

149805

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**1991 Adult Felony  
Phase**

**J U S T I C E  
I M P R O V E M E N T  
M O D E L**

**149805**



**Metro-Dade Department of Justice Assistance**

**January 1994**

149805

**U.S. Department of Justice  
National Institute of Justice**

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### THE DADE JUSTICE IMPROVEMENT MODEL (DADEJIM)

PURPOSE: DADEJIM is a computerized set of tools and a methodology which is intended to assist decision-makers in anticipating and simulating the systemwide effects of changes in justice policy, workload, and resources.

BASIC APPROACH: DADEJIM can be conceptualized as a flow diagram. Boxes on the diagram represent major justice system processes. These are connected by flows representing cases and people that are processed at each stage and routed from one stage to another by connecting branches. Dade County's Adult Felony Model contains ten of these stages, the Adult Misdemeanor Model contains nine.

WHAT GOES INTO THE MICRO-COMPUTER: Once the basic flow structure is created, the names of the major justice processes and the labels for all the branches and flows are entered to make them available to the computer program. Next, numbers representing cases and people flowing into and out of each major justice system stage are entered. In Dade County, these are separated into eleven major offense classifications at each stage of the model.

WHAT COMES OUT OF THE MICRO-COMPUTER: DADEJIM rapidly calculates important measures for each stage of the model:

- number of cases entering each stage, by crime type;
- number of cases in each outgoing flow from a stage, by crime type;
- number of full time personnel involved in processing cases in each stage;
- total time available for key staff to process cases;
- average key staff time available per case;
- number of staff devoted to supporting the key staff for each stage; and
- ratio of support staff to key staff.

Summaries for all stages can be created. Comparisons of various independent runs of the model are also possible; e.g., reports can be produced which compare the results of data runs containing different estimates or assumptions.

### USES OF THE MODEL:

- to analyze base case vs test case;
- to identify emerging system problems;
- to model flows of offense groups;
- to estimate resource requirements and effects of new programs; and
- to project the impact of major system changes.



## EXECUTIVE SUMMARY

The Dade Justice Improvement Model (DADEJIM), is an informational system designed to simulate changes and forecast the impact of these changes on the Criminal Justice System. It is intended to be an analytical and managerial tool for the use of policy and decision-makers. The data presented by DADEJIM, is the synthesis of information provided by more than 47 criminal justice agencies in the Dade County/11th Judicial Circuit. These include the Information and Technology Department (ITD), the State Attorney's Office, the Public Defender's Office, Clerk of the Court, Administrative Office of the Courts, Medical Examiner's Office, Florida Department of Health & Rehabilitative Services, and all twenty-seven (27) local police departments which include Metro-Dade Police Department and the City of Miami Police Department.

The basic methodology for the model, originally developed at Carnegie-Mellon University in the 1970's, required the use of an interactive main-frame computer system. The Santa Clara County Center for Urban Analysis modified the system to work on a UNIX computer system and adapted the model for their use. Working in conjunction with Santa Clara's staff, the Department of Justice Assistance was able to further modify and adapt the JUSSIM model to fit Dade County's judicial and criminal justice system. The final product is called the Dade Justice Improvement Model (DADEJIM).

DADEJIM may be classified as an "aggregate, linear, steady-state" simulation model rather than the more traditional case by case approach; "it gives a the picture of the whole forest, not just the trees." The model is capable of bypassing departmental barriers, evaluating the impact of decisions on a system-wide basis. It incorporates sensitivity analysis as the driving force within its methodological framework. This technique involves dividing policy objectives into smaller components and then changing the quantity of one factor at a time while keeping the other variables constant. In other words, DADEJIM has the flexibility of projecting the impact of major system changes as well as hypothetical case scenarios or "what if" applications. Among its many other applications, DADEJIM is capable of providing a detailed analysis of the flows and costs of processing defendants and cases. Hence, it can easily allow one to evaluate the balance between the criminal justice system's needs and available resources.

DADEJIM can be conceptualized as a flow diagram (enclosed). The stages on the diagram represent major justice system processes. These are connected by flows representing cases and people that are processed at each stage and routed from one stage to another by connecting branches. Specific branching probabilities rather than probabilities of distributions are utilized to determine how cases are processed through the criminal justice system.

The three major model components consist of the following:

FLOWCHART - A graphic diagram depicting the movement of cases/people through the system. The stages represent major functional areas or "choke-points" of the system. The branches represent the major paths defendants/people follow as they move through the system.

CASE-FLOW - The volume of cases/people flowing into and out of each stage are attached to the connecting branches.

RESOURCES - Departmental/Agency estimates of the time and resources apportioned to each of the stages were compiled according to organizational divisions and their line item budget (when applicable). These percentages were applied to fiscal 86-87 actual expenditures. The aggregation of these figures provides resource information of the system towards Adult Felony, Adult Misdemeanor, and as in this case, Juvenile related cases, for each stage of the model. The model also requires the identification of key personnel for each stage. Key personnel is considered to be the job classification that has the most control over the volume of cases processed, or most the decision-making control in determining the outcome of a defendant.

The amalgamation of these elements provide an overview of the entire criminal justice system for a fiscal/calendar year as well as a common framework for considering justice system issues. Through this process, DADEJIM takes the initial steps in fomenting and developing a more integrated criminal justice system.

Criminal justice projections and simulations are the combat intelligence in the war on crime. Predictions of crime levels, prison populations and other criminal justice trends serve as valuable guides in the development of effective public policy. This information is particularly important when budget constraints are tight. Computer driven simulation models offer a cost-effective option for analyzing and evaluating changes in policy and the allocation of resources. DADEJIM promotes faster and more efficient decision making and changes in policy that will benefit the justice system and the community-at-large.

# **Dade Justice Improvement Model**

## **Uses of the Model**

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- ✓ **BASE CASE vs TEST CASE ANALYSIS**  
e.g., Internal Comparative Analysis
- ✓ **Identify Emerging Problems**  
e.g., Measure Increase in "ICE" related Arrests
- ✓ **Model Flows of Offense Groups**
- ✓ **Estimate resource requirements and effects of new programs**
- ✓ **Project Impact of Major System Changes**

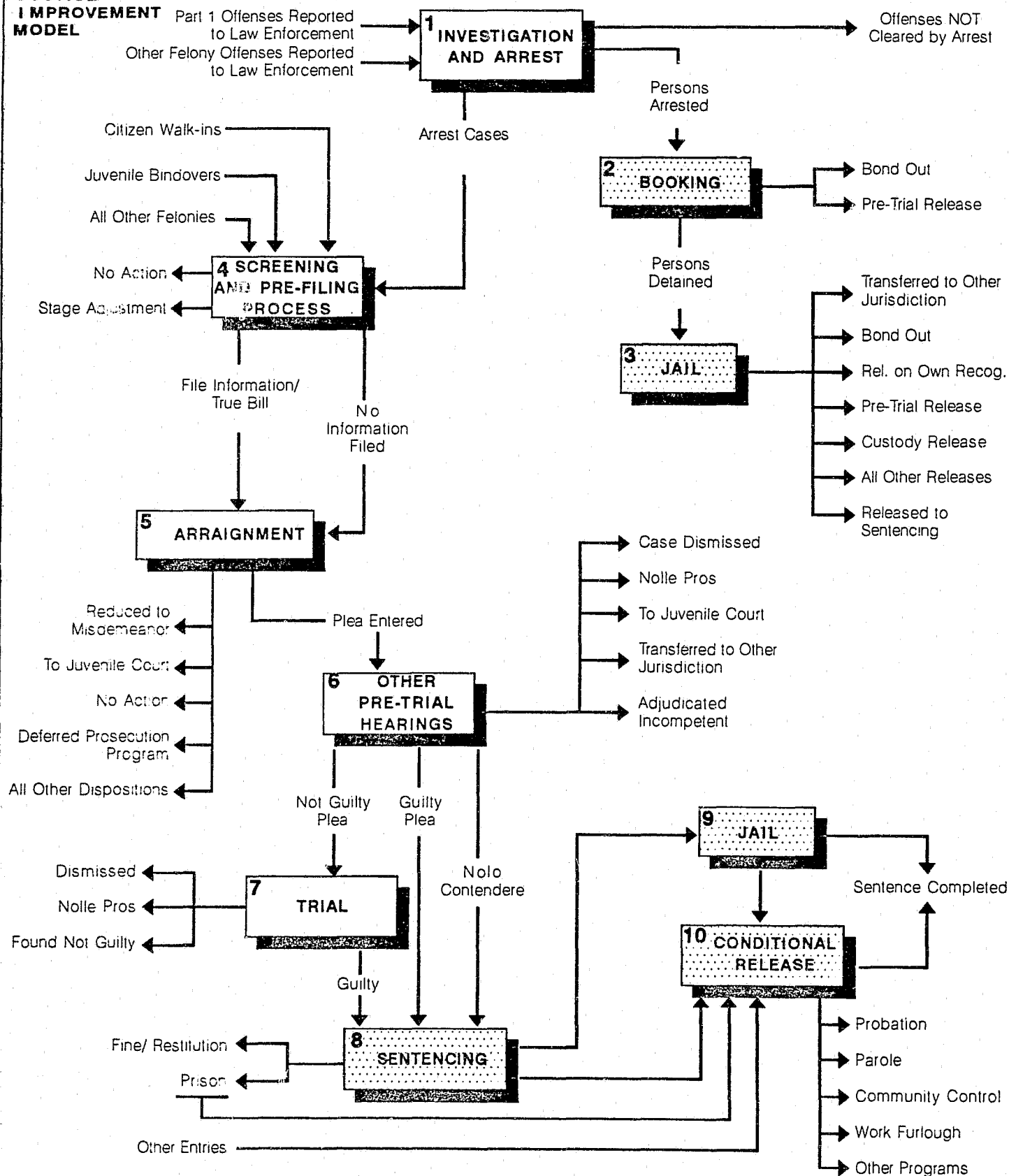
# **Dade Justice Improvement Model**

## **Examples of Possible Model Applications**

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- ✓ Impact of adding 100 Metro-Dade Police Officers
- ✓ Significant New Legislation, e.g., D.U.I. Penalty Increases
- ✓ Impact of Domestic Violence Court
- ✓ Impact of Adding a New Felony Division
- ✓ Adding a New Correctional Facility with 1,000 New Beds
- ✓ Analysis of Court-Time Allocation by Police Officer Hours, Offense Grouping, and Court Stage
- ✓ Ordinance Impact Analysis

