the percentage probability (between 0 and 100 percent) that an initial referral will occur for six individuals that differ by their race-ethnicity, gender, and attendance percentage. Otherwise, these hypothetical individuals are identical with the following characteristics: age 15, from a suburban school district, no disciplinary history, not classified as gifted, not classified as being economically disadvantaged, not classified as disabled, and not classified as having limited English proficiency.

Figure 4. Predicted Probabilities for Six Hypothetical “Average” Juveniles



The example clearly illustrates that low school attendance (shown on the horizontal axis) increases the chance of justice involvement. Among students with all rates of attendance, sex is the single most important factor distinguishing juveniles likely to be referred. The three lines on the chart with the highest risk of referral represent males of various race-

Figure 5. Predicted Probabilities for Six Hypothetical Juveniles with a Disciplinary History



ethnicities. The more subtle role of race-ethnicity can be seen within the two broad groupings by sex. Within each of the line clusters representing both male and female students, Hispanics have the highest probability of initial contact with the justice system. African American students have the second highest probability, and Anglo students are the least likely to be referred.

Figure 6. Predicted Probabilities for Six Hypothetical Juveniles who are Economically Disadvantaged with a Disciplinary History

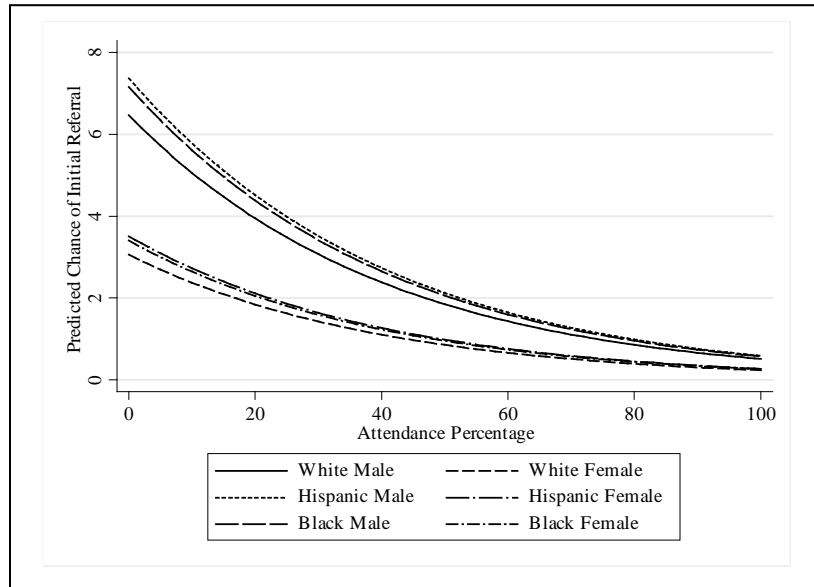


Figure 5 considers what would happen to these same juveniles if the most highly influential risk factor – a discipline history – is introduced to the model. In this instance the probability of an initial TJPC referral has been adjusted based on the assumption that the juveniles all have a school behavior record including two infractions and five total days of suspension. The most apparent impact of this assumption is the substantial rise in predicted chance of an initial referral for all youth in the model. The highest probability rises from a maximum of about 1.5 chances out of 100 in Figure 4 up to a maximum of more than 4.5 times out of 100 (both for Hispanic males). Nonetheless, the patterns with regard to gender and ethnicity remain unchanged. At all rates of attendance, sex remains the strongest factor impacting the chance of a TJPC referral. Within each grouping by sex, Hispanic and African American juveniles, in that order, have a higher probability of initial contact than do Anglos.

Figure 6 retains the assumption of a discipline history and adds yet another highly influential risk factor – economic disadvantage. Again, the overall probability of a referral rises sharply for all juveniles depicted, this time reaching as high as about 7 times out of 100 for Hispanic males. Still, compared to the other factors modeled including school attendance rate, sex, discipline history, and economic disadvantage, race-ethnicity plays a relatively minor role in influencing the probability of justice system contact.

Conclusions

A simple comparison of the proportion of minorities in the general population vs. the justice population (see Tables 1 through 3, Chapter 1) would suggest that Hispanics experience few disparities, and most disproportionality is focused among African American juveniles. However, a closer look using multivariate statistical methods reveals that, after controlling for other risk factors, being Hispanic was found to increase the probability of a referral more than being African American. The presence of African Americans in the justice system is predominantly explained by the presence of other risk characteristics, most notably a disciplinary history in school. Hispanics are slightly more likely to enter the system without these preceding risk factors, leaving ethnicity as the only explanation for their justice involvement.

Stage 1 analyses identified a number of other factors that increase the chance of an initial referral to the justice system (see Table 8). These include a disciplinary history at school, being male, failure to excel academically, economic disadvantage, mental or emotional disability, living in a mid-sized community, having limited English proficiency, and school attendance rate.

CHAPTER 5: Factors Influencing Stage Two Progression from the Initial Juvenile Justice Referral to Prosecutorial Referral

Once a juvenile has been referred to the Texas Juvenile Probation Commission, the next major decision point is Stage 2, “Prosecutorial Referral.” The outcome being modeled is a dichotomous (i.e., “yes or no”) indicator of whether the case gets referred to a prosecutor. If submitted for a prosecutor’s review, youth face the possibility that formal charges may be filed. Cases not referred for review are addressed informally by juvenile probation department officials through strategies such as diversion programs.

Independent variables hypothesized to influence the probability of a prosecutorial referral include all of those modeled in Stage 1, “Initial Referral” (see Chapter 4) as well as a set of new variables which were available only for juveniles after an initial referral. These include type of initial charge (felony, misdemeanor, or crisis intervention), whether the juvenile was classified by authorities as being a gang member, and who the juvenile was living with at the time of the arrest. Results are presented in Table 10. The “maximum effect” column shows the largest estimated impact of a one-unit increase in each statistically significant independent variable on the probability of a juvenile having their case referred to the prosecutor.¹⁵

Race-Ethnicity as a Predictor of Prosecutorial Referral

The greatest disparity in prosecutorial referral was found for Hispanic youth. These juveniles are a maximum of 4.3 percent more likely to have their cases considered for prosecution compared to otherwise identical Anglo juveniles. African American youth are a maximum of 2.4 percent more likely than Anglos to face prosecutorial review. Though these race and ethnic effects are not large, it is important to recognize that the impact is cumulative. That is, they occur in addition to earlier effects of race-ethnicity observed at the point of initial justice contact (see Chapter 4).

¹⁵ Full statistical results are presented in Appendix A, Table 2.

