Increasing Justice Program Evaluation Capacity with a Data Warehouse

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By
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ABSTRACT: How can evaluators get better cross-agency justice data to learn "what works" to stop criminal behavior? In 1999, the Public Safety Coordinating Council of Multnomah County in Portland, Oregon built a data warehouse and decision support system to access justice data from multiple sources. This data warehouse effort is both information technology for storing related databases, and a dynamic collaboration of attentive data proprietors. This presentation will 1) describe history and issues in the Multnomah County collaboration, 2) demonstrate the structure of the decision support system built to access the justice data warehouse, and 3) share results of efforts made by evaluators to use the new system for program evaluation.

Introduction

Justice agencies are increasingly interested in integrating their data systems to streamline operations and to respond to federal legislative mandates such as the FBI's Uniform Crime Reports, and grant requirements for program evaluation. To respond to this need, justice organizations across the U.S. are finding new ways to integrate their data for reducing error and redundant data entry, increasing timely access to crucial information, and to enhance planning and program evaluation. Some efforts focus on integrating operational data to query related databases, report key transactions, generate records for another agency, or copy information from an agency. This paper is a description of a third option: a data warehouse for integrating data extracted from operating systems, for the purpose of improving justice practitioner decision-making and for use in program evaluation research to clarify what works to reduce crime.

1A. History of the Multnomah County Collaboration to Create a Justice Data Warehouse

Getting Tough on Crime

Following the crack epidemic and rising gang violence of the 1980's, many states enacted new legislation to get tough on crime. By design, prison populations rose steeply due to longer prison terms for more offenses, and more mandatory minimum sentences. Five to ten years later, it is apparent that increasing prison populations change all the other parts of the criminal justice system. Justice information system managers have looked for ways to use information better for managing these crowded conditions. And because most of the justice workload comes from

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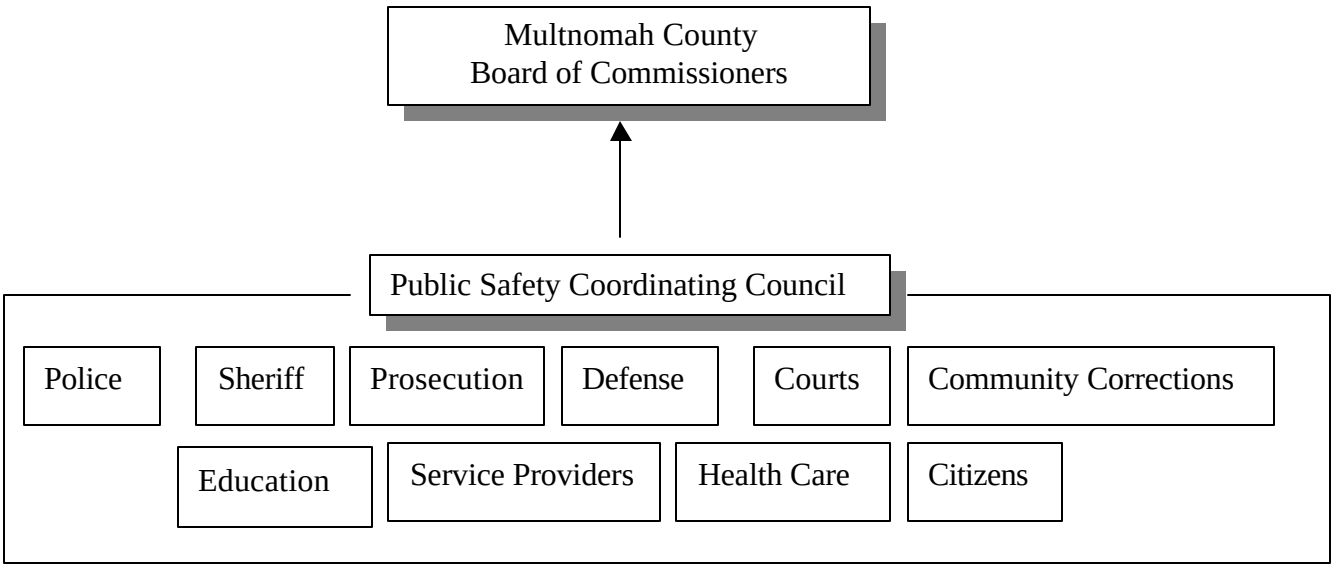
repeat offenders, justice agency managers increasingly support evaluation research to shed light on what works to keep offenders from committing more crimes.

State Funding Created Public Safety Councils

In Oregon a ballot initiative took effect in April of 1995 setting longer mandatory sentences for a list of violent crimes, and making juveniles at age 15 and older accountable as adults for these crimes. Legislators understood that this ballot measure would cause prison populations to rise beyond the current capacity of state institutions, so they passed and funded a companion bill called the Community Corrections Act of 1995. The new legislation mandated that offenders convicted to a year or less in prison would no longer be incarcerated in state prisons, but at county jails. The Act provided funding to handle more convicted felons at the local level, and mandated the creation of a local public safety coordinating council in every Oregon county. The statutes specify that the public safety councils will include justice agency heads and selected local politicians, and will advise county commissioners about how to manage local offenders, particularly those aged 15 to 18.

An organization chart of the Public Safety Coordinating Council appears below.



County Funding Was Added for Information Technology

In Multnomah County, where Portland is located, local leaders placed a bond issue before the voters in May of 1996. Included in the bond language was $7,500,000 for criminal justice information technology enhancements, to be managed by the newly created Public Safety Coordinating Council. An additional $500,000 was later added out of interest earned before the bond funds could be spent.

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Goals of the Data Warehouse/ Decision Support System: Desire for Justice Data Integration

Members of the Council espouse very different views on the philosophy of how to control crime, from get-tough advocates to believers in rehabilitative treatment, but all can agree on the desirability of data to determine "what works" to reduce repeat crime by chronic offenders. Although many people arrested by the police never get arrested again, most of the justice system *workload* is accounted for by a sub-set of offenders who commit crimes again and again, usually influenced by substance abuse. Local justice officials support treatment options to stop the cycle of crime and substance abuse, but they believe that some programs are more effective than others. Council members want to identify the most and least effective programs for reducing crime, in order to promote public safety as economically as possible. The original goals were:

- Reduce criminal behavior of offenders
- Increase program success rates
- Prevent and reduce criminal incidents
- Improve operational efficiency

System Use by Practitioners As Well As Researchers

From an early emphasis on research alone, the scope of the system was enlarged to include the needs of justice practitioners. The system was first envisioned and proposed by program evaluators and justice practitioners working together in the context of a Public Safety Council committee on program evaluation. It became apparent that justice professionals also wanted the system to serve caseload management goals. The justice professionals would use the information to track offenders throughout the system, and to manage their caseloads better. The researchers would use the data warehouse information to analyze program outcomes aimed at stopping offenders from committing new crimes. The system allows:

- Complete tracking of individuals across justice agency boundaries
- Simple and complex presentation of aggregate statistics about justice cases and offenders

Data Warehouse Technology

The Evaluation Committee of the Public Safety Council proposed to use part of the county bonds to fund a data warehouse/ decision support system called the Decision Support System for Justice (DSS-Justice), a common repository for data that could facilitate program evaluation. The Council accepted this proposal and committed $1.5 million in bonds for DSS system development. Later, costs for ongoing maintenance amount to about $400,000 per year.

Justice agency heads wanted to create a common data system without being forced to abandon or integrate their existing operational data systems. A common *operational* data system would have been prohibitively expensive, and caused expensive and intolerable disruption to daily justice operations. Consulting with information technology specialists revealed that data warehouse technology was the state of the art for integrating selected data items from various sources without having to interrupt the source data systems. Creating a data warehouse would allow agencies to continue their own agency databases without interruption or interference, while the data warehouse could be utilized in various ways by different users.

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1B. Issues in Implementing the Multnomah County Justice Data Warehouse

Every organization that maintains a transactional data system has large quantities of data collected over a period of years. Although Multnomah County justice agency heads recognized the value of their information for addressing what works to reduce crime, actually planning to share data raised logistical and collaborative issues to resolve.

Modeling a Complex System

Justice professionals pursue multiple goals that are modeled in data system architecture. While American justice works as a system in a larger sense, justice agencies are managed as separate organizations, at different levels of government. In the Portland area, the police and emergency bureaus are managed by the city. The District Attorney's office, Sheriff's office, and community corrections department are managed by the county. The local courts, indigent defense, and prisons are managed by the state. Service provider agencies that work with law violators are most often private non-profit organizations. Business is organized differently for each of these agencies and organizations, even though they contact each other in the course of doing business. The creation of the data warehouse provided an opportunity for all these justice players to come closer together in their understandings of how the others do business, and in the use of a common vocabulary for justice activities and processes.

Executive Sponsorship Helps Assure System Survival

In order to enhance the likelihood that DSS-Justice will remain supported financially, the District Attorney and County Commission Chair assumed the roles of Executive Sponsors for the system. This gave DSS-Justice a fiscal "home" for the budget process, at the highest levels of County government. Because the system is housed with the County, the County Chair's sponsorship was intended to assure general support. Because the District Attorney paces the system of justice at the local level, the DA's sponsorship was intended to promote support from the justice community as effectively as possible.

Collaborative Governance

The over-arching auspices of the Council, with its charge from the state to coordinate local offender management, provided an ideal framework for legitimizing the activity of Council and justice agency staff and contractors in building DSS-Justice. Tendencies to suspect the motivations of any one agency were offset by the knowledge that all of the relevant justice agencies were involved in the creation of the system: the police, sheriff, defense and prosecuting attorneys, courts, and both community and state corrections. While the district attorney functioned in the role of Executive Sponsor, the head of the largest vendor of indigent defense services acted as chair of the Policy Committee responsible for guiding system development. Every agency that contributes data to the system has a representative on the Security Committee as well as the Policy Committee. The Policy Committee functions as a sub-committee of the Executive Committee of the entire Public Safety Coordinating Council.

Deliverables Designed to Maximize Financial Support

To design a data model for organizing the data warehouse, the Public Safety Council hired a team of business analysts who used standard techniques for system development. As

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information was collected, analysis for each additional agency required continuing modification of both the data architecture and the user application already constructed. In the beginning, agency needs were addressed first for agencies whose commitment to the project was earliest and strongest. As time passed, it became necessary to maximize agencies' commitment to ongoing funding. If certain system features could be delivered, the relevant agencies were more willing to fund the system on an ongoing basis. Thus, system design was ultimately determined by the need to assure future survival of DSS-Justice in the annual agency budgeting process.

Data Security Paces System Access

An important issue is how to control access to data items in the data warehouse. Justice agencies face the legal responsibility of having to balance privacy concerns against the rights of the community to review public records. Records managers from data proprietor agencies need to maintain the same guidelines for releasing a data item from DSS-Justice that apply for their operational data systems. Agencies at the front end of the process of justice (police, Sheriff) maintain more restrictive data access policies (consistent with the greater vulnerability of all parties at that stage), while agencies at the back end (court, corrections) are more open. The Public Safety Council initiated system development before resolving how to handle security concerns associated with data access. Some later issues could have been avoided had data security policy been clearer before users began accessing the system for testing.

Building Trust Around Data Access

Because agencies are accustomed to maintaining access to their data, participating in a data warehouse is a challenge. Data proprietors need to maintain control of their data, but they also need to broaden access beyond their own agencies. Security-oriented staff must assure themselves that the data displayed are correct by their own standards, and displayed in a format that is not misleading. Security representatives remain concerned that users may misconstrue the agency processes portrayed in the data. However, it may be that the possibility of data misinterpretation cannot be prevented entirely. To some degree, using DSS-Justice is an educational process, and authorized users may use and interpret data in ways that would surprise agency practitioners who are familiar with the data. The issue of accuracy in data interpretation has not been entirely resolved.

Acceptance Testing

Acceptance testing is the process of testing the warehouse data against the source data systems that were originally used to collect the items for the data warehouse. Acceptance should be achieved for any one version prior to its release. The decision was made that DSS-Justice data could vary from source data items by no more than 1%. Especially in early system development, data proprietors and system developers spent a great deal of time testing that data were correctly organized and displayed. Justice "clients," i.e., offenders, often try to conceal their identity and use multiple names, give multiple addresses, etc. Paperwork for justice events can be poorly connected to related events due to lack of information or data entry errors, leading to difficulty in connecting event records on DSS-Justice. In November of 2000, the 1% level of data accuracy has been verified by most data proprietors, but not all.

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Role of Information Services Department

It is important to involve the information technology staff closely in the creation of a major new system, even if that system will be built by outside consultants. The Multnomah County Information Services Department (ISD) was involved in the development of DSS-Justice from an early point. The DSS-Justice system is housed by the Multnomah County government, and supported by the county's ISD. The IS department originally suggested a data warehouse to respond to the Public Safety Council's stated desire for an integrated data resource, and continued to support its development. But too few staff were available to support the activity of the outside consultants during the early period of system development. Nevertheless, the IS department adopted a strategy to use data warehouse architecture for serving the needs of different departments across the county, and has now received county funding for this goal. In the end, the IS department works most closely with the Executive Sponsor to monitor DSS-Justice development and operations.