# DADEJIM: Felony Flowchart



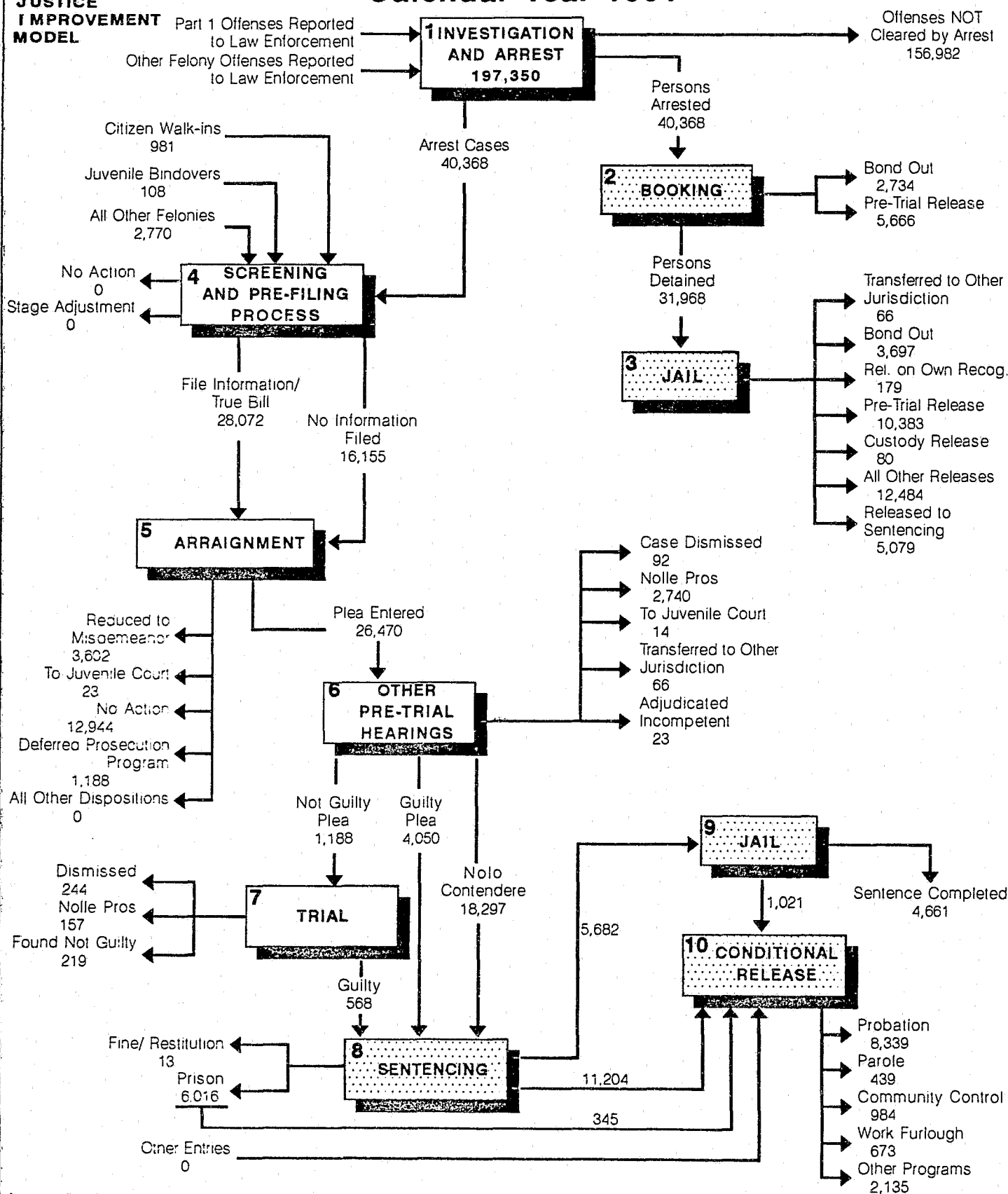
**Legend**

People
Cases



# DADEJIM: Felony Flowchart

Calendar Year 1991



**Legend**

People
Cases

# ANALYSIS OF SELECTED 1991 DATA

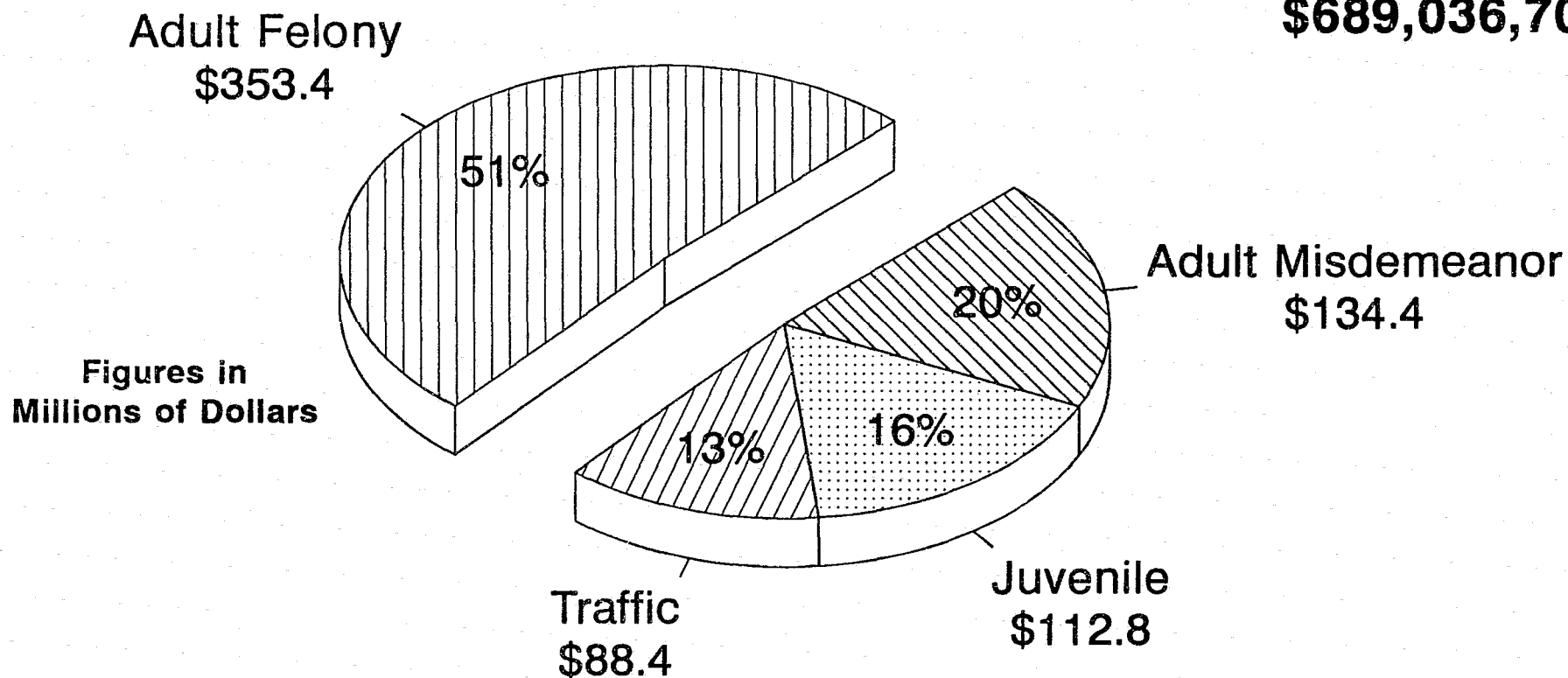
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# DADE JUSTICE IMPROVEMENT MODEL