**Table 10. Model of Prosecutorial Referral:
Maximum Estimated Effects for All Independent Variables Tested***

Independent Variable	Variable Type	Maximum Effect
Felony Charge	Complex Categorical	+48.4%
Misdemeanor Charge	Complex Categorical	+38.0%
Crisis Intervention	Complex Categorical	Baseline
Rural Area	Complex Categorical	-10.7%
Large Urban Metro Area	Complex Categorical	+4.2%
Small- to Mid-Size Urban Metro Area	Complex Categorical	Baseline
Limited English Proficiency	Simple Categorical	-7.9%
Living with Other Adult	Complex Categorical	-5.9%
Living with Father	Complex Categorical	-5.7%
Living with Both Parents	Complex Categorical	Baseline
Living with Mother, with Grandparents, Unsupervised, or in Institutional Care	Complex Categorical	NS
Male	Simple Categorical	+4.3%
Hispanic	Complex Categorical	+4.3%
African American	Complex Categorical	+2.4%
Other Minority	Complex Categorical	NS
Anglo	Complex Categorical	Baseline
Age	Continuous	NS
Academic Giftedness	Simple Categorical	NS
Economically Disadvantaged	Simple Categorical	NS
Disciplinary History	Simple Categorical	NS
Number of Disciplinary Infractions	Continuous	NS
Number of Days Suspended	Continuous	NS
Physical Disability	Complex Categorical	NS
Mental or Emotional Disability	Complex Categorical	NS
No Disability	Complex Categorical	Baseline
Percent of School Days Present	Continuous	NS
Gang Member	Simple Categorical	NS

*All differences reported are statistically significant at the $p < 0.05$ level. "NS" indicates there was no statistically significant difference between groups.

**Table 11. Model of Prosecutorial Referral:
Pair-wise Comparisons across Ethnic Categories*
(Row Relative to Column)**

	Anglo	Black	Hispanic	Other Minority
Anglo		-2.4%	-4.3%	NS
Black	+2.4%		NS	NS
Hispanic	+4.3%	NS		NS
Other Minority	NS	NS	NS	

* Each cell reports the maximum estimated effect of being the ethnic category of that row compared to the ethnic category of the column. All differences reported are statistically significant at the $p < 0.05$ level. "NS" indicates there was no statistically significant difference between groups.

Table 11 illustrates a pair-wise comparison of all race-ethnicities on the likelihood of a prosecutorial case review. Comparing each ethnicity represented on a row with those identified in the subsequent columns, it can be seen that the only statistically significant differences are for Anglo vs. African American and Anglo vs. Hispanic juveniles. Though Hispanics were significantly more likely than African American youth to receive an initial referral, the chance of prosecutorial referral for Hispanic vs. African American juveniles is statistically indistinguishable.

Other Factors Predicting Prosecutorial Referral

Only a small number of independent variables other than race-ethnicity significantly impacted the likelihood of prosecutorial referral. It is logical that the level of offense is the strongest determinant of how a case will be handled. A misdemeanor charge at arrest increases the likelihood of a prosecutor's review by as much as 38.0 percent compared to juveniles being processed for crisis intervention services. A felony arrest charge raises the probability of a prosecutor's involvement by up to 48.4 percent.

Community urbanicity has the next greatest impact on prosecutorial review. Cases handled by juvenile probation departments in large metropolitan areas were 4.2 percent more likely to face a prosecutor's review compared to those in smaller urban population centers. The cases least likely to be referred to a prosecutor were those originating in

rural communities. There juveniles stand up to a 10.7 percent lower probability that a prosecutor will be involved compared to small- or mid-sized urban centers

Limited English proficiency is also an important determinant of case prosecution policy. Other things being equal, juveniles who are challenged English speakers have as much as a 7.9 percent lower chance of having their case referred for possible prosecution. This finding indicates that probation departments are more inclined to seek non-prosecutorial solutions for first-time offenders who speak other languages.

A first-time offender's family situation is a statistically significant determinant of whether the case will be reviewed by a prosecutor, but the specific findings are somewhat puzzling. It was expected that juveniles residing in a two-parent home would be the least likely to have their case considered for filing. Instead, juveniles living with an adult other than a family member (-5.9 percent maximum effect) and those living with their father only (-5.7 percent maximum effect) had a significantly lower probability of prosecutorial review compared to those living with both parents.

The reason for these findings is not clear. The "other adults" category included step-parents, in-laws, or other relatives. Juvenile probation departments may be more willing to defer prosecutorial review where youth have been able to attain these types of relatively stable out-of-home placements (having left more chaotic birth families). Similarly, fathers may be perceived as more capable of providing a structured home environment for juvenile defendants, creating incentives to rely on their support in the event alternatives to prosecution are offered.

When all other factors are held constant, males are up to 4.3 percent more likely than females to have a prosecutor consider their case. Like ethnicity, sex has a cumulative effect on case processing outcomes by exerting an impact at multiple stages. However, the effect of sex at Stage 2 is much lower than the 18.7 percent increase in probability of an initial referral (Stage 1) associated with being male.

Conclusions

The variables found to be statistically significant in the Stage 2 model indicate the factors juvenile probation officers consider when determining the appropriateness of prosecutorial review. While the severity of the offense is logically the first consideration, community size was also highly influential. This indicates that probation departments have different standards and operating procedures in large urban communities compared to those in mid-sized or rural areas. Cases are reviewed and prosecuted more vigorously in major metropolitan systems. Departments in smaller urban and in rural communities tend to pursue non-prosecutorial remedies.

The influence of race-ethnicity on Stage 2 prosecutorial referral is not large compared to other factors modeled. However, this variable, as well as sex, have a cumulative significant impact at both Stage 1 and Stage 2 case processing.

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**CHAPTER 6:
Factors Influencing Stage Three Progression from
Prosecutorial Referral to Prosecutorial Action**

The third stage being modeled, “Prosecutorial Action,” examines the extent to which race-ethnicity and other factors influence the decision to formally file charges. Analyses are based on the subset of juveniles whose cases were initially referred to the prosecutor for review. The independent variables tested are identical to those used in Stage 2. Table 12 presents the estimated maximum effect for each statistically significant independent variable.¹⁶

Race-Ethnicity as a Predictor of Prosecutor’s Decision to File Charges

Among youth whose cases are being considered for prosecution, race-ethnicity was found to be an influential factor for Hispanics only (see Table 13). All other things being equal, the likelihood of having a case formally prosecuted was up to 4.3 percent higher for Hispanics than Anglos and up to 4.9 percent higher for Hispanics than African Americans. By contrast, African American and Anglo youth have a statistically identical chance of having a referred case prosecuted. This finding for Hispanics serves to further compound the small but consistent effects of ethnicity observed in earlier stages of case processing.

**Table 13. Model of Prosecutorial Action:
Pair-wise Comparisons across Ethnic Categories*
(Row Relative to Column)**

	Anglo	Black	Hispanic	Other Minority
Anglo		NS	-4.3%	NS
Black	NS		-4.9%	NS
Hispanic	+4.3%	+4.9%		NS
Other Minority	NS	NS	NS	

* Each cell reports the maximum estimated effect of being the ethnic category of that row compared to the ethnic category of the column. All differences reported are statistically significant at the p<0.05 level. “NS” indicates there was no statistically significant difference between groups.

¹⁶ Full statistical results are presented in Appendix A, Table 3.