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2. Structure of DSS-Justice

A data warehouse can be defined as

a copy of transaction data specifically structured for querying and reporting.

More graphically, a data warehouse is a kind of library of data items. In Multnomah County:

Currently:

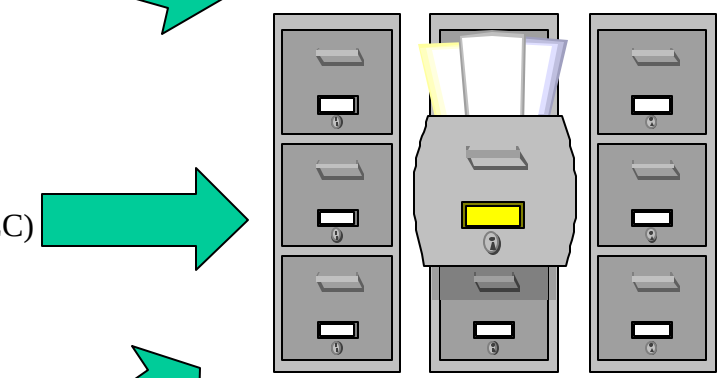
- Portland Police Data System (PPDS)
- Sheriff's Warrant & Inmate System (SWIS)
- District Attorney's Client Tracking System (DACTS)
- Oregon Judicial Information Network (OJIN)
- Metropolitan Public Defenders' Provider List
- Link to Oregon Pathways Provider List
- State Corrections Information System (CIS)

Under Development:

- Bureau of Emergency Communications (BOEC)
- Law Enforcement Data System (LEDS)

In the Future:

- Juvenile Information Network (JIN)
- County Supervision Program Information Network (SPIN)
- Gresham Police Records Management System (PRMS)



In addition, a data warehouse is an ongoing collaboration *. . .*

among the warehouse proprietors and the data source proprietors.

Why?

1. The data are updated frequently, requiring continuing technical discussions.

2. The data proprietors need to maintain control over formatting and dissemination of "their" data, even when it is accessed in the larger data warehouse context.

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Key Point: A Data Warehouse is Not a Standard Information System

Transactional (a.k.a. operational) information systems

On-line transaction processing on systems expensive to build
Data entry, data retrieval by trained staff
Maintain big file systems
System access typically only within agency boundaries

Managers can't ask some questions with transactional systems

Answers may be in different databases, some in other agencies
Querying for answers slows system processing, and disrupts the agency
Information may not be stored in the format needed for relevant queries

The data warehouse solves the analysis problem

Joins items from multiple databases for users to access relatively cheaply
Arranges data to reflect the business that will be analyzed
System separate from operational systems; Read only access

The Construction Phase: Ten Steps to Building a Data Warehouse

1. Organizational sponsorship and funding must be found in advance
2. Create a prototype system to create understanding and support
3. Identify the requirements of the system:
   What are the major areas of analysis and types of queries?
4. Hardware and software acquisition decisions
5. Design the data model
6. Extract data from existing sources, a.k.a data proprietors
7. Upload the extract files: "populating" the data model ("the back end")
8. Create a user interface or "application" ("the front end")
   Designing the look and feel of the graphical user interface
9. Quality analysis and testing by expert users
10. Train the users

After the project: ongoing organizational and system support, including user application process, user training program, user support.

Staffing: The Multnomah County Example

In development phase:

Contractors: project manager
2 business analysts
application developer

Permanent IS: part-time database administrators
part-time system manager

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Permanent staffing: DSS coordinator
technical lead
application developer
data conversion specialist
part-time database administrators
part-time system manager

Permanent Governance of Data Warehouse/ Decision Support System

System Ownership: Public Safety Coordinating Council of Multnomah County

Executive Sponsors: District Attorney (County Prosecutor)
Chair of County Board of Commissioners

Policy Leadership: The *DSS-Justice* Policy Sub-Committee of the PSCC:
Members: Chief of Police
Sheriff
District Attorney
Presiding Judge
Public Defender
Director of Community Justice
Citizen Member of Public Safety Council
Information Services Director of County (Chief Information Officer)
DSS-Justice Security Committee Chair

Day to Day Management: District Attorney and County Information Services

Funding

Project Phase: $1.5 million from 1996 Public Safety Bond
supported initial development and hardware/software acquisition

Continuing Support: $400 K per year from County, PSCC, City of Portland, Courts
supports 4 full-time staff and supplementary maintenance contracts

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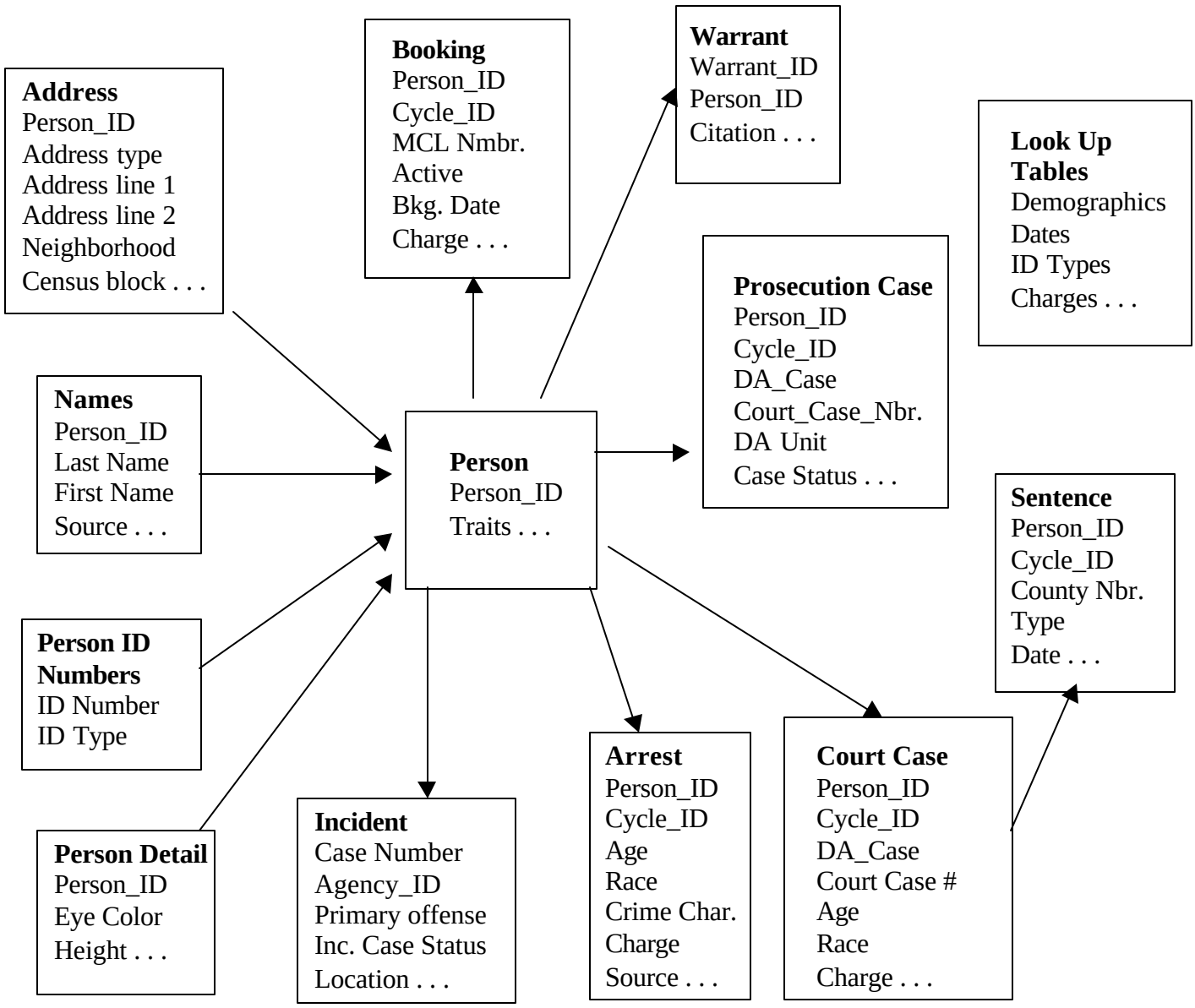
Abridged Data Model for *DSS-Justice*



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DSS-Justice Technical Information

Data storage and delivery: Oracle enterprise database; Windows NT servers;
Development and analysis: Cognos Impromptu for power users;
Viador Eportal for general users
System requirements: Netscape Navigator 4.0 or Microsoft Internet Explorer 4.0; Pentium 60; 16 megabytes RAM; 20 megabytes free hard disk space
Network data access is protected by Multnomah County firewall and Secure Socket Layer (SSL) data encryption, with ID fobs for external users.

Data Warehouse Model: Five Data Dimensions

The data warehouse organizes information in the following ways:

The Person (offender). Includes recidivism analysis.

The Charge or Offense or Count: Various ways to indicate the illegal action(s).

The Justice Cycle: Everything that happens after an offender is recorded as initiating a new contact with the justice system.

The Event or Case: Discrete occasions where the offender is processed through the justice system. E.g., arrest, booking into jail, sentence.

The Agency or Program: Organization that is responsible for some part of the offender's experience with justice, including consequences.

Data Warehouse Construction:

Extracting the Data and "Populating" the Model: The Back End

- **Extracting the data** is mostly a matter of reaching agreement with data proprietors on what data items to share. Then programmers write computer code to write that data onto a file.

- **Populating the model** is writing the extracted data numbers and codes onto the best places in the big relational database under construction.

Building the "Front End": The Application

- Business analysts specify requirements for the new system based on meetings and conversations with many potential users of the system.

- Building a successful application is an ***iterative process.*** When users are able to test the system they helped to design, they see that many additional changes are needed. This must continue for a long enough time that the result is finally acceptable.

- Acceptance testing is the process of deciding if the data are correct, and if they are displayed in a satisfactory manner.

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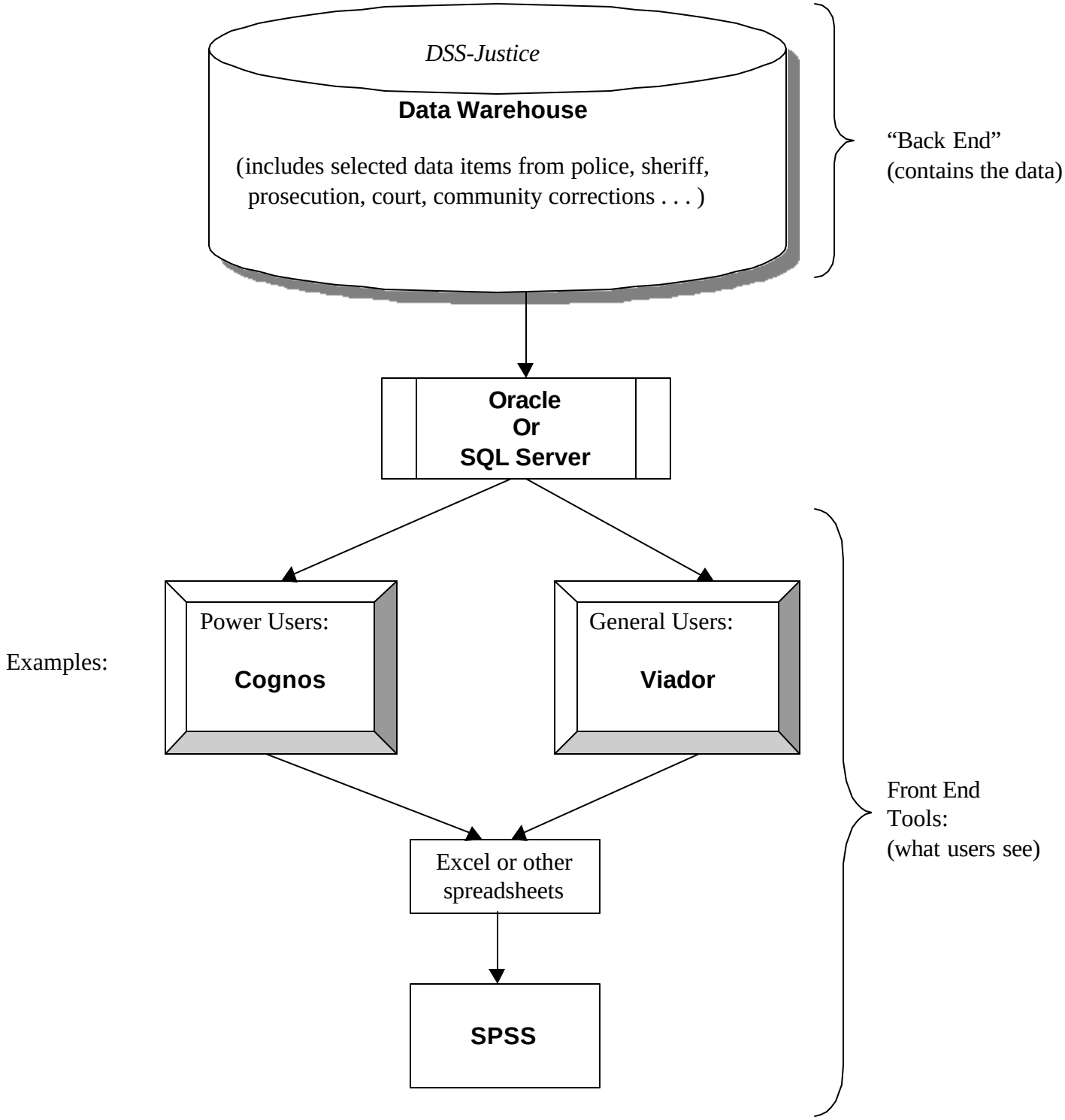
The Data Warehouse May Be Accessed By A Range of Products



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Operational Security: The Legal Environment

Legal requirements for criminal history data is an emerging field. According to Robert Belair, General Counsel to SEARCH, the National Consortium for Justice Information and Statistics of the Bureau of Justice Assistance:

> *"The Constitution of the U.S. remains largely neutral with respect to the privacy of criminal history record information."*

However, states share fundamental principles that protect the privacy of criminal history records.