## Justice System Expenditures 11th Judicial Circuit

Fiscal Year 1990-91

**Total  
Expenditures  
\$689,036,700**



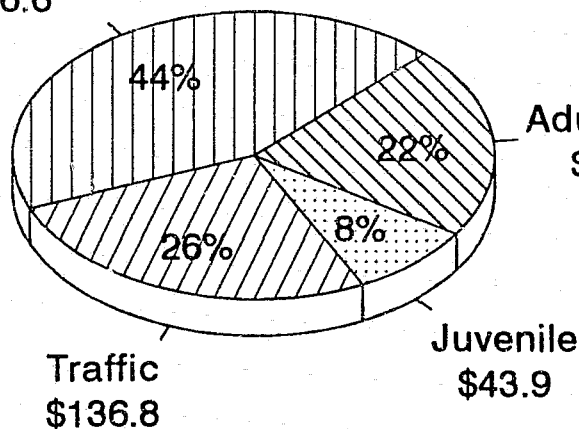
# DADE JUSTICE IMPROVEMENT MODEL

## Justice System Expenditures 11th Judicial Circuit

Figures in  
Millions of Dollars

**Total  
Expenditures  
\$520,258,100**

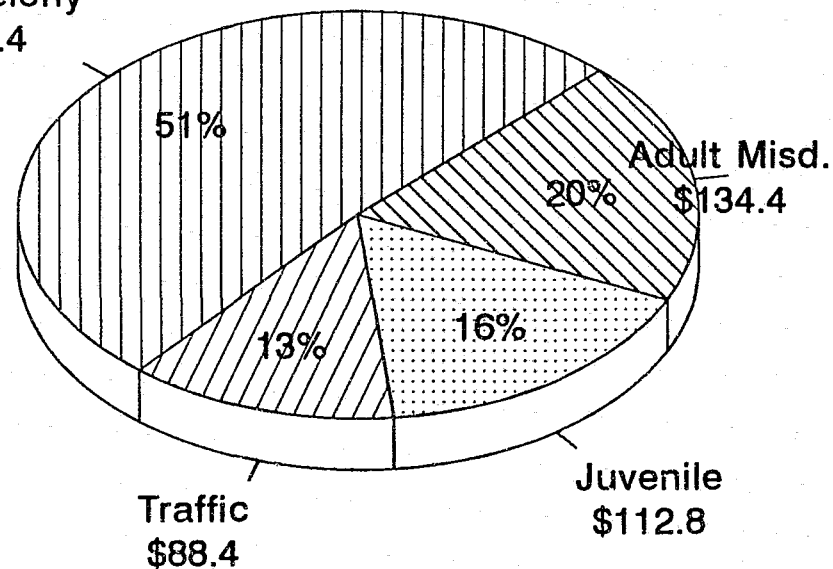
Adult Felony  
\$226.6



**Fiscal Year 1986-87**

**Total  
Expenditures  
\$689,036,700**

Adult Felony  
\$353.4



**Fiscal Year 1990-91**

DADE  
JUSTICE  
IMPROVEMENT  
MODEL

Department of Justice Assistance  
Program Analysis & Grant Development Division

**ADULT**

**FELONY**

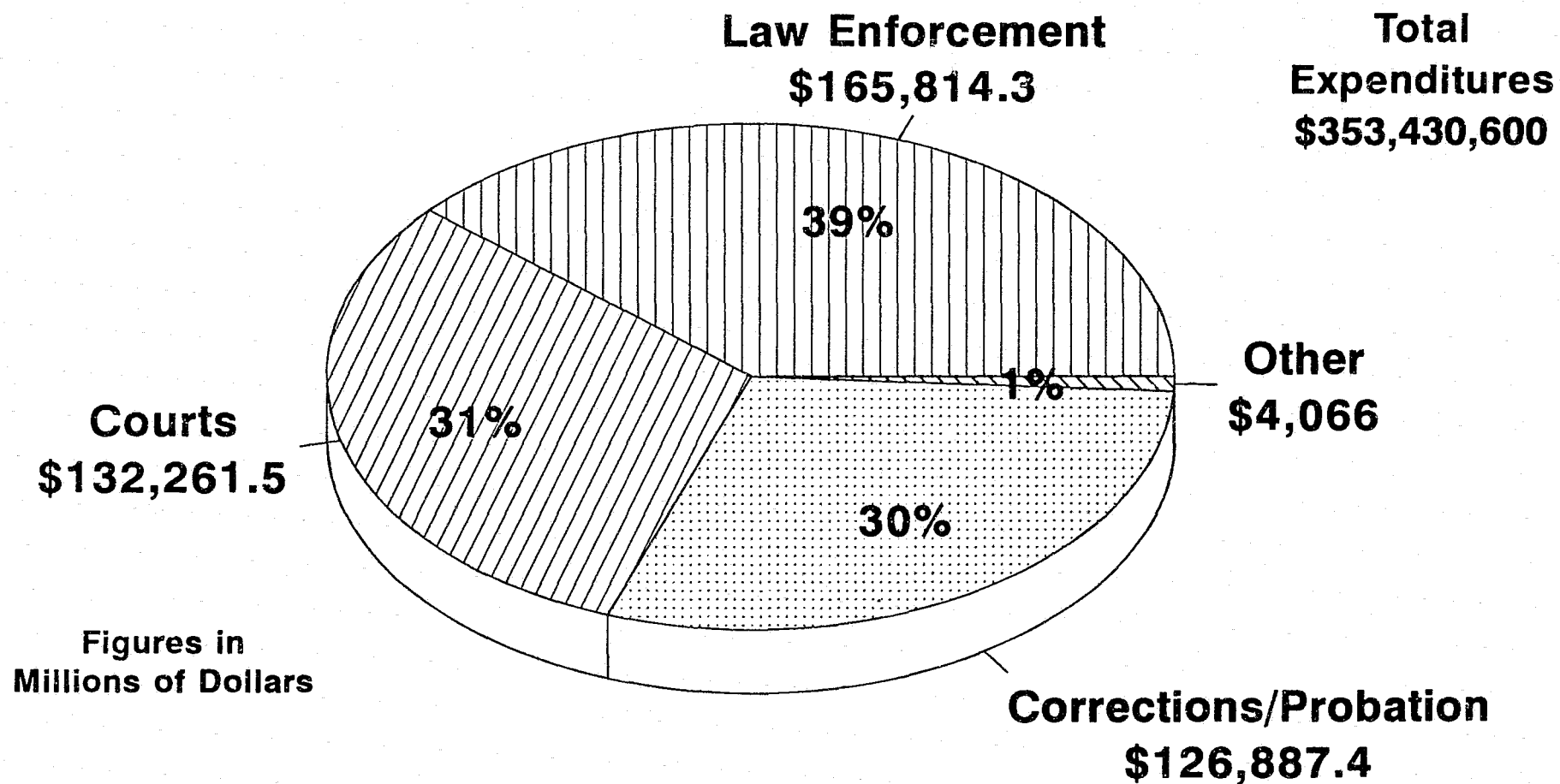
**EXPENDITURES**

D A D E  
JUSTICE  
IMPROVEMENT  
MODEL

# DADE JUSTICE IMPROVEMENT MODEL

## Adult Felony Expenditures 11th Judicial Circuit

Fiscal Year 1990-91



DADE  
JUSTICE  
IMPROVEMENT  
MODEL

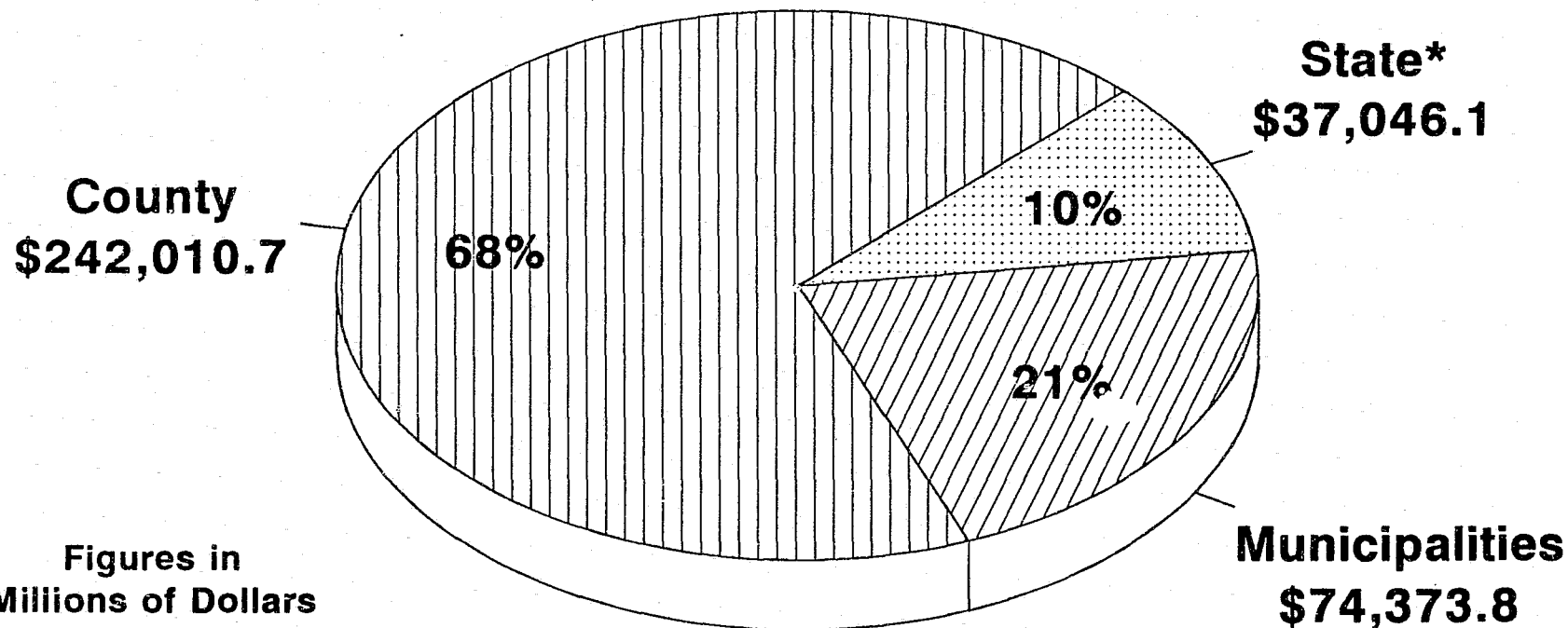
Department of Justice Assistance  
Program Analysis & Grant Development Division