**Table 12. Model of Prosecutorial Action:
Maximum Estimated Effects for All Independent Variables Tested***

Independent Variable	Variable Type	Maximum Effect
Rural Area	Complex Categorical	+7.9%
Large Urban Metro Area	Complex Categorical	+19.8%
Small- to Mid-Size Urban Metro Area	Complex Categorical	Baseline
Felony Charge	Complex Categorical	NS
Misdemeanor Charge	Complex Categorical	-16.9%
Crisis Intervention	Complex Categorical	Baseline
Living with Mother	Complex Categorical	+4.0%
Living with Grandparents	Complex Categorical	-5.7%
Living with Father, Other Adult, Unsupervised, or in Institutional Care	Complex Categorical	NS
Living with Both Parents	Complex Categorical	Baseline
Limited English Proficiency	Simple Categorical	+4.8%
Hispanic	Complex Categorical	+4.3%
African American	Complex Categorical	NS
Other Minority	Complex Categorical	NS
Anglo	Complex Categorical	Baseline
Male	Simple Categorical	+3.0%
Disciplinary History	Simple Categorical	+2.6%
Number of Disciplinary Infractions	Continuous	NS
Number of Days Suspended	Continuous	NS
Age	Continuous	NS
Academic Giftedness	Simple Categorical	NS
Economically Disadvantaged	Simple Categorical	NS
Physical Disability	Complex Categorical	NS
Mental or Emotional Disability	Complex Categorical	NS
No Disability	Complex Categorical	Baseline
Percent of School Days Present	Continuous	NS
Gang Member	Simple Categorical	NS

*All differences reported are statistically significant at the $p < 0.05$ level. "NS" indicates there was no statistically significant difference between groups.

Other Factors Predicting Prosecutors' Decision to File Charges

Community urbanicity emerges as the strongest predictor of whether a prosecutor will take action. Those in small- to mid-sized urban communities are the least likely to push formal charges. By comparison, large metropolitan prosecutors are as much as 19.8 percent more likely, and those in rural areas are up to 7.9 percent more likely to file charges. Combined with evidence from Stage 2, urban prosecutors both formally review and file juvenile cases far more assertively than less populous areas. This suggests clear differences in case processing procedures and protocols in high-volume urban prosecutors' offices. Importantly, to the extent that minority juvenile populations are concentrated in urban areas, this pattern may contribute substantially to the occurrence of DMC in Texas. That is, if minority juvenile populations are concentrated in communities where prosecutorial action is more likely, a larger proportion would be likely to have their cases prosecuted with a corresponding increased likelihood of incarceration.

Offense severity was the next most important predictor of prosecutorial action, though the relationship is counter-intuitive. Juveniles accused of a low level crisis intervention offense had as much as 16.9 percent greater chance of prosecution than juveniles accused of a misdemeanor offense. They had the same probability of prosecution as those accused of a felony offense. It is known that any crisis intervention offense that reaches the level of prosecutorial action is somehow atypical. The vast majority of these relatively minor cases are disposed by probation officers without involvement of a prosecutor. A juvenile accused of an initial crisis intervention-level offense (e.g., "child in need of supervision" or CINS offense), then subsequently prosecuted for a more serious crime, may have these separate charges bundled together in the court case. This type of unusual event might explain why the small subset of crisis intervention first-offenses reviewed by prosecutors has such a high probability of prosecutorial action.

Juveniles' living situation was also significant in determining whether charges would be formally filed. Using juveniles in two-parent homes as the comparison group, prosecutors were more likely to take action against youth living with their mother only (4 percent maximum effect). This is not inconsistent with Stage 2 evidence that

prosecutorial review is less likely for youth living with their father. While fathers may be perceived as better able to manage the behavior of juveniles thereby mitigating the need for formal justice action, mothers may be viewed as weaker and less able to enforce follow-through on the conditions of a diversion program. Prosecutors were significantly less likely to press charges when grandparents are the caretakers (-5.7 percent maximum effect). The probability of formal charges being filed was not influenced by other family arrangements.

In all earlier stages of processing, juveniles with limited English-speaking ability have a lower probability of initial TJPC referral and a reduced chance of case review by a prosecutor. Surprisingly, however, LEP youth that pass those initial milestones face an increased likelihood that formal charges will be filed. Prosecutors are 4.8 percent more likely to take action against first-time offenders who do not speak fluent English compared to those who do.

Though the role of sex gradually declines over the first three stages of juvenile case processing, a cumulative impact is consistently present. Males referred for prosecutorial review are up to 3 percent more likely to face charges compared to otherwise identical females. This pattern further reinforces the cumulative detrimental impact of being male at every stage of justice system processing.

Though juvenile probation officers do not appear to weigh juvenile's school disciplinary history in deciding whether to refer cases for prosecutorial review (Chapter 5), prior delinquency is considered by prosecutors in deciding whether to file charges. Juveniles involved in one or more school disciplinary events have a slightly higher (2.6 percent maximum effect) probability of prosecutorial action than those who stayed out of trouble in school. This finding illustrates the differences in factors considered by various actors across the four major stages of case processing. Juvenile probation officers, prosecutors, and judges evaluate and weigh information differently in determining their course of action.

Conclusions

Ethnicity is a factor in prosecutors' decision to take action against Hispanic juveniles only. All other things being equal, Hispanic youth are significantly more likely than either Anglo or African American youth to face prosecutorial action. This finding further exacerbates the cumulative impact of ethnicity on this subgroup of juveniles. African American and Anglo youth have an equal likelihood that charges will be brought after controlling for risk factors other than race.

Prosecution practices were observed to be much more aggressive in large urban communities, with potentially important implications for DMC in Texas. To the extent that minority populations are concentrated in cities, higher prosecutorial review and filing rates may result for minority juveniles simply because they reside in urban communities. Since prosecution is a precedent of incarceration, more minorities being prosecuted would also contribute to the over-representation of minorities in incarcerated settings.

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CHAPTER 7: Factors Influencing Stage Four Progression from Prosecutorial Action to Court Outcomes

After the prosecutor has determined to take action against a juvenile (Stage 3), each case will either result in commitment to a juvenile detention facility, probation, deferred prosecution, or dismissal. Unlike previous stages in which the dependent variable being predicted was a simple two-category “yes or no” indicator of whether juveniles progressed to the next level, the dependent variable at Stage 4 is a complex set of four possible “Court Actions.” Thus, while the binomial logit model used in Stages 1 through 3 set a starting probability that juveniles would advance to the next level at 50 percent (see Chapter 3: Methodological Approach, Format for Reporting Results), in this instance, the starting probability of each of the four possible outcomes is set equal to 25 percent.

In considering the practical implications of these findings, it is important to bear in mind that only a very small proportion of all juveniles end up with a formal commitment during their first referral. Therefore, although the probability of a commitment may increase or decrease based on the values of independent variables, the actual number of juveniles affected is quite small. The projections in Tables 15 through 18 (see Chapter 8) provide some perspective on the number impacted at each stage of processing including court actions. Because probation is the most common court result for all groups of juveniles this outcome is used as a rough standard of organization in the presentation of maximum effects in Table 14, below.¹⁷

Race-Ethnicity as a Predictor of Court Actions

Court outcomes for Anglo, African American, and other minority groups were statistically identical. Only Hispanic youth were found to have court outcomes significantly different than those for Anglos. All other things being equal, Hispanic defendants were up to 8.1 percent more likely than the Anglo comparison group to

¹⁷ Full statistical results are presented in Appendix A. Table 4.