Key public policy issues and questions about handling of criminal history records include whether there should be restrictions on integration of criminal justice information systems, and whether there should be restrictions on the dissemination of criminal history record information.

SEARCH reports that in February and March of 2000, telephone interviews were conducted with 1,030 adults in the U.S. to assess concerns about use of criminal history information. Adults do have concerns about privacy and technology, and do not want criminal records "posted" on the Internet. Most are willing to give up some privacy protection if the trade-off results in a benefit to the public, such as increased safety, crime prevention or the protection of children. Most adults prefer that criminal history records systems be maintained only by government agencies- not private sector entities.

In May, 2000 the BJS/ SEARCH National Task Force on Privacy, Technology and Criminal Justice Information concluded that integrated information system strategies by criminal justice agencies should be encouraged but should take privacy and profiling threats into account. No policy was recommended for integrated information systems. A full report will be published in the fall of 2000.

Operational Security: DSS-Justice Procedures for User Screening

- Security Committee includes one person from each data proprietor agency.

- Functions of Security Committee:
  - Recommend policy relating to DSS-Justice system access
  - Review applications and authorize users to access specific areas of the system
  - Design forms for use by applicants who want to use the system

- Review DSS-Justice system performance in replicating data from source data systems

- DSS Policy Committee decides on policy, including related to DSS-Justice system access

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Data Quality Assurance

- Standards: Where relevant, DSS-Justice follows State of Oregon's Criminal Justice Information Standards (CJIS).
- Initial data cleaning at extraction eliminates obvious difficulties.
- Incremental updates: each week, data from every source is re-loaded to integrate changes, additions, and official record expunctions.
- System experts analyze data quality to identify any shortcomings or anomalies of the data, and correct them if possible.
- Expert users and data security staff from each source agency test DSS-Justice data to assure satisfactory correspondence with source data.
- Source data errors are detected and resolved.

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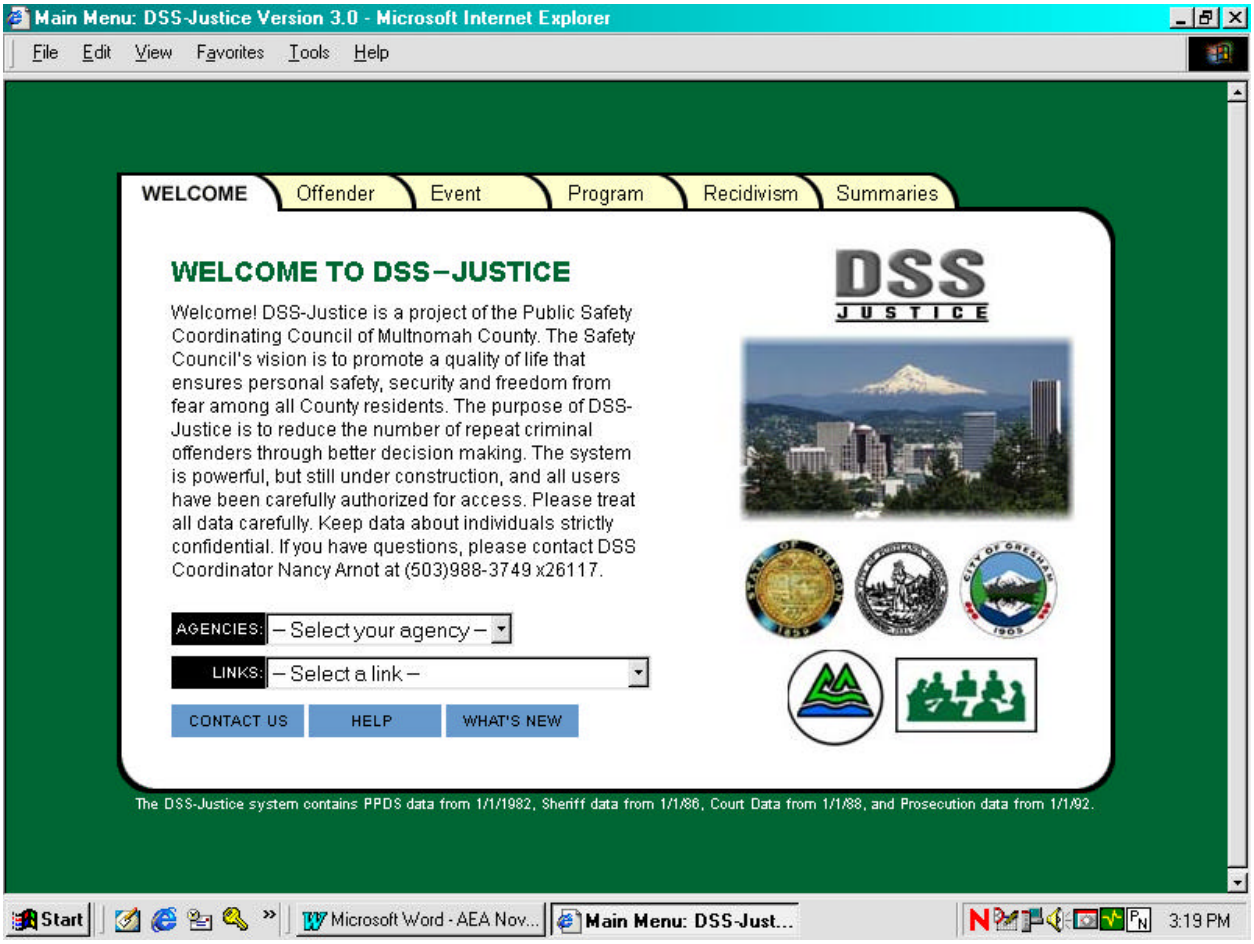
DSS-Justice Today

The following pages display screen prints from the Viador "Eportal" user interface for DSS-Justice. After the login recording user ID and password, the main menu looks like this:



At the main menu screen, the user can choose among these options:

- Employ an *ad hoc* querying tool for direct access to selected data items. Currently, users with this capability are querying their own data items only.
- Link directly to related justice web sites.
- Contact the DSS-Justice technical assistance team to report a problem or ask a question.
- Access the extensive Help system for DSS-Justice.
- Find out what are the latest features added to DSS-Justice.
- Review offender criminal history records (for authorized users).
- Review aggregate information about selected justice system events such as arrest, prosecution, etc.
- Search a directory of information about local and nearby social service programs.
- Collect information about recidivism on a selected group of offenders
- Review summaries of data frequently requested, such as all arrest data for a certain year.

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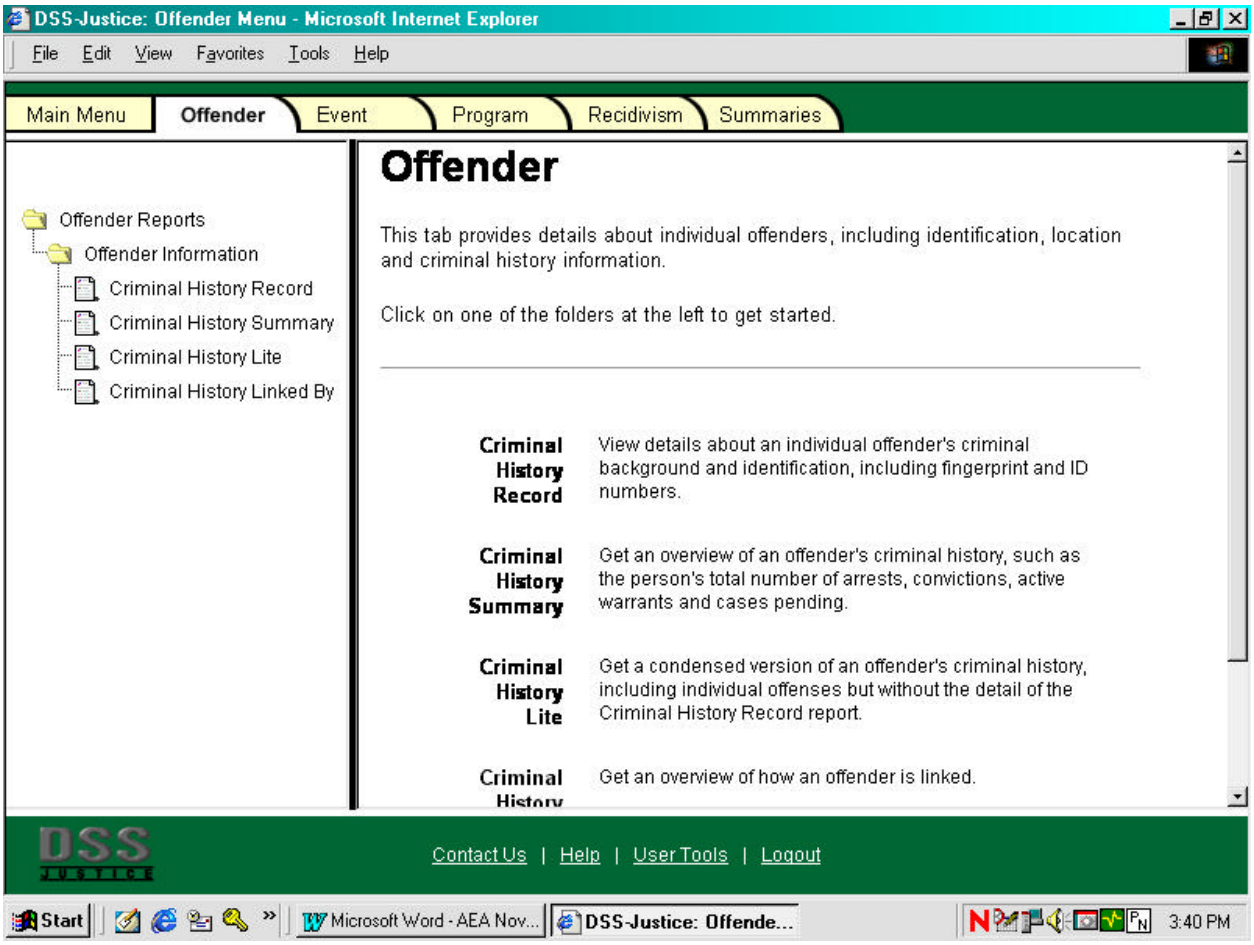
The Offender "tab" or group of screens offers several formats for viewing criminal history information (i.e., the rap sheet), depending on the level of detail desired. The left part of the screen offers the menu, and the right part explains briefly about what can be expected by selecting any one option. At any time on this part of the DSS-Justice system or elsewhere, the user can click on the options at the bottom of the screen to contact the technical team, access the Help system, update personal contact information, or log out.



Offender information is most sensitive, as it includes pre-conviction as well as conviction data on individuals. The police, proprietors of incident and arrest data, are very sensitive to their responsibility to safeguard the confidentiality of this kind of information. At this time, the only authorized users of this data outside of the Portland Police Bureau are a few other justice agency employees involved in testing this part of the DSS-Justice system.