# DADE JUSTICE IMPROVEMENT MODEL

## Adult Felony Expenditures 11th Judicial Circuit

Fiscal Year 1990-91

Total  
Expenditures  
\$353,430,600



Figures in  
Millions of Dollars

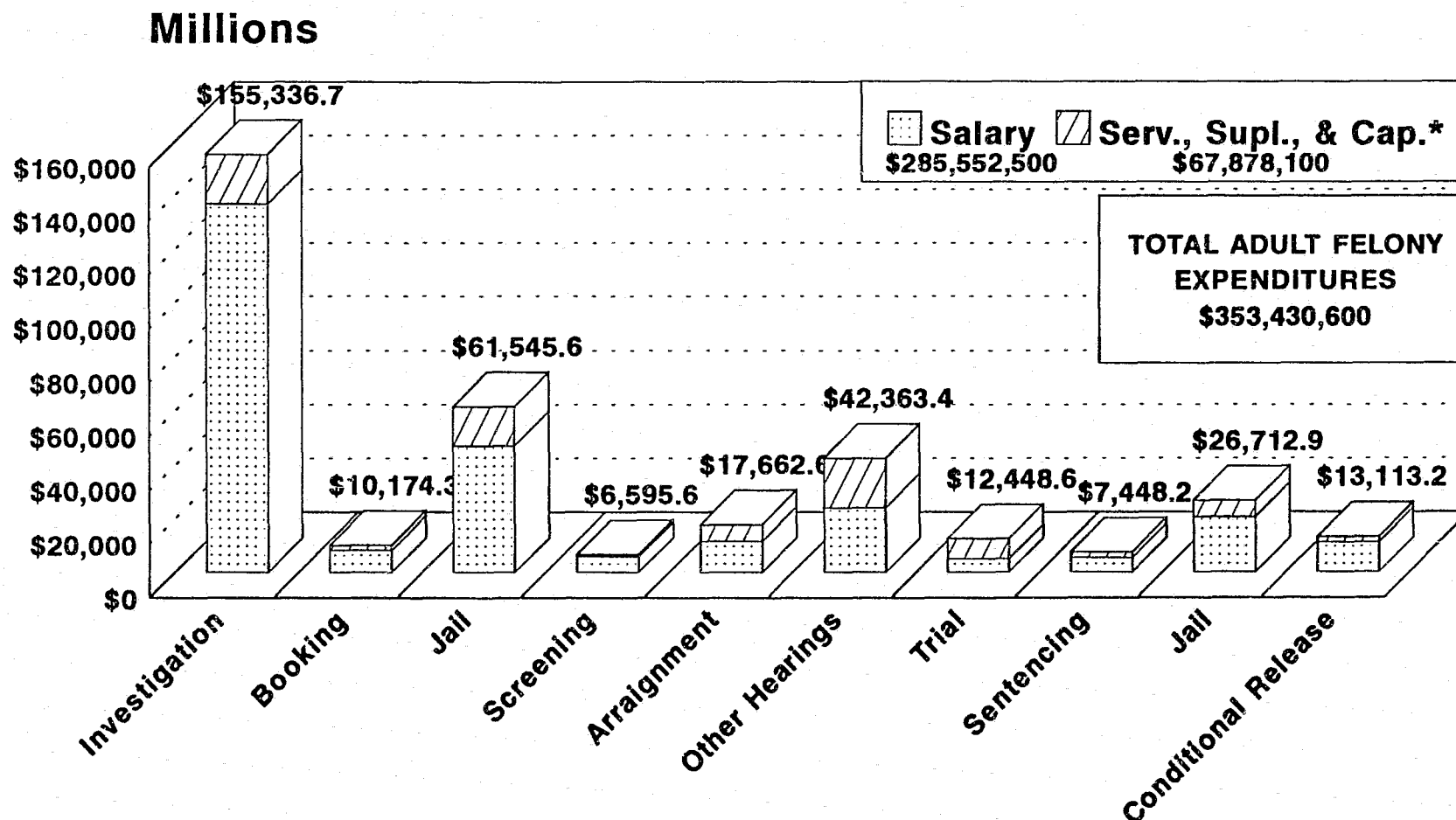
DADE  
JUSTICE  
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MODEL

\*State expenditures do not include prison costs.

Department of Justice Assistance  
Program Analysis & Grant Development Division

# DADEJIM - ADULT FELONY PHASE

Salary vs. Non-Salary Expenditures  
11th Judicial Circuit - Fiscal Year 1990-91



DADE  
JUSTICE  
IMPROVEMENT  
MODEL

DADEJIM STAGES

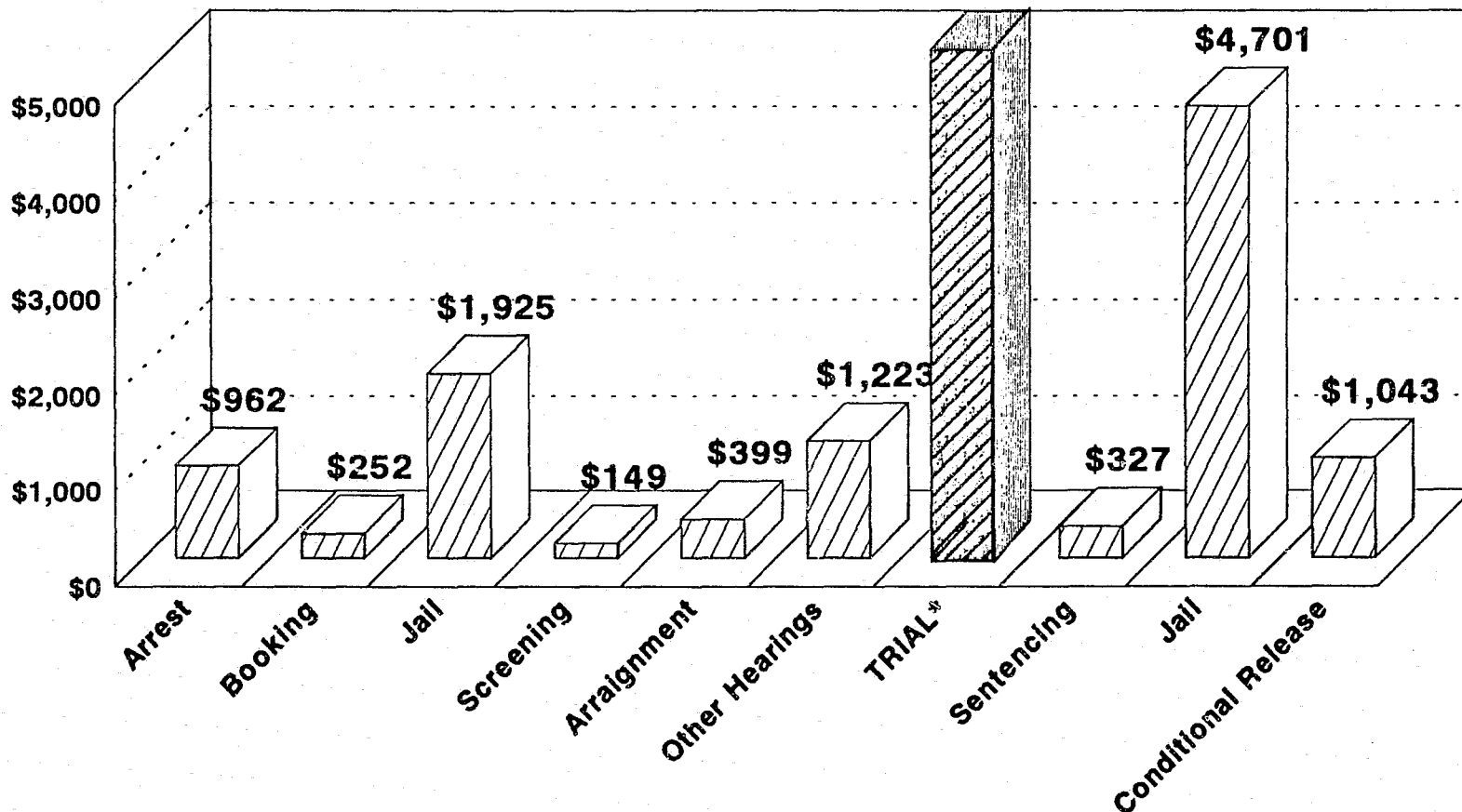
\* Capitol expenditures only includes outlays in F.Y. Budget.