**Table 14. Model of Court Action:
Maximum Estimated Effects for All Independent Variables Tested***

Independent Variable	Maximum Effect			
	Probation	Deferred Adjudication	Dismissal	Commitment
Felony Charge	-25.0%	-25.3%	-25.0%	+75.0%
Misdemeanor Charge	-25.0%	-25.0%	-25.0%	+74.9%
Crisis Intervention	Baseline			
Living Unsupervised	+23.2%	-8.5%	+10.3%	-25.0%
Living with Grandparents	+1.4%	-15.2%	+0.3%	+13.6%
Living with Father	-1.8%	-14.5%	+6.0%	+10.3%
Living with Other Adult	-2.3%	-17.4%	+0.6%	+19.1%
Living with Mother	-7.0%	-10.4%	-10.5%	+28.0%
Living in Institutional Care	-17.1%	-24.0%	-18.9%	+60.0%
Living with Both Parents	Baseline			
Rural Area	+12.0%	+14.0%	-5.7%	-20.0%
Large Urban Metro Area	-2.6%	+13.4%	-15.7%	+4.9%
Small- to Mid-Size Urban Metro Area	Baseline			
Gang Member	+6.1%	-12.6%	-0.6%	+7.1%
Disciplinary History	+5.8%	+0.5%	+4.5%	-10.7%
Number of Disciplinary Infractions	NS			
Number of Days Suspended	NS			
Percent of School Days Present	+0.02%	+0.6%	+0.02%	-0.7%
Male	-1.3%	-6.5%	-7.9%	15.7%
Economically Disadvantaged	-1.7%	-7.8%	-2.5%	12.0%
Academic Giftedness	-2.6%	+10.0%	-0.1%	-6.1%
Hispanic	-3.4%	+8.1%	-4.2%	-0.4%
African American	NS			
Other Minority	NS			
Anglo	Baseline			
Limited English Proficiency	NS			
Physical Disability	NS			
Mental or Emotional Disability	NS			
No Disability	Baseline			

*All differences reported are statistically significant at the p<0.05 level. "NS" indicates there was no statistically significant difference between groups.

receive deferred adjudication. At the same time, Hispanics were significantly less likely to be committed, to be assigned probation, or to have their case dismissed.

Other Factors Predicting Court Actions

As expected, offense type is the strongest predictor of prosecutorial action in court. Juvenile defendants charged with a crisis intervention-level offense were up to 75 percent less likely to be committed to a detention facility than either misdemeanants or felons. At the same time, they were as much as 25 percent more likely to have more lenient outcomes such as probation, deferred prosecution, or dismissal.

Maximum effects of juveniles' home situation are also rather large. Youth who live with both parents are consistently most likely to receive deferred adjudication. Those living unsupervised (i.e., alone, with friends, or with siblings) have a substantially higher probability of probation (23.2 percent maximum effect) or dismissal (10.3 percent maximum effect) than other groups. Conversely, juveniles in institutional care (i.e., foster homes and shelters) are the least likely to receive any outcome other than commitment (60 percent maximum effect).

Large statistically significant differences were observed across the three categories of urbanicity. Probation was more likely to occur in rural areas than in either small/mid-sized or large urban communities (about 12.0 percent maximum effect). Mid-sized communities were the most likely to resolve cases with a dismissal (15.7 percent maximum effect) but the least likely to defer adjudication (about -14.0 percent maximum effect). Youth are most likely to be committed to a detention facility in large urban areas (4.9 percent maximum effect) and considerably less likely in rural areas (-20.0 percent maximum effect).

As in all previous stages, being male increases the probability of detrimental court outcomes, as well. Holding all other characteristics statistically equal, male juveniles have a maximum 15.7 percent greater chance of formal commitment than do females.

Similarly, males are less likely to have their cases dismissed (-7.9 percent) or to have adjudication deferred (-6.5 percent) compared to female youth.

Though the number of juveniles whose cases terminate in a formal commitment is extremely small in a first offense, those who come from impoverished backgrounds have a much higher probability of detention (12 percent maximum effect) compared to their more affluent peers. At the same time, economically disadvantaged juveniles are less likely to receive more favorable outcomes such as probation (-1.7 percent maximum effect), dismissal (-2.5 percent maximum effect), or deferred prosecution (-7.8 percent maximum effect). Though economic status is an important indicator of initial contact with the justice system (Stage 1), it not found to be associated with juvenile progression to Stage 2 (decision to refer the case to the prosecutor) or Stage 3 (prosecutor determines to file charges). It is not entirely clear why family income should re-emerge as an important determinant of commitment. Contributing factors may include juvenile defendants' access to legal resources, or court perceptions of the ability of families facing the challenges of impoverishment to properly supervise delinquent youth.

Though counterintuitive, the presence of a school disciplinary history is associated with a lower chance of commitment (-10.7 maximum effect) and an increased likelihood of more lenient dispositions. A history of gang involvement, by contrast, increases the probability of commitment by as much as 7.1 percent. Gang members also have a significantly higher chance of probation (6.1 percent maximum effect), but a lower likelihood of deferred adjudication (-12.6 percent maximum effect).

All other things being equal, academic giftedness significantly reduces the probability of commitment while raising the chance a youth will have a deferred adjudication.

Similarly, for every percentage increase in school days present, the probability of commitment declines by as much as 0.7 percent. More school days present also increase a juvenile's chance of more favorable outcomes, most notably deferred adjudication (maximum of 0.6 percent effect per percentage increase in days attended).

Conclusions

Because factors predicting four potential court actions were modeled, Stage 4 results are somewhat more complex to report. Only outcomes for juveniles of Hispanic ethnicity were significantly different from the Anglo comparison group. With all other factors being equal, no significant differences in court actions were found between Anglo and African American juveniles, or between Anglos and other minorities.

The most important influences on court outcomes proved to be offense type, juveniles' living arrangement, community urbanicity, and sex. Interestingly, several personal characteristics unrelated to case processing since Stage 1, also re-emerged as significant factors in Stage 4. Economic disadvantage, disciplinary history, academic giftedness, and school attendance were found to play a significant role in decision-making at the disposition phase. This finding suggests that, while most case processing decisions are based on offense type and system characteristics (measured by urbanicity), a broader array of evidence is taken into consideration to determine court dispositions.

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CHAPTER 8: Models of Overall DMC Effects on Progression through the Juvenile Justice System

Previous chapters of this report have analyzed the impact of a number of factors on the probability that an individual juvenile will progress through each of four phases of juvenile case processing illustrated in Figure 1 (see Chapter 3). Results have shown that at every stage of processing, after controlling for a wide range of other factors, a relatively small but consistent statistically significant effect of ethnicity remains. The purpose of this chapter is to illustrate the net impact of these cumulative effects across the stages of the juvenile justice system.

Results from a series of simulation exercises are presented below. These findings, summarized in Tables 15 through 17, quantify the number of juveniles impacted by the race and ethnic effects discussed throughout this report. Each exercise begins with a sample of 100,000 hypothetical individuals in each of six categories distinguished by sex and race-ethnicity. These are the only two factors other than limited English proficiency found to have a significant impact at virtually every stage of case processing. In every other way, the hypothetical individuals presented in the three models are statistically identical, with the characteristics described below.

Predicted Justice System Advancement for “Average” Juveniles

Table 15 presents the predicted outcomes for statistically identical juveniles with the following characteristics: age 15, from a small/mid-size urban school district, no disciplinary history, not gifted, not economically disadvantaged, not disabled, not having limited English proficiency, and having a 96 percent school attendance rate. After an initial referral at Stage 1, these hypothetical individuals were assigned the following case characteristics using variables available only in the TJPC database: charged with a misdemeanor offense, living only with their mother, and not a gang member.