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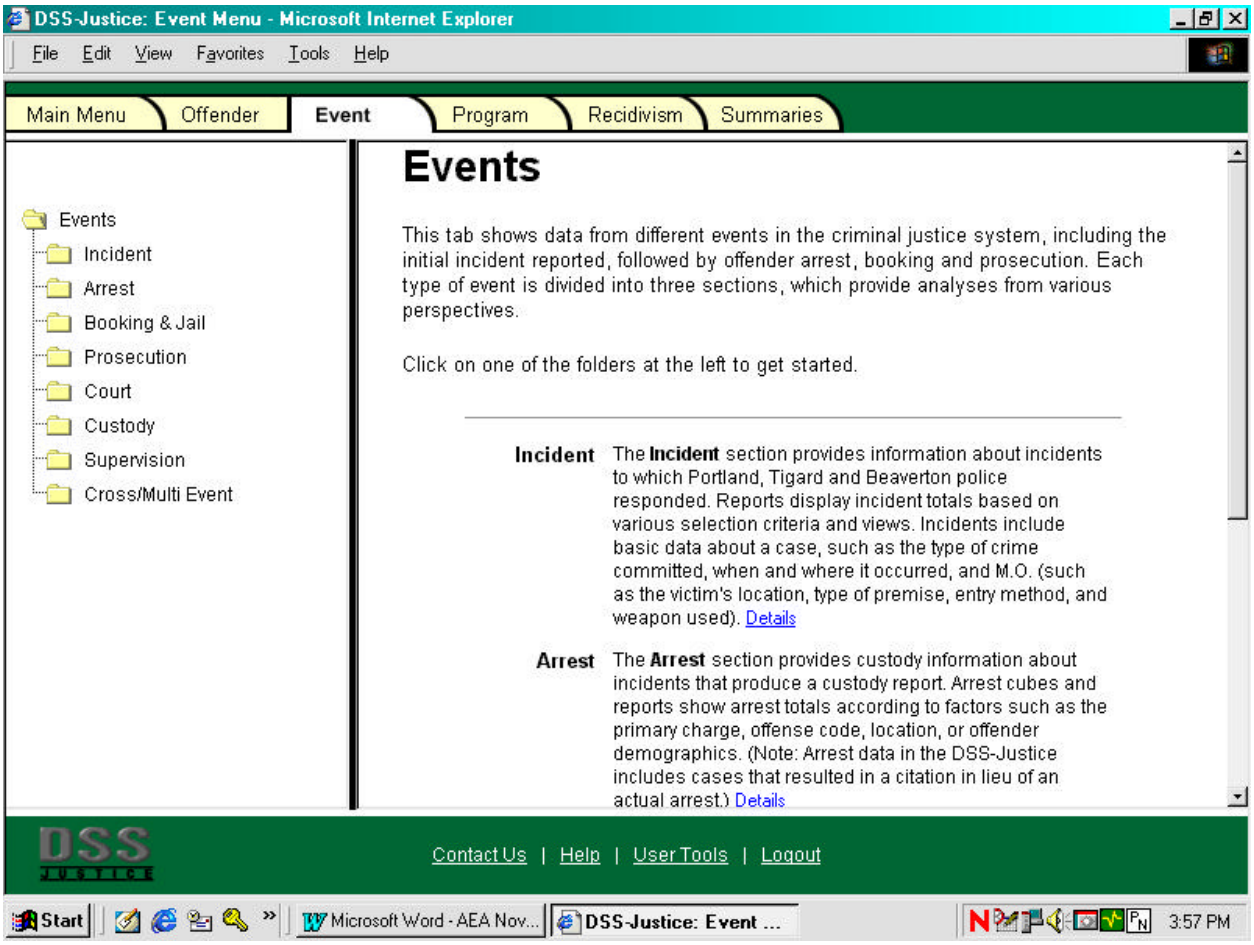
The Events tab is the most complex part of DSS-Justice. Here the user can request a wide range of **reports and "cubes"** for displaying and analyzing information. A report is an interactive tool that allows the user to define what to include in a resulting table of information, arranged in a predetermined grid. A cube is a sub-set of data items that may be arranged and re-arranged on-screen by the user in a variety of formats to explore and analyze how data items are connected with each other empirically.



The table below displays the names of the reports and cubes available in DSS-Justice Version 3 in late October of 2000 for each of the basic event categories: incident (reported to the police), arrest, booking into jail, prosecution, court, custody, and supervision. The "Cross/Multi Event" folder offers users the option of finding how offenders at one event (such as arrest) may be followed up at another event (such as court). This allows cohort analysis of offenders: individuals "captured" at an early point in the justice process can be followed up at later points in the system in order to learn how the system is actually working for selected crime types, or demographic groups, etc.

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Table: DSS-Justice Version 3 Event Reports and "Cubes"

Event	Cube/ Report	Analysis Description
Incident	Cube	Incident Analysis-Reported Date
	C	Offense Analysis- Reported Date
	C	Incident with People Arrested Analysis
	Report	By Primary Offense
	R	By City/ Neighborhood
	R	By Precinct/ District
	R	By Case Status
	R	By Offense
	R	Leading to Arrest by Primary Offense
Arrest	Cube	Arrest Analysis
	C	Arrest Crime Themes Analysis
	C	Charge Analysis
	C	Arrest Charge to Oregon Revised Statutes (ORS) Mapping
	Report	By Primary Charge (ORS/ORD)
	R	By Primary Charge (PPDS Arrest Codes)
	R	By a Specific Charge (PPDS Arrest Codes)
	R	By a Specific Charge (ORS/ORD)
	R	By Precinct/District
	R	By Gender
	R	By Age Range
	R	By Race
	R	By City/ Neighborhood
	R	By Results (Cited vs. Booked)
	R	Year to Year Comparison
Prosecution	Cube	Cases Received- Primary Charges
	C	Cases Disposed- Primary Charges
	C	Cases Received- Case Types
	C	Cases Disposed- Case Types
	C	Cases Received- All Charges
	C	Cases Disposed- All Charges
	Report	By Unit/ DDA
	R	By Primary Charge
	R	By a Specific Charge
	R	By Case Disposition
	R	By Case Status
	R	By Defendant Race
	R	Review Outcome by Unit/ DDA
Court	Cube	Dispositions on cases filed
	C	Dispositions on cases started
	Reports	By Charge Level/ Class for cases filed
	R	By Charge Level/ Class for cases started
	R	By a Specific Charge
	R	Pending Cases by Charge Level/ Class for cases filed
	R	Pending Cases by Charge Level/ Class for cases started
	R	Terminated Cases by Disposition
	R	Cases by Any Charge Level and Class

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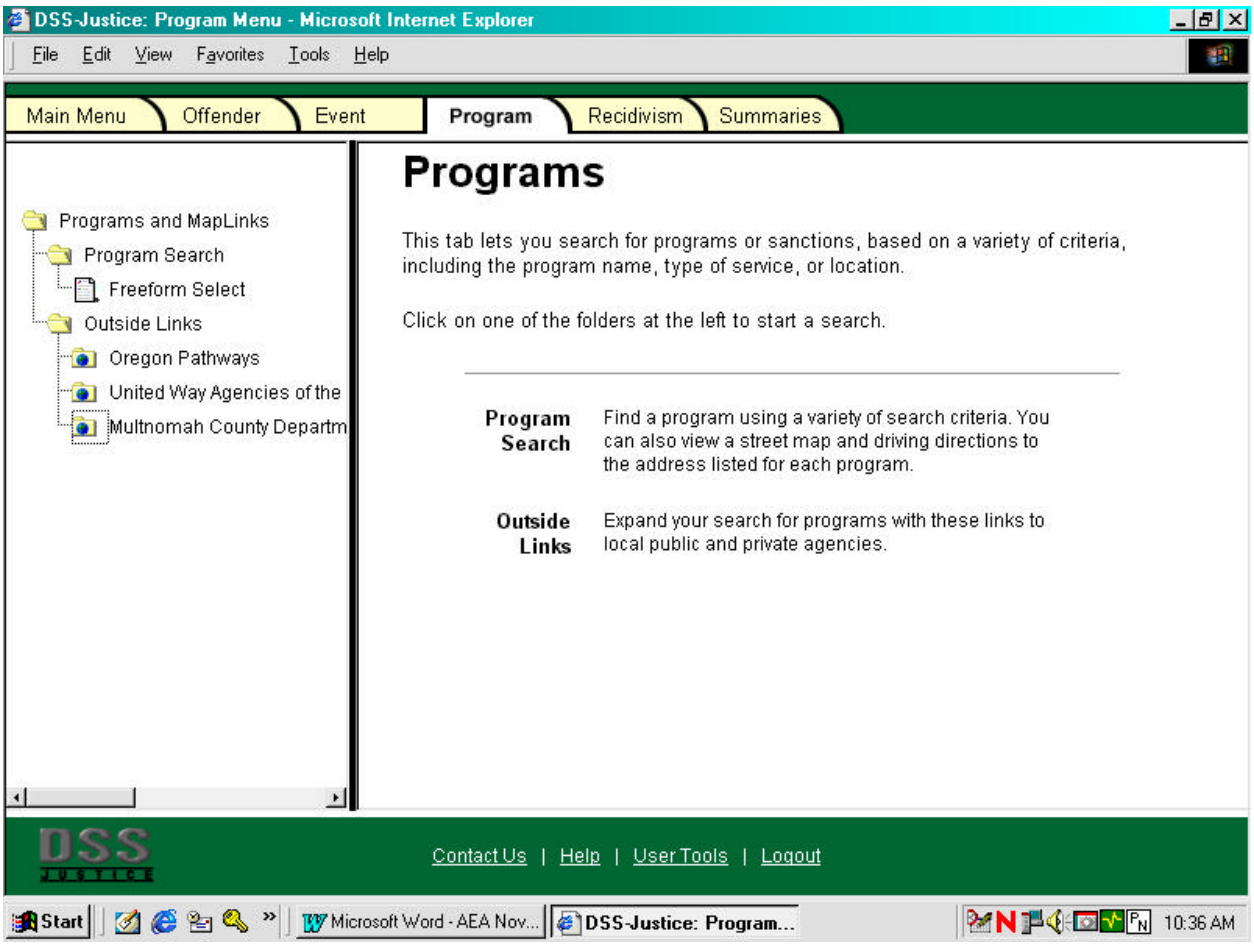
Event	Cube/ Report	Analysis Description
Custody	[none yet]	[no cubes or reports at this time]
Supervision	Cube	Current Case Analysis
Cross/ Multi Event	Report	Arrest by Court Case Status
	R	Arrest by Court Case Disposition
	R	Bookings by Arrest Precinct
	R	Bookings by Arrest Zip Code

The Programs tab allows a justice practitioner such as a judge or probation/ parole officer to search in a number of locations for appropriate service agency placements, possibly to impose as a condition of the sentence or supervision. The user may search in a freeform way, or may search one of several existing databases that compile program information:



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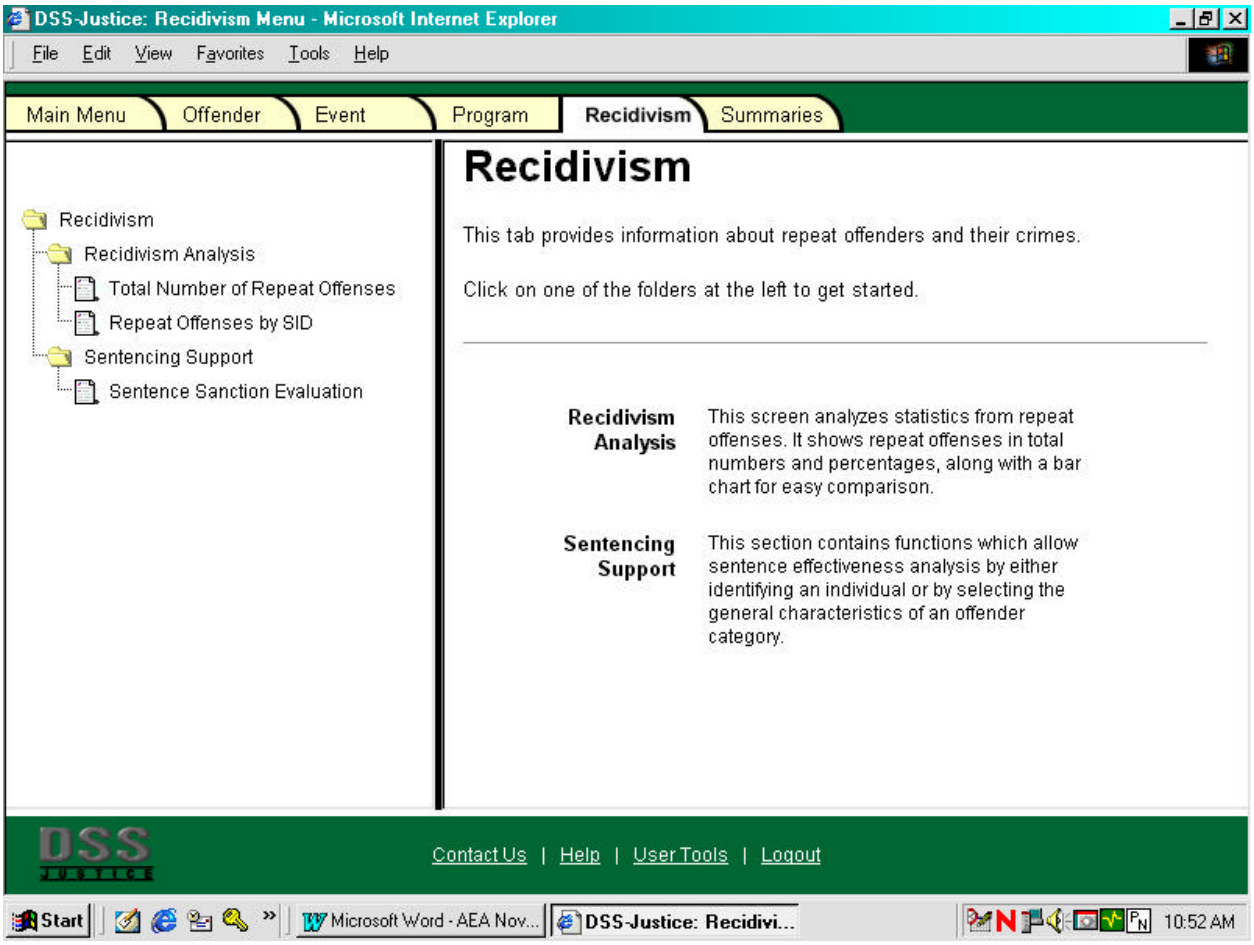
The Recidivism tab of DSS-Justice allows the researcher to define a cohort according to type of initial event (arrest or conviction), the recidivism measure (recidivism end event, charge comparison, and recidivism period), and offender demographics.