METRO-DADE DEPARTMENT OF JUSTICE ASSISTANCE  
Program Analysis & Grant Development Division



# DADEJIM - ADULT FELONY PHASE

Average Cost / Case / Defendant By Stage  
11th Judicial Circuit - Fiscal Year 1990-91



## DADEJIM STAGES

\*Trial Stage: \$18,896

DADE  
JUSTICE  
IMPROVEMENT  
MODEL

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Program Analysis & Grant Development Division

**ADULT FELONY**

**CASE**

**INFORMATION**

D A D E  
J U S T I C E  
I M P R O V E M E N T  
M O D E L

**ADULT FELLOWS**

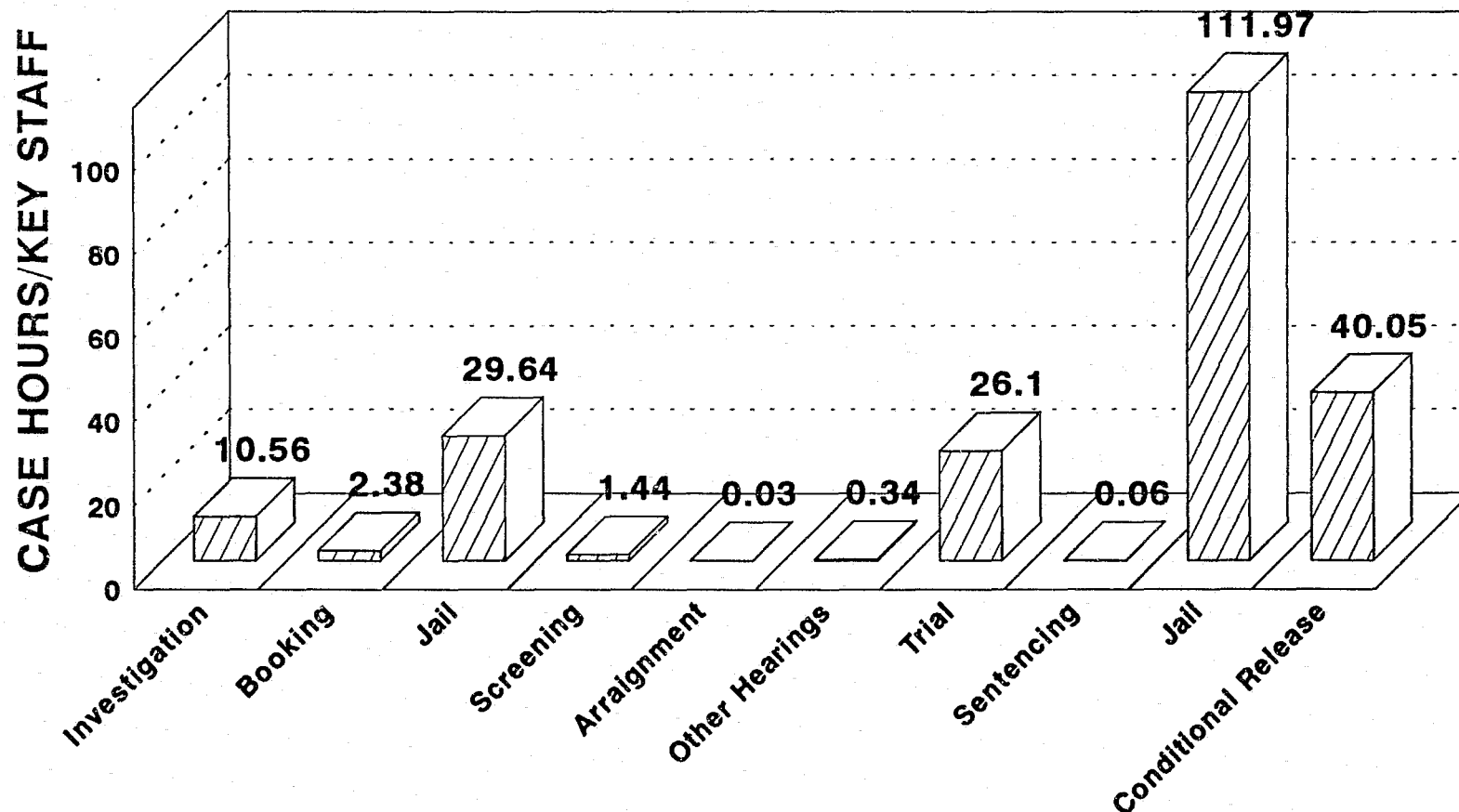
**CASE**

**INFORMATION**

D A D E  
JUSTICE  
IMPROVEMENT  
MODEL

# DADEJIM - ADULT FELONY PHASE

Average Key Staff Time Spent / Case in Hours  
11th Judicial Circuit - Fiscal Year 1990-91



DADEJIM STAGES

# COST ANALYSIS FOR CAREER CRIMINALS

D A D E  
JUSTICE  
I M P R O V E M E N T  
M O D E L

CRIMINAL HISTORY  
SYNOPSIS

Averages for 1800 Career Criminals with a past arrest for Robbery

AVERAGE AGE (24)

PRIOR ARRESTS (19)

PRIOR CHARGES (33)

PRIOR ROBBERY CHARGES (3)

PRIOR CONVICTIONS (14)

VIOLENT FELONY (3)

FELONY (5)

MISDEMEANOR (4)

PRIOR JUVENILE CONVICTIONS (6)

AVERAGE SENTENCE FOR ALL CONVICTIONS (11 YEARS 2 MONTHS)

AVERAGE TIME SERVED FOR ALL CONVICTIONS (3 YEARS 5 MONTHS)

# Dade Justice Improvement Model

## COST ESTIMATE – CAREER CRIMINAL

As Detailed by MDPD's Criminal History Synopsis – Career Criminal Section

### A. Costs Associated with M.D.P.D. Analysis

	Ave. # of Incidents
Average Prior Arrests	19
Average Prior Convictions	14

(excludes Inv./Arrest)

Cost / Case

\$962
\$4,003

### B. Cost Breakdown for each Career Criminal Profiled in the Criminal History Synopsis

Average Prior Arrests (19)  
 Average Prior Convictions (14)  
*Cases Closed Prior to Conviction (5)*  
 Post Conviction Costs (14)  
 Misdemeanor (4)  
 Juvenile (6)

Ave. Total Costs per Career Criminal

\$18,278
\$54,071
\$18,380 *
\$26,350
\$5,196
\$19,044

Average Cost per "Career Criminal"

\$141,319 **
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Direct Impact / Cost for 1,800 Career Criminals  
 Offenders Profiled in the Criminal History Synopsis

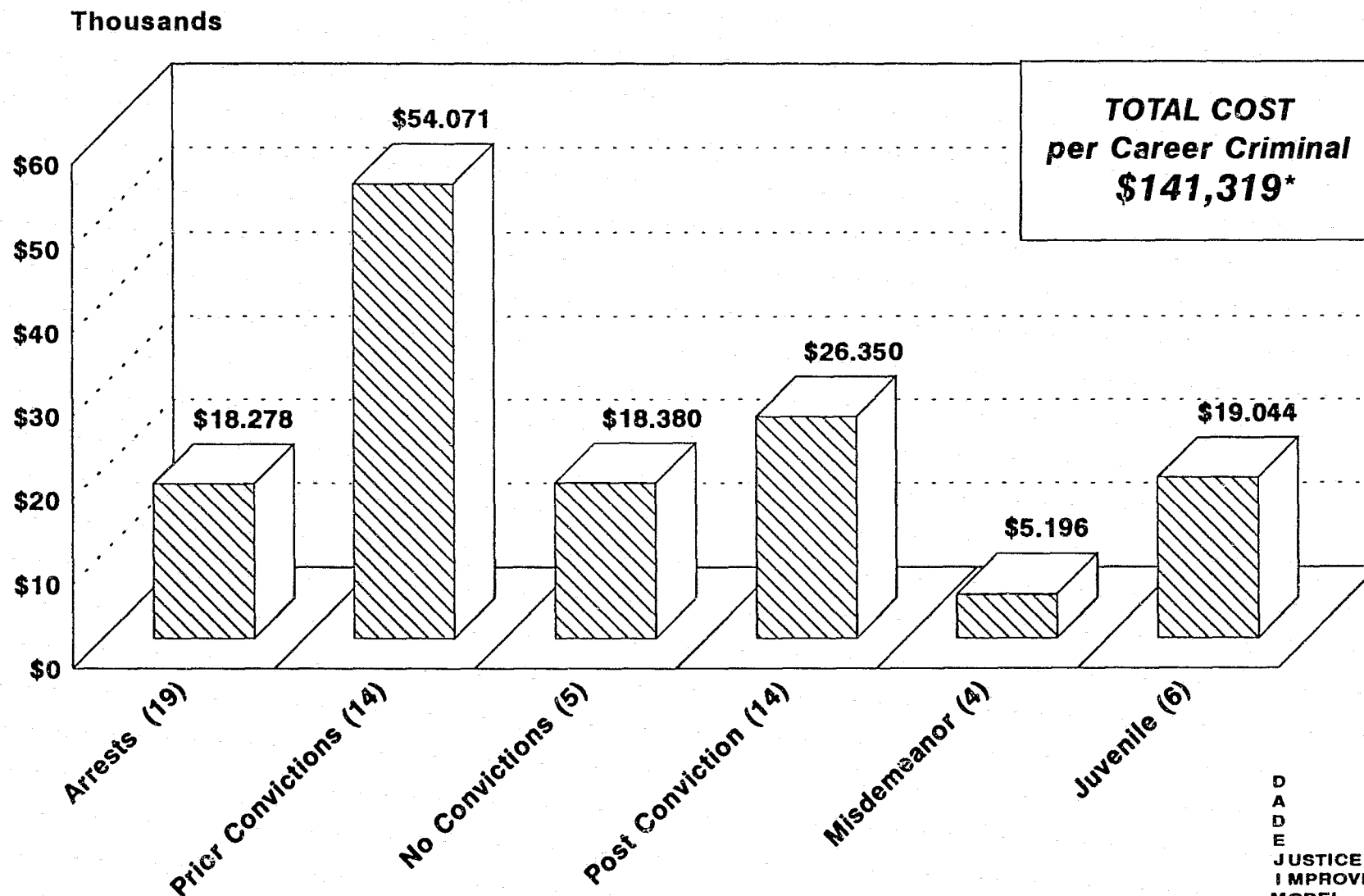
\$254,374,200 **
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\* Costs were prorated based on the ratio of cases reaching each criminal justice stage.(FY 1990-91).