In the hypothetical sample of “average” juveniles with identical characteristics, 9.0 percent more African American males, and 18.0 percent more Hispanic males, are projected to have a juvenile referral compared to otherwise identical Anglos. The racial-ethnic disparity is greater for females, though a smaller number of individuals are affected. Twenty percent more “average” females of both African American and Hispanic ethnicity are expected to experience a justice referral compared to their Anglo peers.

Table 15. Predicted Outcomes for Six Sets of 100,000 Hypothetical “Average” Juveniles

		Male			Female		
		Anglo	African American	Hispanic	Anglo	African American	Hispanic
	No Initial Contact	99,890	99,880	99,870	99,950	99,940	99,940
Stage 1	Initial Contact	110	120	130	50	60	60
Stage 2	Prosecutorial Referral	49	56	63	20	26	27
Stage 3	Prosecutorial Action	29	33	40	11	14	16
Stage 4	Probation	18	19	22	6	7	8
	Deferred Prosecution	7	8	13	3	4	6
	Dismissed	5	6	6	2	3	3
	Committed	0	0	0	0	0	0

The prosecution rate is lowest for Anglo juveniles and highest for Hispanics. Among “average” juvenile males with an initial justice contact, 25.3 percent of Anglos are projected to eventually face prosecutorial action. The projected proportion is incrementally higher for African American males (27.5 percent), and highest for Hispanic males (30.7 percent). The percentage of justice-involved females projected to be formally prosecuted is similar between Anglos (22.0 percent) and African Americans (23.3 percent), and higher for Hispanic females (26.7 percent).

Despite slightly higher rates of prosecutorial action, Hispanic juveniles tend to have more favorable case outcomes. Among “average” Hispanic males whose cases were filed, 47.5

percent are projected to have prosecution deferred or have their cases dismissed. Only 41.3 percent of Anglos and 42.4 percent of African Americans are projected to have these favorable outcomes. Similarly, for “average” females whose cases are filed, 15 percent of Hispanics are projected to have a deferred prosecution or a dismissal. The number of justice-involved Anglo (10.0 percent) and African American (11.7 percent) females projected to have these case outcomes is lower.

While ethnic differences in justice involvement clearly exist, the most striking differences occur between males and females. Among “average” juveniles with no risk factors, at least twice as many males are projected to encounter an initial referral compared to females of the same ethnicity. At each subsequent phase of case processing only half as many females face prosecutorial referral or formal charges, even though they have the same background and offense characteristics as their male peers.

Predicted Justice System Advancement for Juveniles with a Disciplinary History

The hypothetical students modeled in Table 16 share all of the same characteristics of the “average” students in Table 15 with one exception. Those in Table 16 are assumed to have a disciplinary history that includes two infractions and five total days of suspension from school.

Table 16 shows that, when a discipline history is included in the model, the overall number of justice-involved juveniles increases for all race-ethnic and gender categories, and at all stages of case processing. With all other things being equal, Hispanic youth in this group continue to have more frequent contact with the justice system (17.1 percent more males, 18.75 percent more females) than the Anglo comparison group. African Americans are also projected to have referral rates higher than their Anglo counterparts (11.4 percent more males, 12.5 percent more females), though the discrepancy is smaller than for Hispanics.

**Table 16. Predicted Outcomes for Six Sets of
100,000 Hypothetical Juveniles with a Disciplinary History**

		Male			Female		
		Anglo	African American	Hispanic	Anglo	African American	Hispanic
	No Initial Contact	99,650	99,610	99,590	99,840	99,820	99,810
Stage 1	Initial Contact	350	390	410	160	180	190
Stage 2	Prosecutorial Referral	159	187	204	66	78	86
Stage 3	Prosecutorial Action	98	114	134	39	46	54
Stage 4	Probation	64	69	79	23	24	28
	Deferred Prosecution	19	25	37	9	11	17
	Dismissed	16	20	19	8	10	9
	Committed	0	0	0	0	0	0

With discipline history in the model, prosecutors take action at about the same rate for justice-involved male Anglo (28.0 percent) and African American juveniles (29.2 percent). However, a larger proportion of Hispanic males with an initial referral will encounter a formal prosecution (32.6 percent). The pattern holds for females with a discipline history, as well. Comparable proportions of Anglo (24.4 percent) and African American juveniles (25.5 percent) with initial justice contact are expected to face prosecutorial action. The projected proportion is highest, though, for Hispanic females (28.4 percent).

If a discipline history is assumed, more Hispanic juveniles are projected to have their case culminate in a dismissal or deferred prosecution (41.8 percent for males, 48.1 percent for females). The expected occurrence of these most favorable case outcomes is somewhat lower for comparable African American (39.5 percent for males, 45.6 percent for females) and Anglo youth (35.7 percent for males, 43.5 percent for females).

The dramatic differences in justice involvement between males and females continue to be evident after a discipline history is incorporated into the model. All other things being equal, about 2.1 times as many of these higher risk male juveniles are projected to have a

justice referral than their female peers. Furthermore, about 2.5 times more males encounter prosecutorial action than do females. These findings hold across all ethnic groups.

Predicted Justice System Advancement for Economically Disadvantaged Juveniles with a Disciplinary History

Table 17 presents the model of progression through the justice system for a simulated sample of youth who have been assigned two risk factors. Beginning with all the characteristics attributed to “average” juveniles, in addition to the same discipline history applied above (i.e., two infractions and five total day of suspension from school), these students are also assumed to be economically disadvantaged as evidenced by their ability to qualify for free or reduced school lunch.

Results again confirm that, as the number of risk factors being modeled increases, so does the overall number of youth in every category of case processing. Among these “highest-risk” youth, the inter-ethnic discrepancy is largest for Hispanics who are about 16 percent more likely than Anglos to encounter justice involvement. About 12 percent more African Americans are projected to experience a justice referral compared to the Anglo reference group. Referral rates are nearly identical for both male and female juveniles with both disciplinary and economic risk characteristics.

As additional risk factors are added to the model, Hispanic youth remain the group most likely to face formal prosecution. While male Anglo (28.5 percent) and African American (29.8 percent) youth with initial justice contact are prosecuted at comparable rates, the projected likelihood of prosecution for Hispanics is slightly higher (33.2 percent). Though otherwise identical females have their cases prosecuted less frequently, the general pattern is the same. “Highest risk” Anglo females have the fewest prosecuted cases (24.8 percent), followed by African Americans (26.1 percent) and Hispanics (28.9 percent).

Table 17. Predicted Outcomes for Six Sets of 100,000 Hypothetical Juveniles, Economically Disadvantaged with a Disciplinary History

		Male			Female		
		Anglo	African American	Hispanic	Anglo	African American	Hispanic
	No Initial Contact	99,450	99,380	99,360	99,750	99,720	99,710
Stage 1	Initial Contact	550	620	640	250	280	290
Stage 2	Prosecutorial Referral	247	294	315	102	121	130
Stage 3	Prosecutorial Action	157	185	213	62	73	84
Stage 4	Probation	108	119	136	38	42	48
	Deferred Prosecution	24	31	46	11	14	21
	Dismissed	25	34	31	13	17	15
	Committed	0	0	0	0	0	0

Hispanic and African American youth with both disciplinary and economic attributes are about equally likely to have their case end in dismissal or deferred adjudication. Anglos are consistently least likely to receive these positive case outcomes. Once charges are filed, 36.1 percent of Hispanic males and 35.1 percent of African American males are projected to avoid formal charges compared to only 31.2 percent of Anglo males. A larger proportion of females facing charges are projected to have their case deferred or dismissed. Hispanic (42.9 percent) and African American females (42.5 percent) are about equally likely to have these positive outcomes, while Anglo females (38.7 percent) are the least likely to avoid charges filed in court.