Sentencing Support

The Recidivism tab is also where judges may access the Sentencing Support feature. In a recent newsletter posted on an internet site to promote use of the system by his fellow judges, (http://ourworld.compuserve.com/homepages/SMMarcus/whatwrks.html) one Multnomah County judge describes Sentencing Support in the following way:

> *The main objective of this technology is to equip all involved in sentencing decisions with better information to support sentencing choices most likely to reduce the criminal behavior of offenders. As illustrated on the web site . . . a user identifies the offender by case number, selects the charge of conviction, and views a bar chart showing how sentencing choices for similar offenders sentenced in the past for similar charges have correlated with reduced criminal behavior. Tabs allow users to modify the defaults constructed by the program to match the offender's characteristics (employing age, criminal history, and other variables), the crime for which sentences have been imposed, and the outcome measure.*

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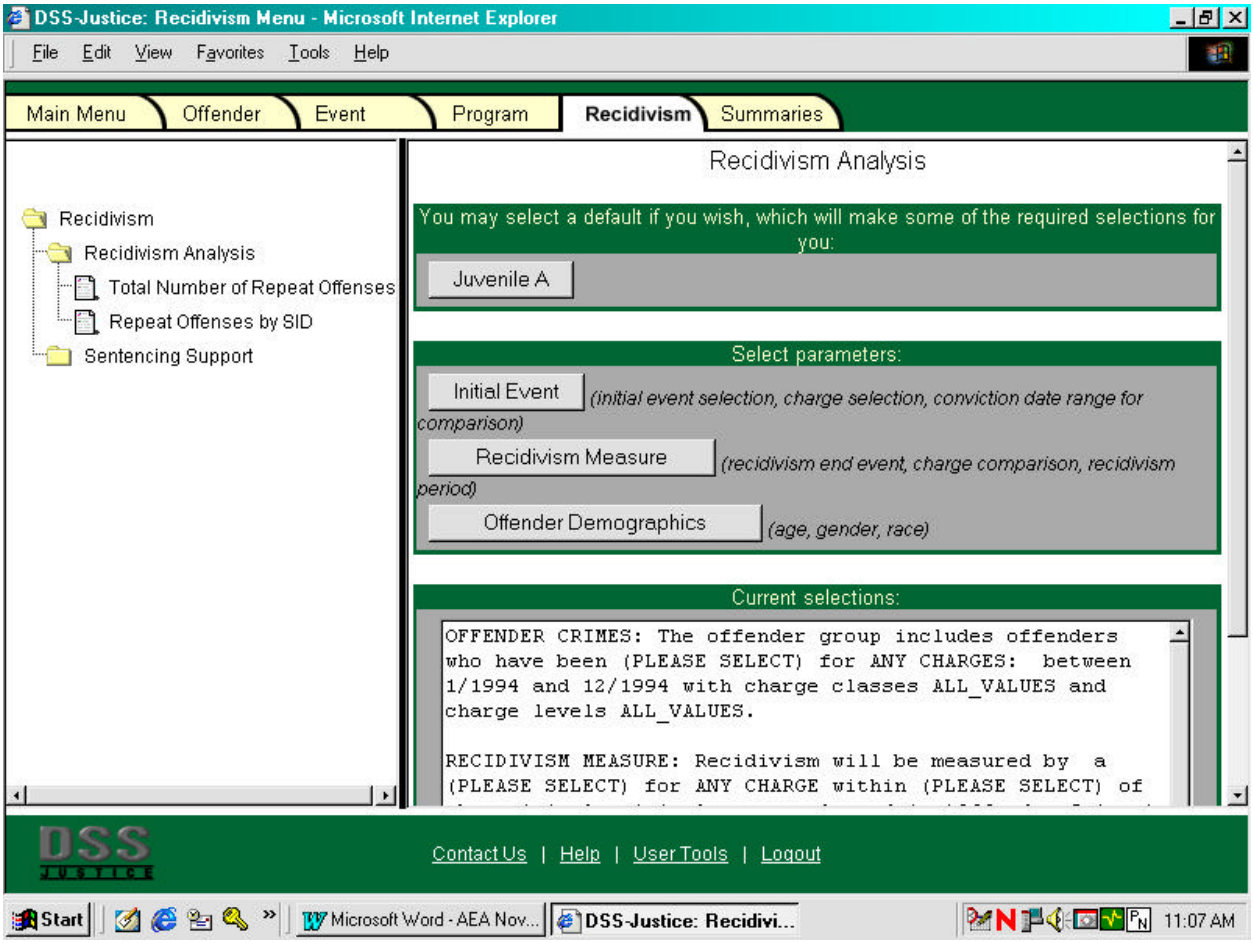
In order to convey the look and feel of the screens where a user defines the elements of an analysis, the following pages display screen prints generated while defining a recidivism report. (Please note that although juvenile data are anticipated in the future, no juvenile records are stored on DSS-Justice at this time.)



The above **Recidivism Analysis** tab includes two analyses, one by SID, or state identification number. In the state of Oregon, all felony offenders are assigned a SID number when they are fingerprinted. The following screen prints only reflect the recidivism analysis called Total Number of Repeat Offenses (see left side of screen printed above).

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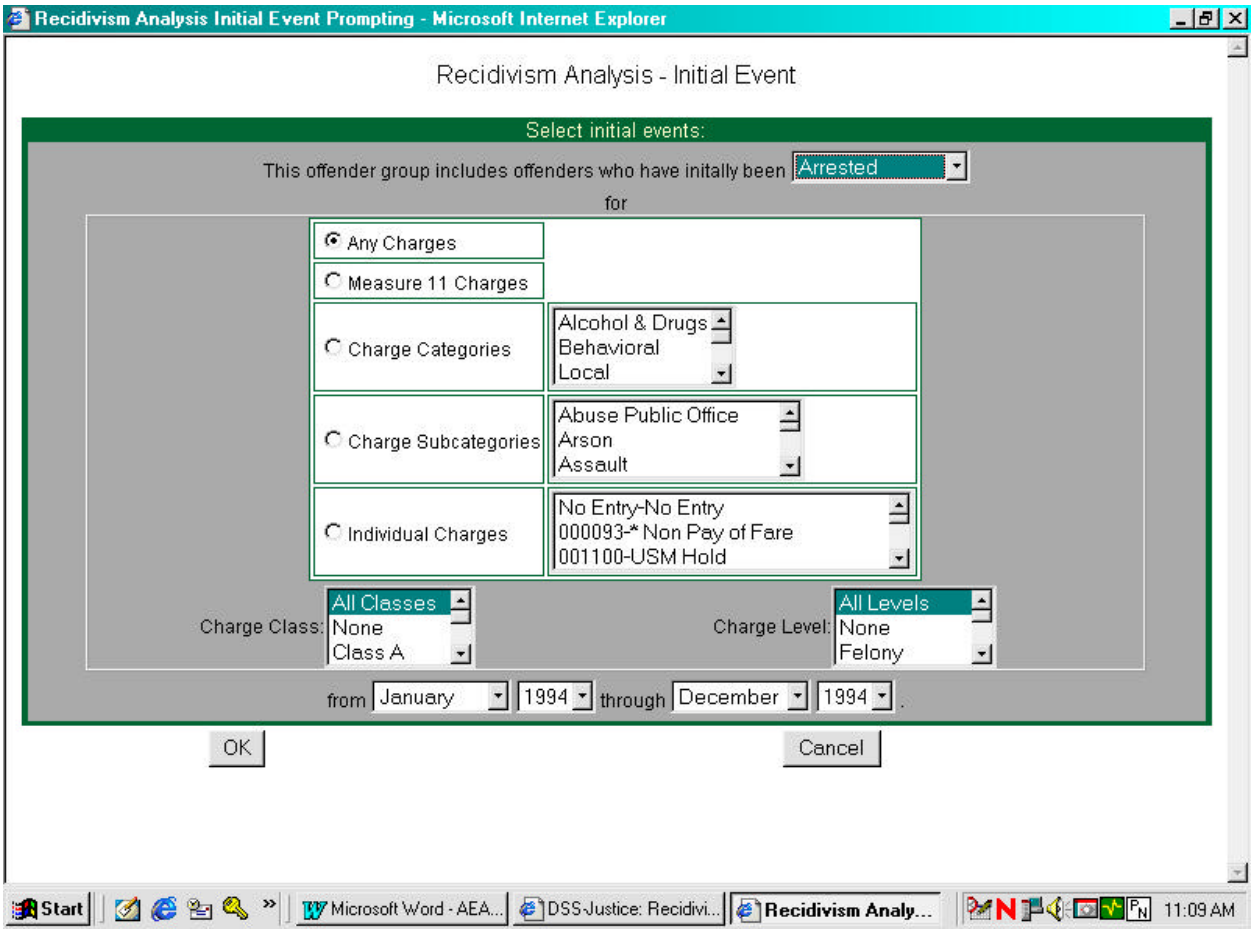

In this **Initial Event** screen, arrest has been chosen but conviction was also an option. Other options are visible for selected charges, charge class, and charge level. The initial event period is defined here as the year of 1994, but data are available from 1982 for arrest. Events in the more distant past must be interpreted in historical context, and certain data anomalies can occur due to the need to standardize information for storage in the data warehouse.

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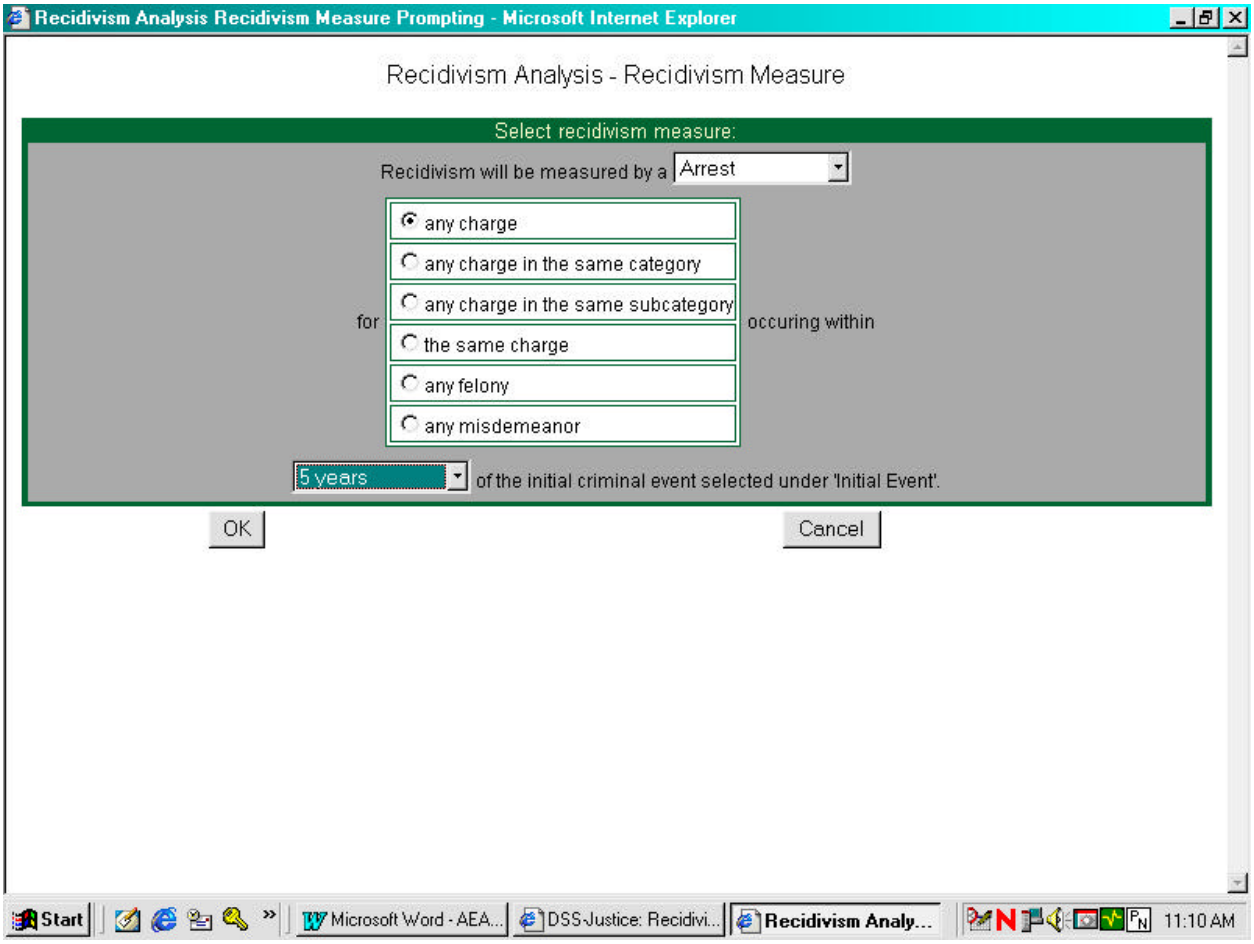

The above **Recidivism Measure** screen allows the researcher to choose arrest or conviction as the later event to be counted as recidivism, for various types of charges, and for a follow-up period of 6 months to five years, or for all available time. In this example, the follow-up event is an arrest for any charge within five years of any arrest occurring in 1994.