\*\* These figures exclude indirect costs such as victim related expenditures, prevention efforts, etc.; as well as State Prison costs. (Federal System is altogether excluded). Estimates are based on 1991 dollar figures, and measure the offender's entire criminal career.

# Cost Per Career Criminal

## Cost Estimate as Detailed by MDPD's Criminal History Synopsis



SOURCE: MDPD Serious Habitual Offender Criminal History Synopsis, Dade Justice Improvement Model

\* Figures exclude State and/or Federal Prison Costs.

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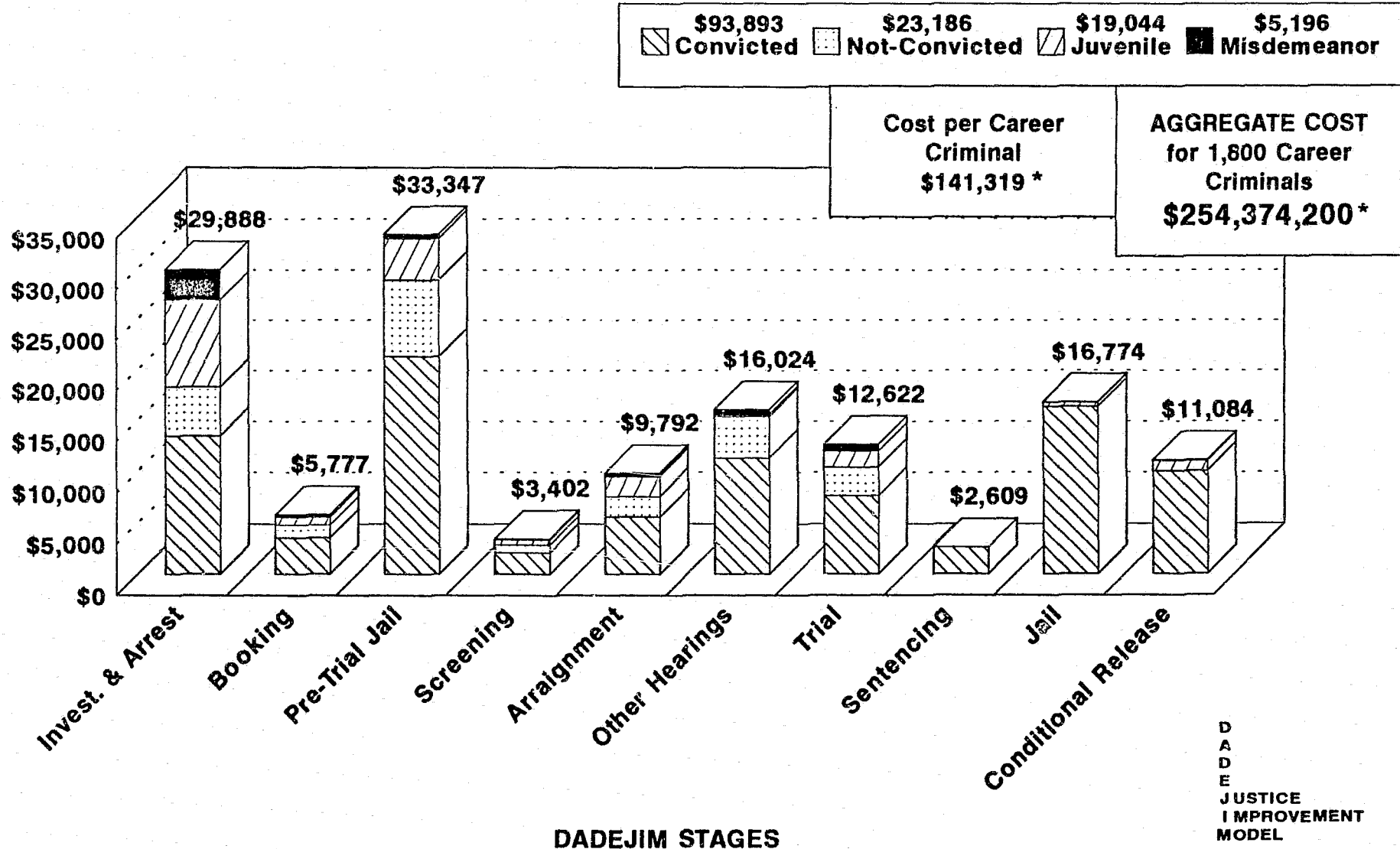
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Program Analysis & Grant Development Division



# Cost Estimate - Career Criminal

## As Detailed in MDPD's Criminal History Synopsis

### Total Cost Breakdown for 1 Career Criminal



SOURCE: MDPD Serious Habitual Offender Criminal History Synopsis, Dade Justice Improvement Model (DADEJIM).

\* Figures exclude State and Federal Prison Costs.

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# ALTERNATIVE CASE SCENARIO

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# **EFFECT OF AN** **INCREASE OF 100** **POLICE OFFICERS**

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J U S T I C E  
I M P R O V E M E N T  
M O D E L

# Dade Justice Improvement Model

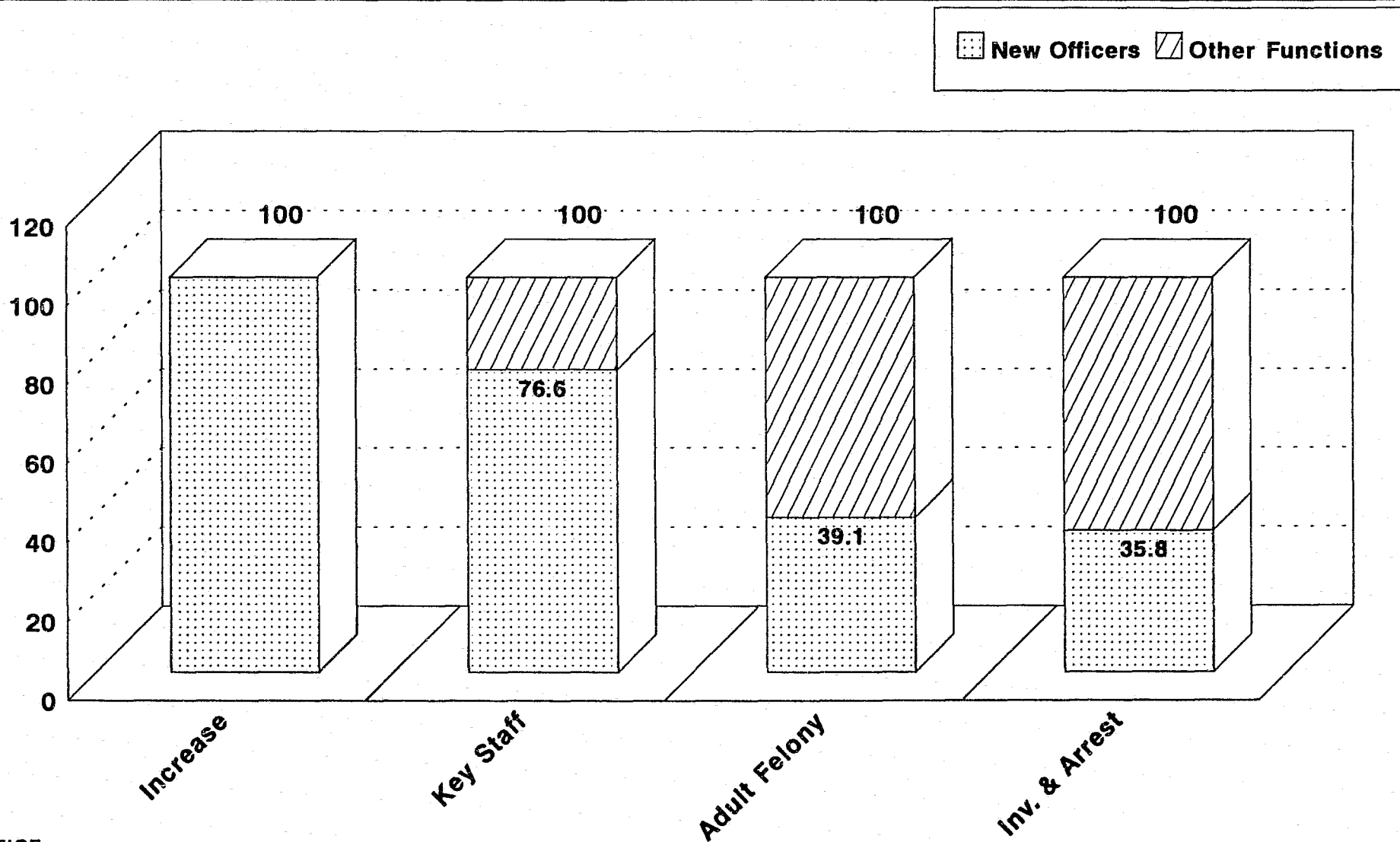
## New Staff Required When 100 Police Officers are Added