As with models describing lower risk juveniles, differences in justice experience between otherwise identical male and female juveniles remain strikingly high. The model of justice involvement among the “highest risk” students continues to show about 2.2 times more males of all ethnicities have initial contact and about 2.5 times more males than females are the target of formal action by the prosecutor. While the impact of race and ethnicity is important, differences in the projected number of male vs. female juveniles at all stages of justice involvement are considerably more extreme.

Conclusions

This chapter has reported results from a series of statistical simulations designed to show the actual number of juveniles projected to advance from the general school population through each stage of juvenile case processing. Three tables quantify the influence of particular risk characteristics including race-ethnicity, sex, a discipline history, and economic disadvantage. Though only a subset of all potential risk factors were modeled, those chosen are among the most salient contributors to delinquency.

First, rates of advancement into and through the justice system increase substantially for all ethnic and sex categories as the number of risk factors increases. The number of justice-involved youth consistently rises as additional risk characteristics are modeled in Tables 15 through 17. All other things being equal, the highest rates of contact with the juvenile justice system occur for Hispanic males. Hispanic males are also projected to face formal prosecution at rates higher than either Anglos or African Americans. Despite these trends toward the more assertive referral and prosecution of Hispanic males, however, they are also the group most likely to have their case resolved in deferred adjudication or dismissal. Anglos are the least likely to receive these favorable dispositions.

In interpreting these findings, it is also important to bear in mind that the actual number of juveniles per 100,000 impacted by race-ethnic effects is relatively small compared to the extremely large number affected by sex differences. While differences in rates of justice involvement between ethnic groups may range as high as 20 percent, differences in rates between males vs. females are commonly as high as 250 percent. The tables presented in this chapter are intended to add meaning to the actual impact of findings presented throughout this report.

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CHAPTER 9: Summary and Conclusions

Purpose of the Research

Though African American youth between the ages of 10 and 16 comprise only 13 percent of the general population of Texas, they make up fully 32 percent of the detained population (see Tables 1 through 3, Chapter 1). There is less disparity for Hispanic youth who make up 40 percent of the general population and 39 percent of juvenile detainees. Anglo youth, by contrast, are underrepresented in the justice system relative to the general population (45 percent and 28 percent respectively).

These statistics have been a cause for concern among policymakers and advocates for justice. In order to craft policy solutions capable of eliminating the problem, more information is needed about the causes of disproportionality. Does this discrepancy in justice involvement result from overt racism or other forms of systematic bias against young people of color, or are minorities overrepresented because they share other characteristics independent of race and ethnicity that put them at greater risk for justice involvement? These questions must be answered before it is possible to plan and target interventions capable of eliminating racial and ethnic disparity in the juvenile justice system.

Overview of Research Methods

The research methods used to investigate these important policy questions in Texas are both innovative and powerful. The analysis approach employed here has not been widely utilized in other states, in part due to the difficulty of assembling a comprehensive set of individual-level data on juveniles both within and outside the juvenile justice system. Using existing databases from the Texas Education Agency and the Texas Juvenile Probation Commission, virtually every Texas school child enrolled in grades 8-12 during the 1999 school year was monitored for juvenile justice involvement over a five year period. Because extensive personal information was available for each child included in the study, multivariate statistical models could be constructed. These models measure the separate effects of many different risk characteristics that commonly occur together in

individual children. Thus it was possible to quantify the relative importance of race-ethnicity as compared to other attributes shared by minority children that might also increase the chance of justice involvement.

Statistical models were constructed to identify factors that increase or reduce the likelihood that a juvenile would advance through each of four stages of the justice system. These outcomes are illustrated in Figure 1 (see Chapter 3). They include (1) progression from school to a TJPC referral; (2) progression from a TJPC referral to prosecutor's review of the case; (3) progression from prosecutor's review to the filing of a formal charge; and (4) in charged cases, progression to one of four potential outcomes (dismissal, deferred adjudication, prosecution, or commitment).

Fifteen factors expected to influence juvenile's progression through these stages are illustrated in Table 18. The maximum effect size is shown for all independent variables having a statistically significant impact (at the $p < 0.05$ level) on each of these outcomes. Additional detail on analytic strategies is provided in Chapter 3.

Major Findings

A number of conclusions can be drawn based on the evidence generated through this research. These results help illuminate the underlying causes of minority overrepresentation in the juvenile justice system, and inform planning to formulate meaningful solutions.

1) Race-ethnicity has a relatively small effect on justice involvement.

Initial contact with the justice system predominantly occurs because youth have a discipline history at school, are male, are not excelling academically, are economically disadvantaged, or have an emotional or learning disability. The probability of a TJPC referral increases by 8.7 to 23.4 percent depending on the presence or absence of these characteristics. By contrast, being Hispanic elevates a juvenile's chance of justice involvement by a maximum of 3.5 percent, and being African American increases the

Table 18. Maximum Estimated Effects for All Variables Tested by Stage*

Independent Variable	Maximum Effect			
	Stage 1: Initial Contact	Stage 2: Prosecutorial Referral	Stage 3: Prosecutorial Action	Stage 4: Prosecutorial Outcomes**
Disciplinary History	+23.4%	NS	+2.6%	p<0.05
Male	+18.7%	+4.3%	+3.0%	p<0.05
Academic Giftedness	-14.1%	NS	NS	p<0.05
Economically Disadvantaged	+11.1%	NS	NS	p<0.05
Mental or Emotional Disability	+8.7%	NS	NS	NS
Physical Disability	-12.3%	NS	NS	NS
No Disability	Baseline			
Rural Area	-5.5%	-10.7%	+7.9%	p<0.05
Large Urban Metro Area	-2.1%	+4.2%	+19.8%	p<0.05
Mid-Size Urban Area	Baseline			
Limited English Proficiency	-4.6%	-7.9%	+4.8%	NS
Hispanic	+3.5%	+4.3%	+4.3%	p<0.05
African American	+2.7%	+2.4%	NS	NS
Other Minority	-30.2%	NS	NS	NS
Anglo	Baseline			
Percent of School Days Present	-0.6%	NS	NS	p<0.05
Felony Charge	NA	+48.4%	NS	p<0.05
Misdemeanor Charge	NA	+38.0%	-16.9%	p<0.05
Crisis Intervention	NA	Baseline		
Living with Other Adult	NA	-5.9%	NS	p<0.05
Living with Father	NA	-5.7%	NS	p<0.05
Living with Mother	NA	NS	+4.0%	p<0.05
Living with Grandparents	NA	NS	-5.7%	p<0.05
Living in Institutional Care	NA	NS	NS	p<0.05
Living Unsupervised	NA	NS	NS	p<0.05
Living with Both Parents	NA	Baseline		
Gang Member	NA	NS	NS	p<0.05

* All differences reported are statistically significant at the p<0.05 level. “NS” indicates there as no statistically significant difference between groups. “NA” indicates the variable was not available for Stage 1 analyses.