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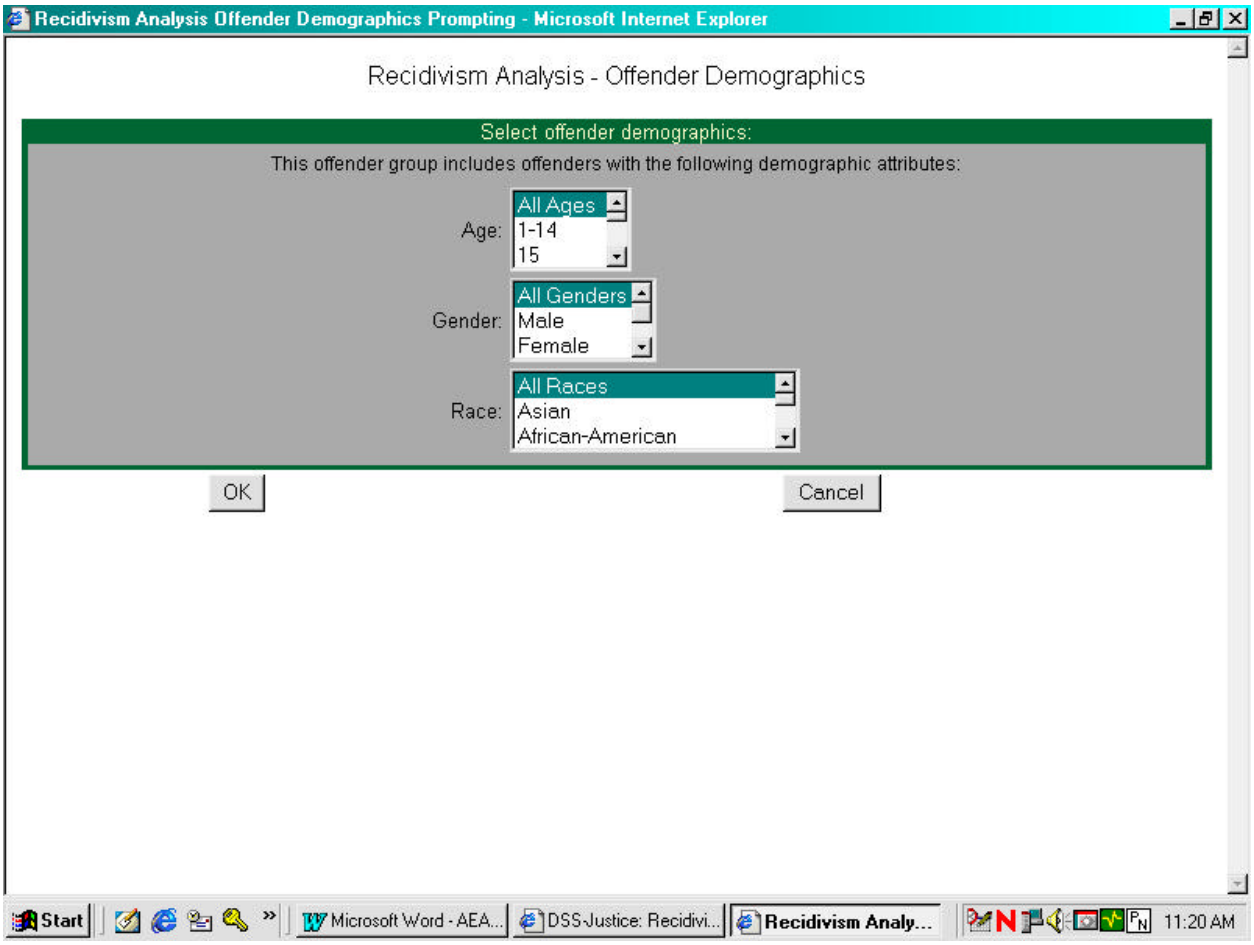
The following **Offender Demographics** screen allows the researcher to analyze recidivism for sub-groups of offenders, or for all offenders. In this example, the data will be run for all ages, both genders, and all races of offenders.



Although displayed alone here, these optional selection screens are normally displayed in a non-maximized window superimposed on the basic Recidivism Analysis screen.

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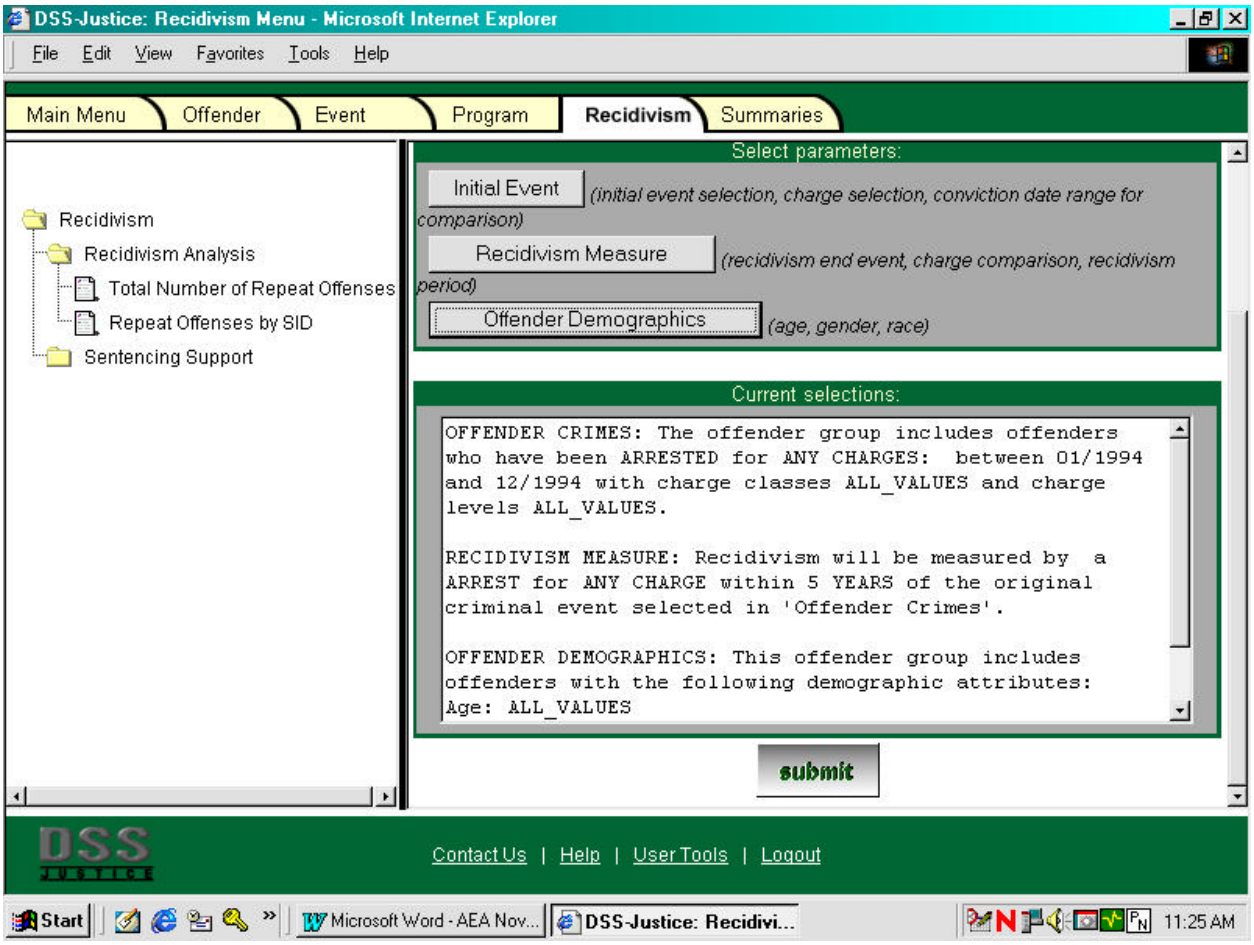
When all selections have been made for the desired recidivism analysis, the current selections are displayed on the main Recidivism Analysis screen for easy review by the user:



When the selections are complete, the user clicks on Submit and waits a number of minutes while the data desired are analyzed by DSS-Justice.

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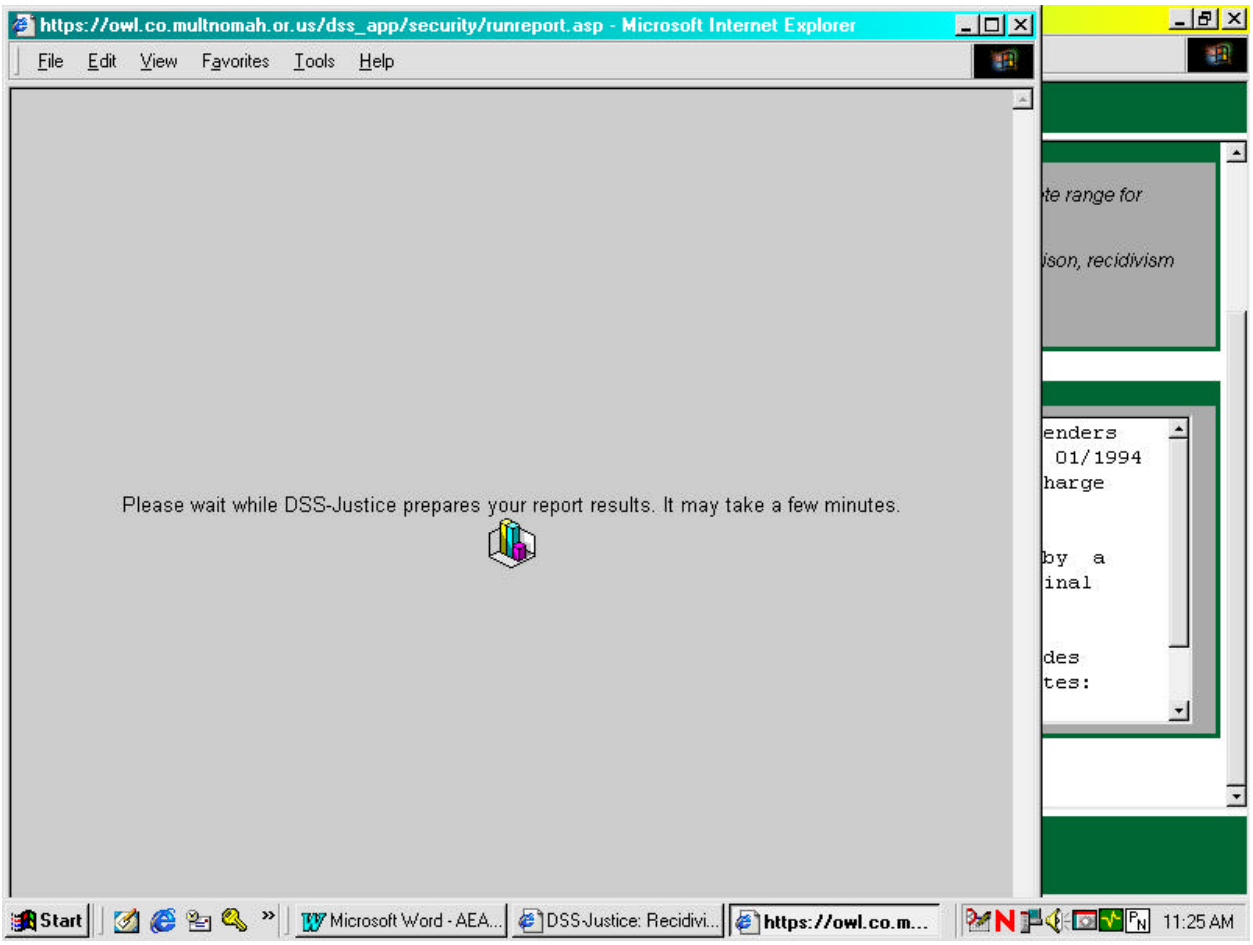
Waiting for reports and cubes to be processed, especially cubes, can take 10 minutes or more for complex analyses that ask for crime data collected over a greater length of time. The wait screen looks like this:



Response time has proven to be a tenacious obstacle for DSS-Justice users located outside of the County's wide area network. Despite the installation of direct T-1 data lines between the County and other sites, satisfactory response time still depends on the number of other County applications accessed by the remote user base, and the internet browsers installed at the remote location. Efforts are underway to resolve these difficulties, including purchase and installation of new servers to speed up system operations and response time.