- All projections are based on 1991 case-load and disposition ratios of the 11th Judicial Circuit. All cost projections are based on 1991 dollar values.
- For this exercise, the term "officer" is assumed to imply "uniform patrol", not a specialized agent, i.e., detective, or any other specialized unit.
- DADEJIM is an "aggregate, linear, steady-state" model of the criminal justice system. Its basic assumption is that the criminal justice system is in a state of equilibrium at testing time. It assumes that all participating agencies will use their resources optimally and in a format producing the highest yield.
- The main source of case-flow data was the Criminal Justice Information System (CJIS). Other sources include the Florida Department of Law Enforcement (FDLE), the State of Florida Supreme Court Summary Reporting System, State of Florida Health and Rehabilitative Services (HRS) Client Information System (CIS), and the Clerk of the Courts.
- New staff requirements estimates fringe benefits for law enforcement officers at 48%, fringes for correctional officers at 42%, and all other staff at 29%.
- Clerical support staff entry-level salaries were established to start at \$20K.
- Estimates of law enforcement's involvement in Adult Felony, Misdemeanor, and Juvenile cases and incidents are based on each agency's Court involvement, and extensive questionnaires answered by each participating agency. (Delphi Methodology).
- It is assumed that there is NO LEARNING CURVE for "NEW" officers. In other words, the NEW officers will yield the same production curve as existing officers.
- Case-load estimates were based on ratios of key staff vs. case-load, NOT key staff vs. other key staff; i.e. estimates for "new" correctional officers are measured against the increase in "BOOKINGS", "PRE-TRIAL JAIL", and "POST-TRIAL JAIL"; not versus the increase in police officers.

# DADEJIM - ADULT FELONY PHASE

## Net Effect of an Increase in 100 Police Officers

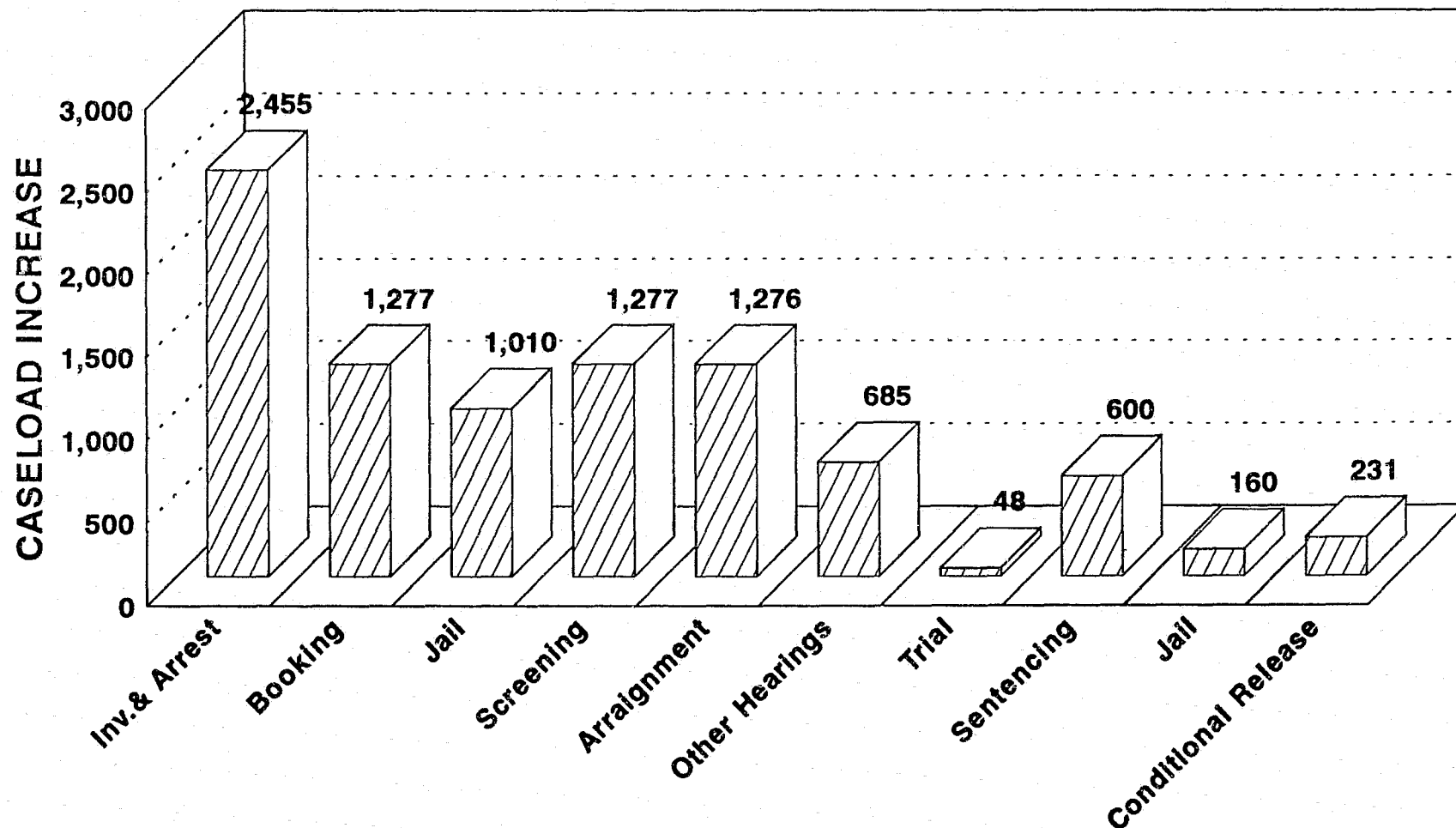
### 11th Judicial Circuit - Base Year 1991



# DADEJIM - ADULT FELONY PHASE

## Caseload Increase When 100 Officers Added

11th Judicial Circuit - Base Year 1991



DADE  
JUSTICE  
IMPROVEMENT  
MODEL

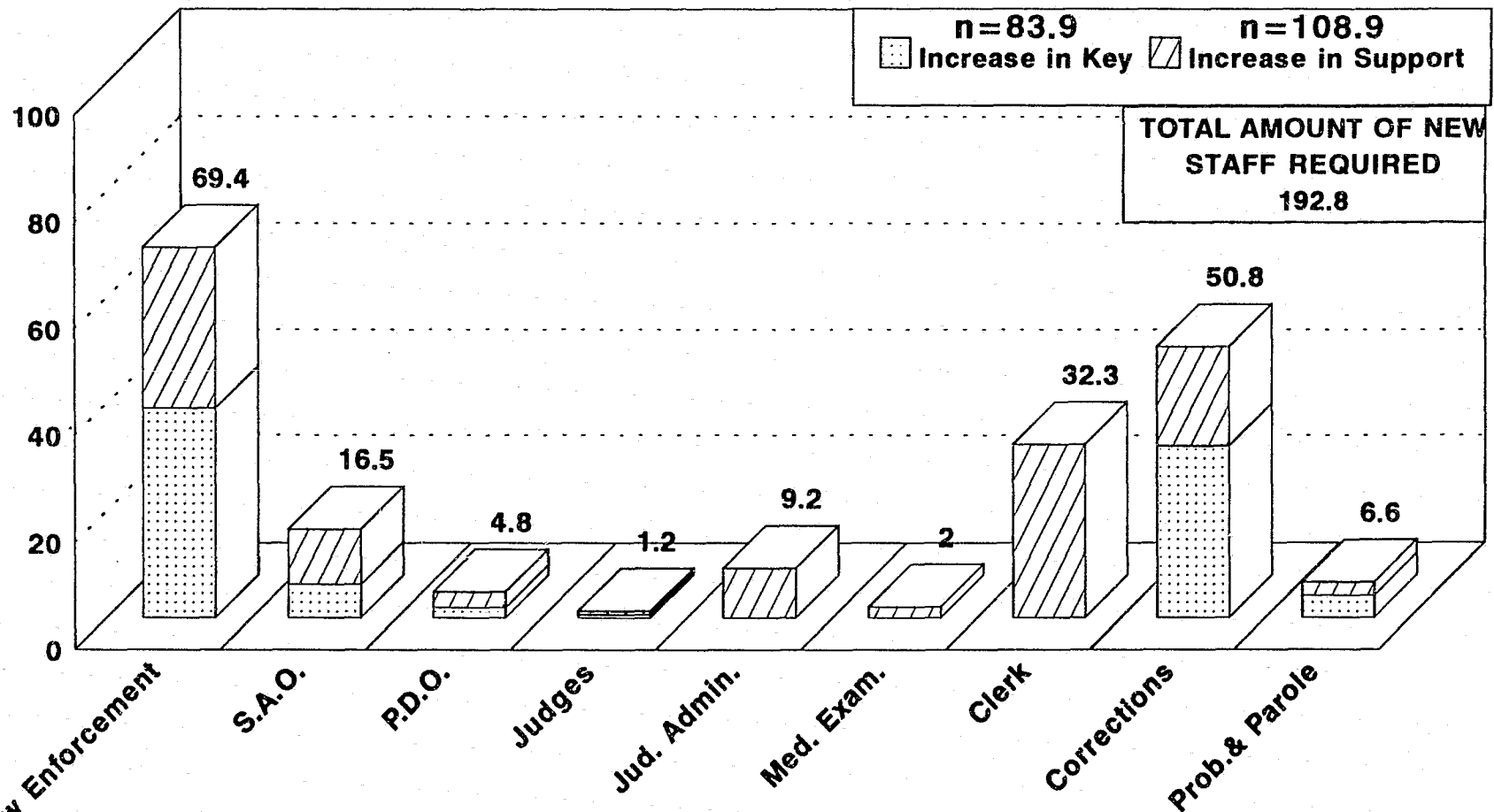
DADEJIM STAGES

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# DADEJIM - ADULT FELONY PHASE