** Because there are four possible prosecutorial outcomes, detailed results are too complex to present in this table. Information about statistical significance is presented here with full results available in Table 14 (see Chapter 7).

probability of initial contact by no more than 2.7 percent. The role of race-ethnicity in subsequent stages remains relatively small, never increasing the chance of progressing to the next level by more than 4.3 percent for Hispanics and 2.4 percent for African Americans.

Based on this evidence, interventions focused narrowly on eliminating racial bias will do little to reduce disproportionality. Instead, the data show efforts should be targeted toward minimizing the number of minority youth in high-risk categories. Resources should be invested in prevention or early intervention programs to reduce involvement of minorities in school delinquency, enhance academic performance, support economically disadvantaged families, and develop effective interventions for juveniles with emotional or learning disabilities.

2) The impact of race-ethnicity is cumulative across the four major stages of juvenile case processing.

Although race-ethnicity has a relatively small effect on juvenile justice involvement, it does have a cumulative impact over multiple stages of processing. Compared to Anglos, Hispanic juveniles have a significantly higher probability of progressing through all four stages of case processing from initial contact through court action. African American youth have a higher probability of progressing through two stages including initial contact and prosecutorial review (see Table 18).

The practical impact of this cumulative effect is illustrated in Chapter 8. Among 100,000 “average” male juveniles who are equal in every way except ethnicity, 40 Hispanic youth and 33 African American youth are projected to progress to the stage of prosecutorial action (see Table 15, Chapter 8). By contrast, only 29 “average” male Anglo youth are projected to reach that stage. If the youth in this same hypothetical sample are also assumed to share a common discipline history and be economically disadvantaged, the discrepancy grows even greater. Of 100,000 otherwise identical high-risk males, 213 Hispanic juveniles are projected to reach the stage of prosecutorial action compared to 185 African Americans and 157 Anglo youth. From this projection model it is possible to quantify the actual impact of the cumulative effect of race-ethnicity over multiple

stages of justice processing. It also helps elucidate the differential influence of race-ethnic effects for Hispanic and African American youth.

3) Race-ethnicity has a greater influence on case processing outcomes for Hispanic youth than for African Americans. This finding is of particular importance because it is not apparent from aggregate statistics alone.

As has been noted, analysis of aggregated race-ethnicity data alone shows that African American youth are about 2 times more likely to appear in the TJPC population and 2.5 times more likely to appear in the juvenile detained population than in the general population. Hispanic youth, by contrast, are about equally represented in both groups. This type of single-variable data might lead observers to conclude that African American youth are the greater victims of injustice and that Hispanic youth should have fewer concerns about inequity.

However, when data are available to support multivariate modeling, the opposite picture emerges. While it remains a fact that African Americans have disproportionate TJPC involvement, when other explanations besides race-ethnicity can be entered into statistical models, most of the discrepancy is accounted for by factors other than race. African American youth have increased contact with the justice system because they are more likely to be in high-risk categories (e. g., history of delinquency, male, academically at-risk, economically disadvantaged, or mentally or emotionally disabled). They have a greater chance of progressing through the system because of offense characteristics or the urbanicity of their local home community.

While these same statements are true of Hispanic youth, they are somewhat more likely than their African American peers to progress from one justice stage to the next without possessing any of these risk factors. Hispanic offenders are up to 0.8 percent more likely than otherwise identical African American youth to have an initial TJPC referral (Table 9), and as much as 4.9 percent more likely to face prosecutorial action (Table 13). This means that a slightly larger proportion of Hispanic than African American youth in the justice system have no explanation for their involvement other than their ethnicity. By

comparison, more African American youth have preceding risk factors that account for their justice contact.

This finding is particularly noteworthy because, although it is a point of considerable policy importance, it would not have been observed in the absence of multivariate modeling. Although Hispanic youth are not disproportionately represented in the juvenile justice system, there is in fact greater evidence of potential system bias against this group than any other. This finding raises fundamental questions about the concept of proportionality as an accepted indicator of equity. It is generally believed that if minority juveniles are equally represented in both the general population and the justice population, then system fairness has been achieved. Even though Hispanics have achieved proportional representation in both populations, stronger evidence of disparity exists for them than for African Americans for whom disproportionality is greatest.

4) This study cannot identify the specific processes that explain the effect of race-ethnicity on juvenile case processing.

Though the likelihood of a juvenile referral and subsequent case advancement is slightly higher for minorities, and for Hispanics in particular, the reason this occurs is not clear. Many different possibilities exist. Some authorities charged with administering juvenile justice may intentionally or unintentionally engage in practices that are biased against Hispanic and African American youth. Routine and accepted system policies may inadvertently have disparate impact. Some field personnel have described cultural differences in the ways youth and families interact with authority. For instance, Anglo youth may be more culturally prepared to conform with bureaucratic expectations, thereby more frequently gaining “the benefit of the doubt.” It is also possible that real differences in participation in delinquency exist among members of different race-ethnic groups.

These scenarios are only speculation. Further research is required to understand why risk of progression through the justice system is higher for some youth simply by virtue of their minority group membership. Although the race-ethnic effect is small compared to

other influences on justice involvement, in the absence of a clear understanding of causes, solutions cannot be readily formulated.

5) The factors that predict initial contact with the juvenile justice system are different from the factors that predict advancement within the system.

Table 18 shows that different variables are influential at different stages of case processing. The factors important in predicting initial contact with the justice system generally include personal attributes such as behavior at school, sex, academic success, economic status, and disability status. While these individual characteristics may contribute to opportunity for delinquency in the community setting, they would not be expected to influence decision-making by authorities after youth have entered the justice system. In fact this is largely confirmed in the data.

As expected, after entering the justice system the nature of the offense is the most important influence on advancement from one case processing level to the next. The urbanicity of the community where the juvenile is processed emerges as the second greatest influence. Urbanicity can be thought of as an indicator of local processing policies and practices which vary systematically depending on the size of juvenile departments, prosecutors' offices, and county court systems. The data indicate that youth entering large metropolitan juvenile probation offices have the greatest consistent likelihood of aggressive case prosecution.

Though factors other than offense characteristics and urbanicity also impact the risk of justice involvement, these are by far the most influential. At the same time, many of the personal attributes that increased the risk of initial contact decline in importance or become statistically insignificant at later stages of justice processing. This finding confirms that, in general, the most important influences on case processing are not individual personal traits. Instead, most decisions are based on the facts of the case combined with objective and standardized local operating procedures.

6) Factors unrelated to race-ethnicity may contribute to disproportionate minority representation in the justice system.

Besides Hispanic ethnicity, two other variables were observed to have a statistically significant impact increasing the likelihood that juveniles will progress through all four stages of case processing modeled. One of these variables is urbanicity. Juveniles in large urban areas are the least likely to have an initial justice referral. However, once in the system, juveniles in metropolitan communities have the greatest likelihood that their case will be referred to a prosecutor (4.2 percent maximum effect) and that action will be taken on a referred case (19.8 percent maximum effect). Thus, irrespective of race-ethnicity or other attributes, any youths processed through major urban justice systems can expect more ambitious efforts toward prosecution.