Resolution of technical issues such as excessive response time serves to highlight the vital importance of effective collaboration between the agencies contributing data to DSS-Justice. Because technology is evolving rapidly to keep up with the ever-increasing demands of users, finding solutions depends in large measure on having effective champions of the DSS-Justice system in each agency. Advocacy of DSS-Justice is better developed at some agencies than it is at others. It is the role of the Executive Sponsors of DSS-Justice to lead in building collaborative successes and removing obstacles to the successful operation of the system in every participating agency.

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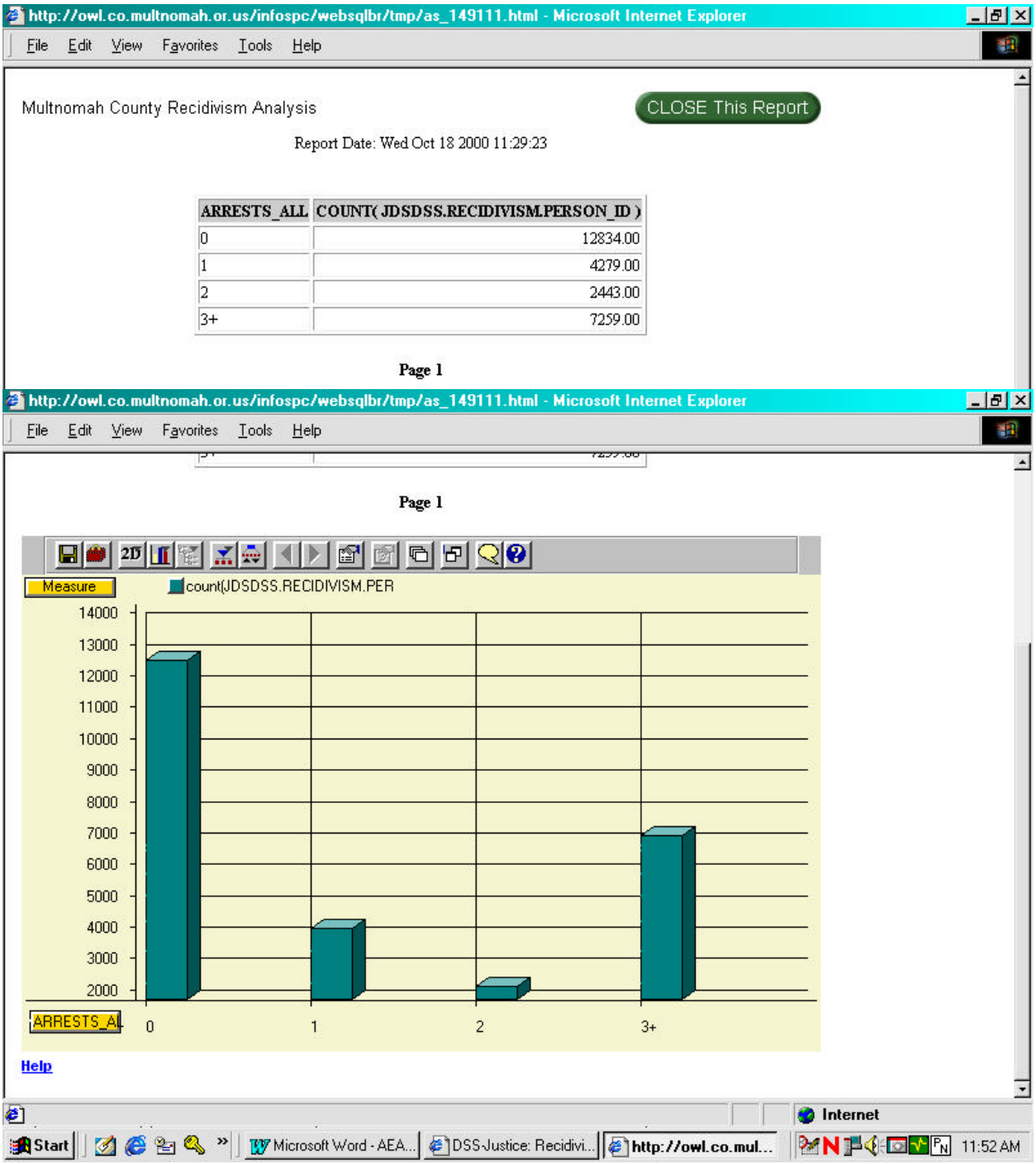
The results screen for the Recidivism Analysis described on the previous pages displays both a table of numbers, and a bar chart, with offenders counted who have no later arrests, only 1 arrest, 2 arrests, or three or more later arrests, in the current example.



This particular results screen, like many others in DSS-Justice, requires the use of the scroll bar for viewing complete results.

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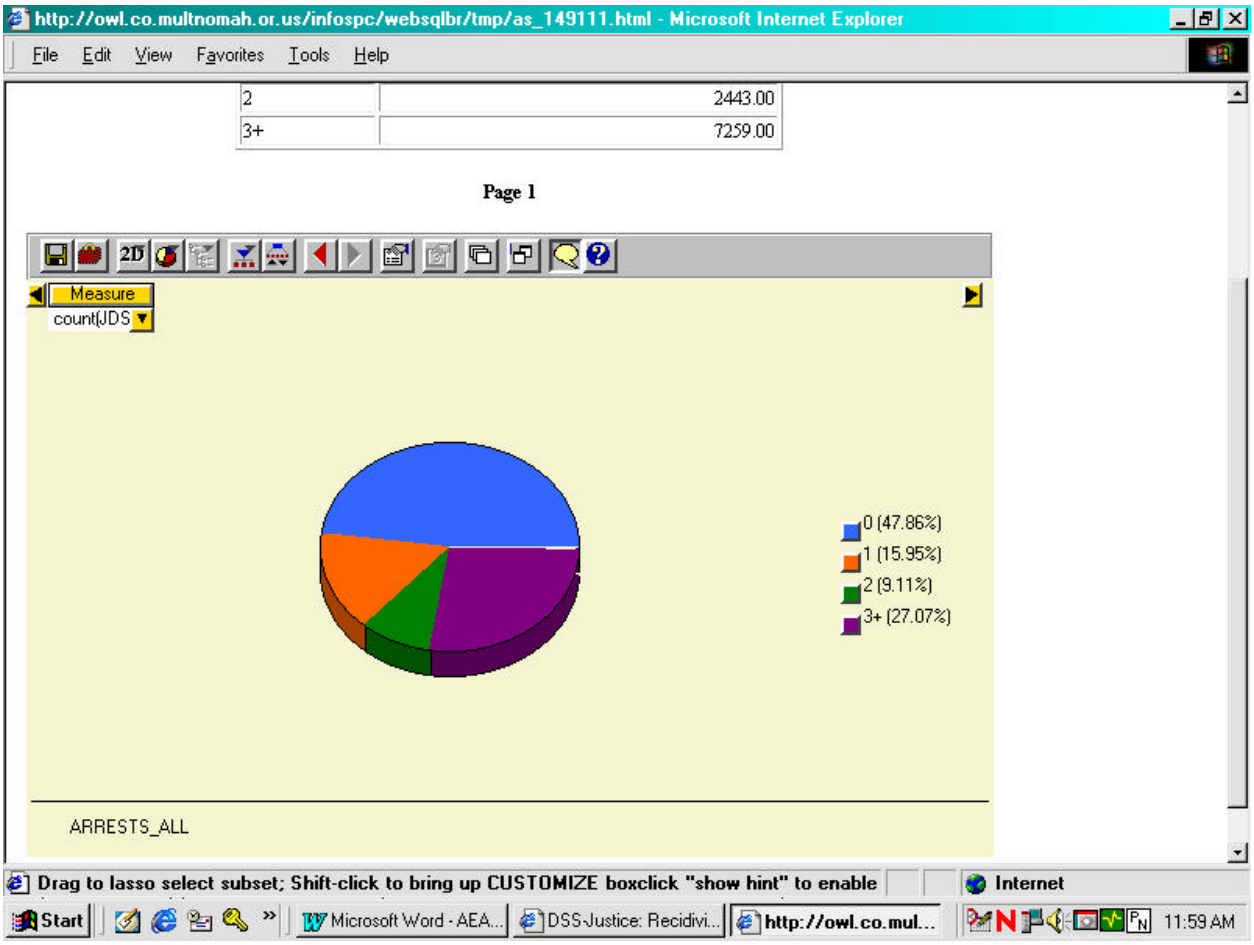
DSS-Justice results screens are also displayed with a separate button bar provided by the software manufacturer, Viador. These buttons allow a range of options such as saving the data as a file, downloading to Excel, display in other chart styles, drilling down or drilling up for more or less data aggregation, display hints, customizing, etc. For example, the following presents the same data in pie chart format, with the "display hints" button toggled on:



Downloading data to Excel for exporting into SPSS or other statistical programs is probably the most important use of the Viador buttons for researchers.

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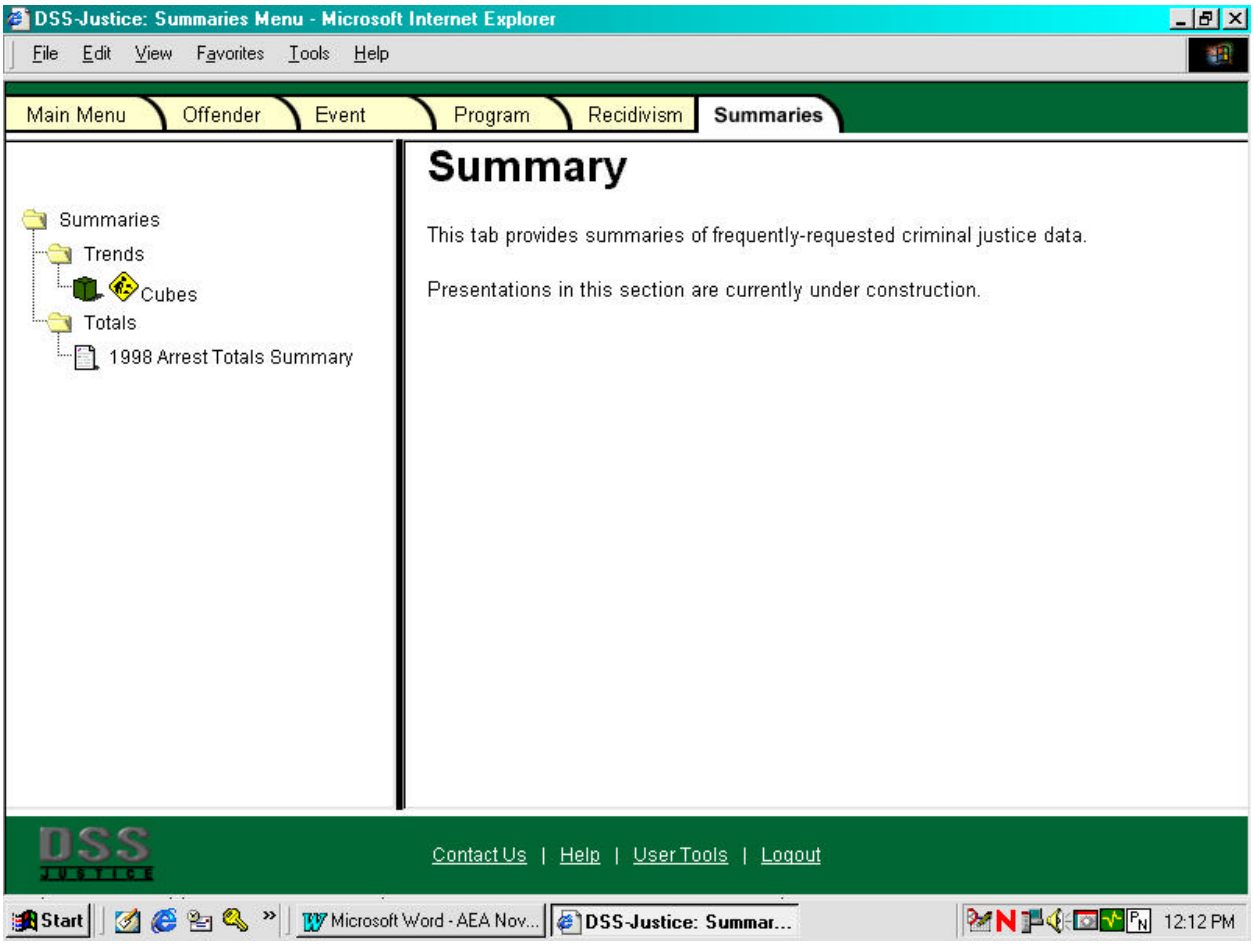
Finally, the Summary tab on DSS-Justice will offer display of data that are frequently requested, for example the annual arrest totals. This area of the system is still under development.