## New Staff Required When 100 Police Officers are Added

11th Judicial Circuit - Base Year 1991



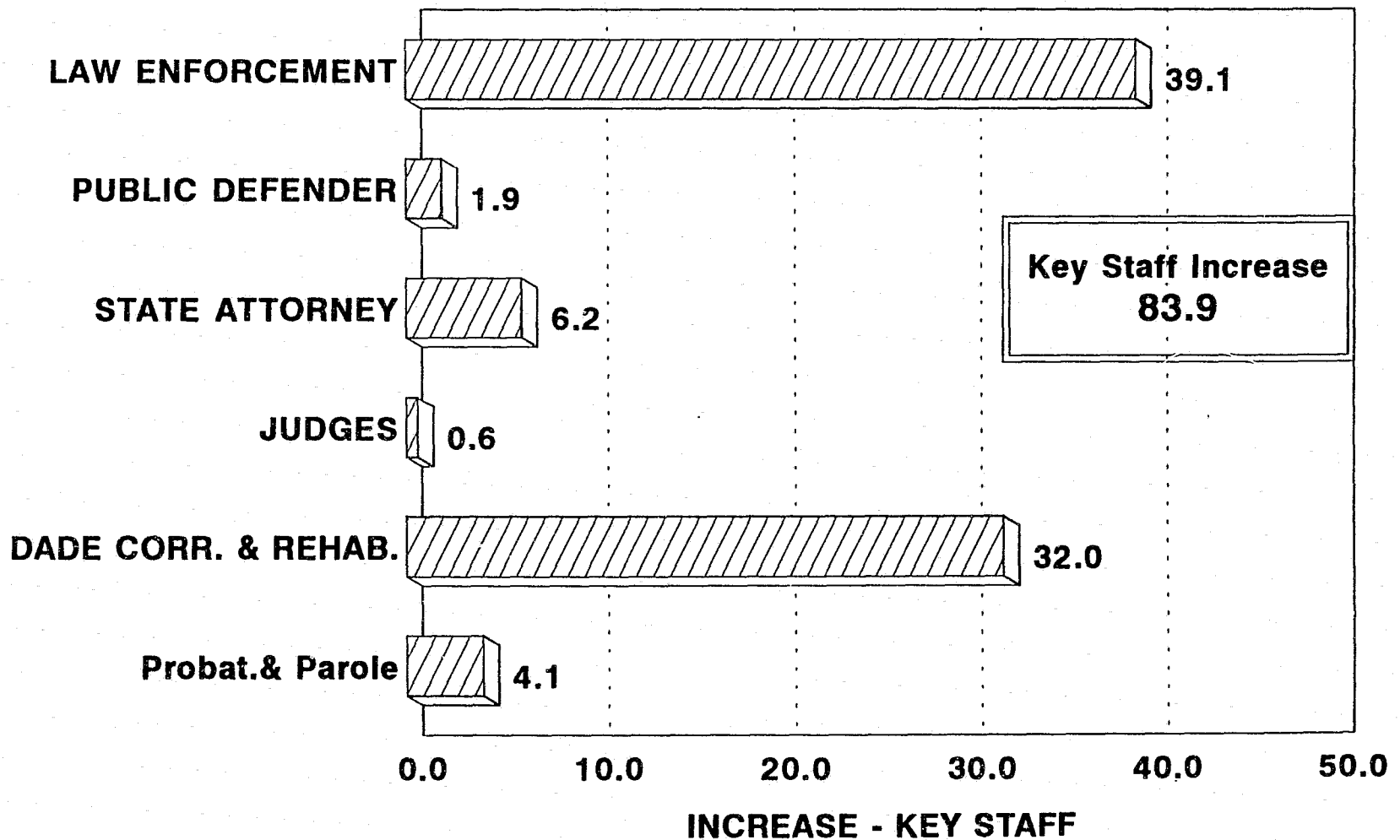
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IMPROVEMENT  
MODEL

CRIMINAL JUSTICE AGENCIES

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# DADEJIM - ADULT FELONY PHASE

Key Staff Required When 100 Police Officers are Added  
11th Judicial Circuit - Base Year 1991

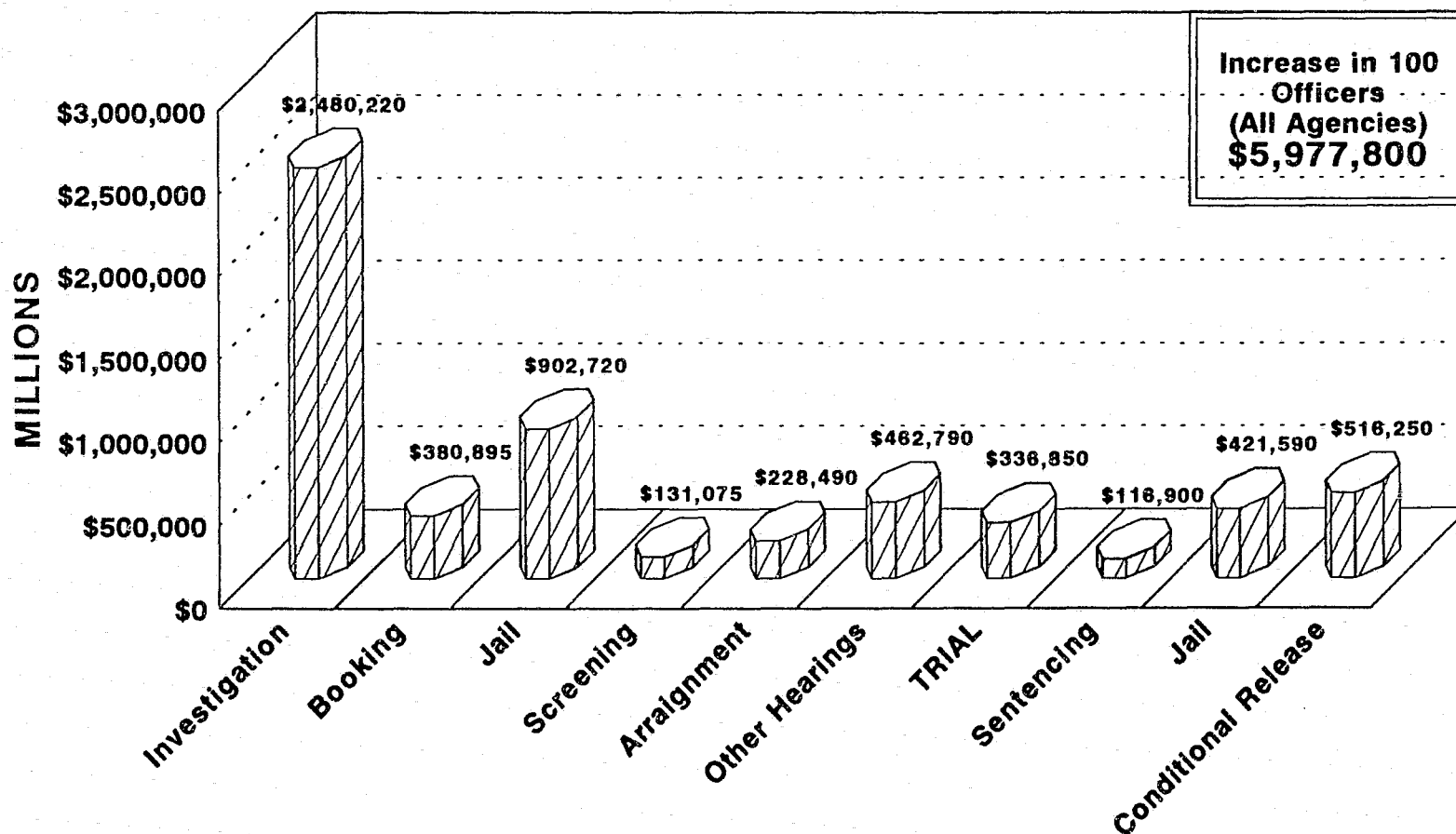




# DADEJIM - ADULT FELONY PHASE

## Cost of 100 Additional Police Officers

11th Judicial Circuit - Base Year 1991



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JUSTICE  
IMPROVEMENT  
MODEL

DADEJIM STAGES

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