To the extent that minority populations are concentrated in metropolitan communities, Hispanic and African American juveniles would be impacted by these more assertive case processing policies in greater numbers. In fact nearly 80 percent of both Hispanic and African American Texans live in highly urban areas, compared to nearly 60 percent of Anglos. With policies in these areas favoring prosecutorial referral and court action, more minorities would likewise be expected to advance further through the justice system, potentially including commitment to juvenile justice facilities.

The second variable having a cumulative impact on advancement through all four case processing levels is sex. Males are more likely to become involved in the justice system and to be processed more vigorously compared to females. As with urbanicity, to the extent that minority males become involved in the justice system, their likelihood of advancement is magnified by the significant cumulative impact of their sex.

Clearly, living in a major metropolitan community, or being male, can combine with race-ethnicity to inadvertently enhance disproportional representation. When these three risk factors operate together, justice involvement among male minority juveniles residing in large urban communities can potentially rise well above rates for Anglos statewide. This example illustrates some of the complexities involved in explaining disproportionate

minority contact. Some of the major forces accounting for disproportional representation may in fact have little direct relationship to youths' race-ethnicity.

Conclusions

The results of this study are intended to provide direction for effective policymaking to eliminate disproportionate minority representation in the juvenile justice system.

Findings indicate that, if they are to be effective, efforts must focus on helping Hispanic and African American juveniles in the highest risk categories. The youth most at risk are typically male with a history of disciplinary involvement at school. They are not excelling academically, are economically disadvantaged, and commonly have a mental or emotional disability. Most justice involvement among minorities can be explained because they possess one or more of these risk factors. Race-ethnicity plays a relatively small role in justice contact. This information is essential to know in order to develop and target solutions capable of truly eliminating disproportionality.

Appendix A

Full Statistical Results for Relationships Modeled

Table A1: Model of Initial Referral

Independent Variable	Parameter Estimate	Standard Error
Black	.108	.019*
Hispanic	.141	.016*
Other Non-White	-1.400	.092*
Male	.784	.015*
Gifted Student	-.579	.031*
Age	-.881	.006*
Attendance %	-.026	.001*
Economically Disadvantaged	.455	.015*
Disciplinary Indicator	1.017	.015*
Number of Disciplinary Infractions	.059	.002*
Number of Days Suspended	.004	.000*
Limited English Proficiency	-.187	.023*
“Hard” Disability	-.510	.152*
“Soft” Disability	.352	.015*
Urban School District	-.083	.014*
Rural School District	-.224	.018*
Constant	8.098	.109*

Pseudo R-Squared Statistic=.23

Number of Observations 2,024,838

Notes:

* indicates a p-value <.05

These parameters were estimated using a binomial logistic regression model.

Table A2: Model of Prosecutorial Referral

Independent Variable	Parameter Estimate	Standard Error
Felony Charge	4.135	.074*
Misdemeanor Charge	1.991	.065*
Gang Member	.114	.069
Black	.095	.046*
Hispanic	.172	.039*
Other Non-White	-.143	.227
Male	.174	.035*
Gifted Student	.061	.075
Age	.016	.020
Attendance %	-.003	.002
Economically Disadvantaged	-.022	.036
Disciplinary Indicator	.031	.037
Number of Disciplinary Infractions	.008	.005
Number of Days Suspended	-.001	.001
Limited English Proficiency	-.319	.055*
“Hard” Disability	-.270	.364
“Soft” Disability	-.001	.036
Urban School District	.169	.034*
Rural School District	-.433	.045*
Living in Institutional Care	-.101	.141
Living Unsupervised	.034	.087
Living with Mother Only	-.006	.038
Living with Father Only	-.230	.063*
Living with Grandparents	-.103	.084
Living with Other Adult	-.238	.060*
Constant	-2.34	.331*

Pseudo R-Squared Statistic=.19

Number of Observations 23,139

Notes:

* indicates a p-value <.05

These parameters were estimated using a binomial logistic regression model.

Table A3: Model of Prosecutorial Action

Independent Variable	Parameter Estimate	Standard Error
Felony Charge	-.233	.156
Misdemeanor Charge	-.704	.154*
Gang Member	-.016	.093
Black	-.025	.063
Hispanic	.173	.055*
Other Non-White	-.091	.328
Male	.120	.051*
Gifted Student	-.042	.104
Age	.049	.028
Attendance %	.004	.003
Economically Disadvantaged	.080	.050
Disciplinary Indicator	.103	.052*
Number of Disciplinary Infractions	-.008	.008
Number of Days Suspended	.001	.001
Limited English Proficiency	.191	.083*
“Hard” Disability	.443	.588
“Soft” Disability	-.022	.051
Urban School District	.836	.047*
Rural School District	.320	.063*
Living in Institutional Care	.213	.170
Living Unsupervised	.175	.123
Living with Mother Only	.160	.052*
Living with Father Only	-.148	.086
Living with Grandparents	-.228	.110*
Living with Other Adult	-.029	.082
Constant	-.294	.470

Pseudo R-Squared Statistic=.04

Number of Observations 11,625

Notes: * indicates a p-value <.05

The Dependent Variable in this analysis was coded as equal to one if the case was sent to court and zero if some other outcome occurred at the prosecutorial level. These parameters were estimated using a binomial logistic regression model.

Table A4: Model of Court Action

Independent Variable	ln(dismissal/ probation)	ln(deferred prosecution/ probation)	ln(commitment/ probation)
Felony Charge	-2.120*	-.292	17.189*
Misdemeanor Charge	-1.478*	1.515*	14.198*
Gang Member	-.244	-.921*	.035*
Black	.195	.167	-.062
Hispanic	-.037	.431*	.132
Other Non-White	.009	.526	-29.03
Male	-.329*	-.249*	.540
Gifted Student	.061	.449*	-.169
Age	.014	-.023	.069
Attendance %	.000	.023*	-.028*
Economically Disadvantaged	-.036	-.306*	.461
Disciplinary Indicator	-.043	-.186*	-.769*
Number of Disciplinary Infractions	.002	-.005	.035
Number of Days Suspended	-.003	-.001	-.010
Limited English Proficiency	.127	-.028	-.645
“Hard” Disability	1.118	.554	-28.757
“Soft” Disability	-.002	-.123	.213
Urban School District	-.874	.539*	.291
Rural School District	-.650	.053	-2.071*
Living in Institutional Care	-.249	-2.051*	2.378*
Living Unsupervised	-.313	-1.072*	-30.170
Living with Mother Only	-.217*	-.208*	1.084*
Living with Father Only	.291	-.788*	.422
Living with Grandparents	-.043	-.990*	.381
Living with Other Adult	.119	-1.098*	.661
Constant	.420	-3.908*	-20.880

Pseudo R-Squared Statistic=.12

Number of Observations 7717

Notes:

* indicates a p-value <.05

Continued...

The Dependent Variable in this analysis was coded as equal to following:

- one if the case was dismissed, the juvenile was found not guilty, the case was adjudicated with no disposition, or the case was transferred;
- two if the juvenile was given deferred prosecution;
- three if the juvenile was placed on probation;
- four if there was a commitment to TYC.

These parameters were estimated using a multinomial logistic regression model.