The DSS-Justice Help screens are extensive and a valuable source of help for users. The following page displays some of the information available.

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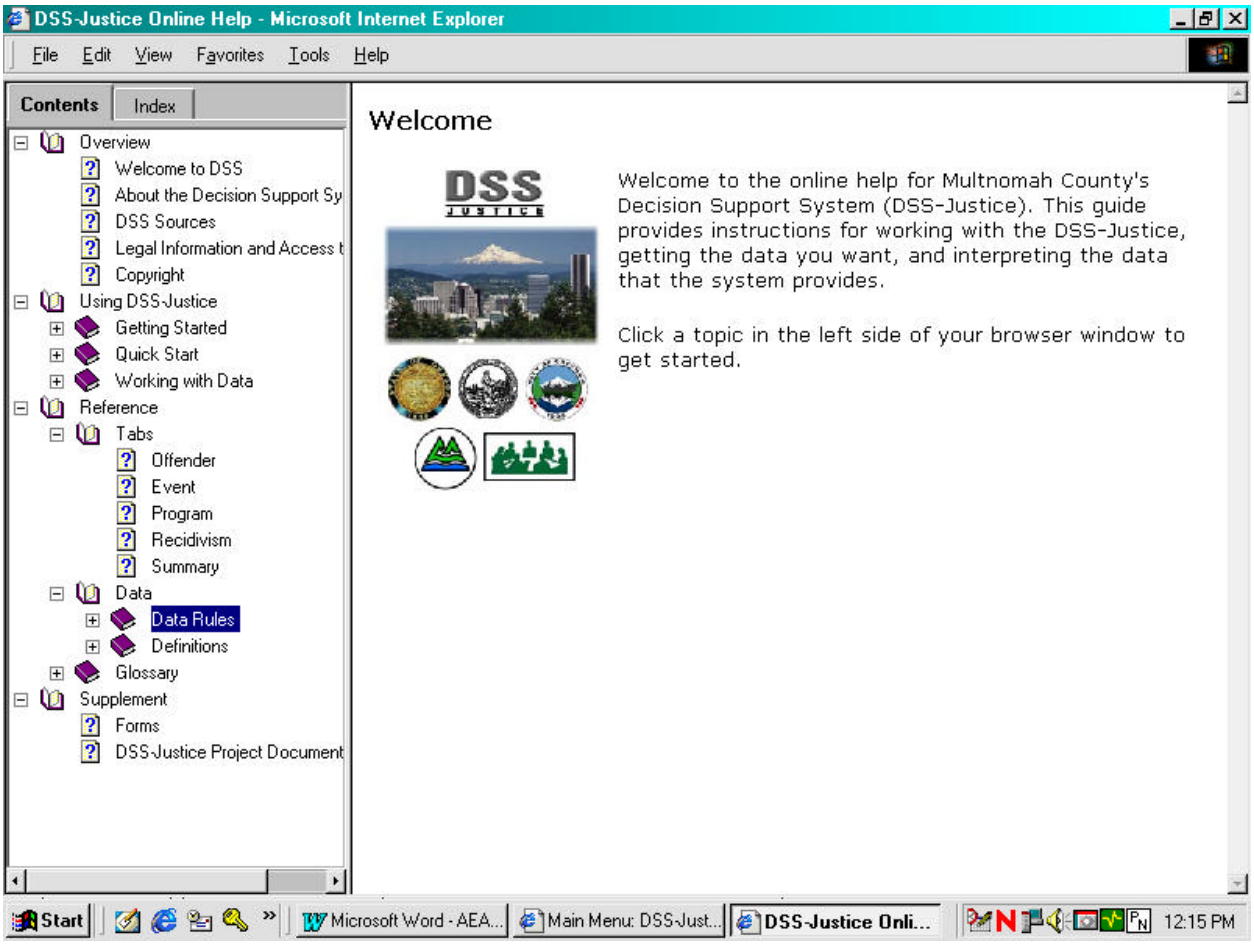

Of particular interest are help entries on how data are defined and linked together, as in the following account of how separate events can be assigned to the same offender's record, or not assigned to it, depending on consistent rules. These decision rules for linking and organizing justice events information were developed in an iterative process resulting ultimately in consensus among the local justice representatives who assisted the business analysts in construction of the system. This may have been the most logically demanding aspect of building DSS-Justice.

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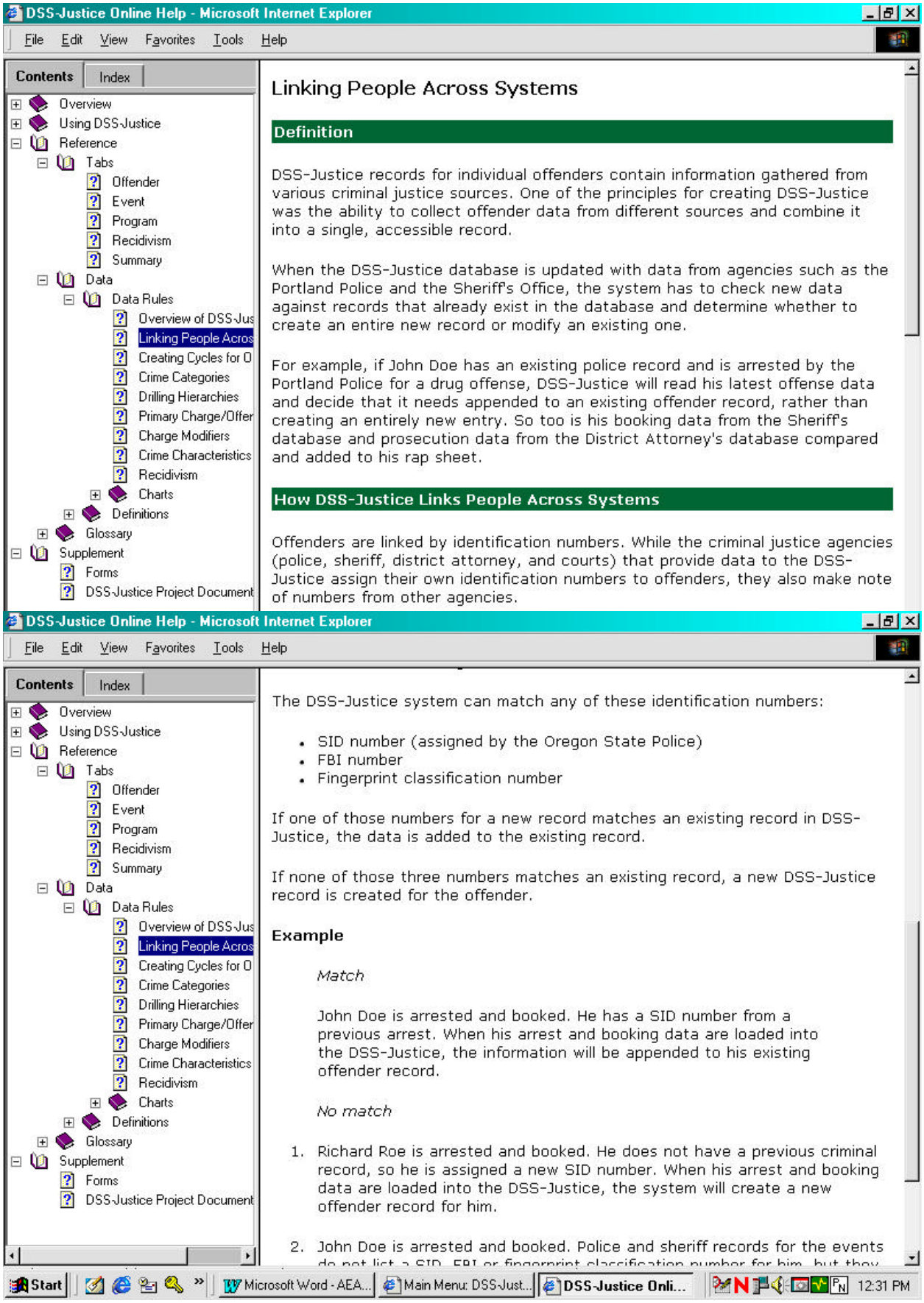

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3. Results of Using DSS-Justice for Program Evaluation Research

Because of the technical and security challenges in validating DSS-Justice data and reluctance to authorize system use at a developmental stage, very little research has actually taken place using this system. Nevertheless as word has spread of the nature of the system under construction, a number of requests to use the system have come from researchers outside local justice agencies. A number of concerns exist concerning how well DSS-Justice data reflect the source databases. As discussed above in the area of system acceptance, most of these concerns have been addressed, but not all. Other concerns address the wisdom of allowing research by individuals not employed by the data proprietary agencies. These issues are not entirely resolved, but two major projects are now planned by the Public Safety Coordinating Council itself, for implementation by the end of the year, both calling for a justice system-wide scope of effort. Council members intend to use DSS-Justice to pursue these two projects.

Criminal Justice Resource Management
In September of 2000, the Public Safety Coordinating Council entered a two-year contract with Utah consultant David Bennett, who specializes in comprehensive criminal justice system analysis and the development and implementation of jail population management strategies. The project will use DSS-Justice data as well as more qualitative means such as extensive interviewing to examine Multnomah County criminal justice system policies and practices, with a goal of designing a better jail population management strategy, and to suggest changes in other areas aimed at reducing inefficiencies.

To improve case processing practices, Bennett will

A. Automate Regular Reports

B. Cohort Tracking, to illuminate:
Admission decisions
Pre-trial policies and release practices
Offender processing times
Charging decisions
Sentencing practices
Program placement
Offender outcomes (recidivism and failure-to-appear)

C. System Decision Point Analysis
Arrest and booking
Pre-trial release
Charge/ Indict
Sentencing
Program placement
Sanction/ revoke

D. Jail Forecasting

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Over-Representation of Minorities in the Criminal Justice System
In October of 2000, the Public Safety Coordinating Council published a preliminary report on the over-representation of minorities in the Multnomah County criminal justice system, and committed to a course of action to address this problem. The draft report will soon be shared with a task force of criminal justice professionals and minority community opinion leaders, who will be asked to identify effective strategies to address and reduce minority over-representation. One of the recommendations of the draft report is to establish a permanent process of uniform data collection and analysis with systems for feedback and correction.

The draft report contains information collected using police data on arrest, sheriff's data on booking and jail population characteristics, district attorney data on prosecution, court data on sentencing, and community corrections and jail data on supervision. It is hoped that most of these data items could be more easily collected and monitored using DSS-Justice, rather than relying on many different source data systems.

Selection of these two projects for use of DSS-Justice by the Council reflects the justice system-wide mission of the Public Safety Coordinating Council. The following project is more targeted, addressing issues about assigning risk scores to offenders on probation or post-prison supervision

Supervision Levels and Risk Scores for Offenders on Probation or Post-Prison Supervision
This project will use DSS-Justice for a more targeted effort, tracking offenders on supervision by the Department of Community Justice to answer the question of whether there is a cost-benefit from adjusting supervision levels according to the level of risk posed by the offender. Three cohorts of offenders have been identified from the years 1995, 1998, and 2000, to be tracked for both process and outcome variables, using a variety of data sources. Most of these sources are now maintained on DSS-Justice (c. 90%), allowing a streamlined process of data collection.

DSS-Justice data will be of key importance for two purposes. First, process data will be extracted from the community corrections data stored on DSS-Justice to estimate the type, intensity and duration of supervision contacts by caseload, and the number of transfers to different caseloads. Second, DSS-Justice will supply outcome data in the form of re-arrest, re-conviction and re-incarceration data for a 24-month follow-up period for the 1995 and 1998 cohorts, and a 12-month follow-up period for the 2000 cohort. The research team also has an interest in the intensity of services provided to supervised offenders, but this information is not available on DSS-Justice and will require supplementary data sources.

Conclusion
The development of the Decision Support System for Justice is an innovative effort by virtue of its application of mature data warehouse and decision support technology to a new setting: reducing recidivism in the criminal justice system. Sharing information on the sensitive issues surrounding law violation introduces a range of significant challenges to collaboration among justice practitioners charged with both protecting confidentiality and maintaining openness about the use of the coercive power of the state. Structured like a data library, Multnomah County's DSS-Justice has exciting potential as a tool for enhancing program evaluation design and execution. Several important research projects are just beginning to explore that potential.

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