

Exploring NIBRS With a Relational Database

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Goals

- Provide back ground on FBI's National Incident-Based Reporting System (NIBRS)
- Demonstrate utility of having NIBRS data in a relational data base (Oracle 11gi)
- Examine NIBRS data issues
- Present a methodology for working with NIBRS data

NIBRS Data Structure

- Group A offenses (46 crimes) – serious crimes (victims)
 - data on arrest, offense, offender, victim, property
 - data on incident (administrative)
 - 56 data elements in 6 main segments
- Group B offenses (11 crimes) – social crimes (victimless)
 - arrest data

NIBRS Data Structure

- NIBRS Group A offenses – data in 6 major files or segments
- An incident can have multiple segments: victims, offenders, offenses, arrestees, property records
- Tied together by Agency Identifier (ORI) and incident number
- 13 Segment files 6 group A, 1 group B, 3 Windows files, 3 Batch Files

NIBRS Relation Database

- 59 Tables – 13 Segments + Codebook
- Enforces referential integrity – important when uploading new data
- Provides SQL query capability and processing capabilities (indices, partitioning, etc.)
- Extract required data and relationships
- Viewing tools

Sizes of NIBRS Segments

John Jay NIBRS Relational Database

Segment Type	Record Counts		Attributes	Row Size (bytes)
	(in millions, first 7 rows)			
	'95-'05	'95-'08		
1.Administrative	29.1	44.1	16	63
2.Offense	31.9	48.4	19	96
3.Property	33.3	50.7	25	77
4.Victim	31.7	48.2	55	142
5.Offender	32.9	50.0	11	54
6.Arrestee	8.0	12.4	19	96
7.Group B Arrest	9.9	14.6	21	74
8.Window Exceptional Clearance	11,502	16, 611	26	97
9.Window Recovered Property	7,086	11,074	34	99
10.Window Arrestee	156,791	179,559	30	132

General

Name **ADMINISTRATIVE**
 Schema **NIBRS**
 Tablespace **USERS**
 Organization **Standard (Heap Organized)**

Columns

	Name	Data Type	Size	Scale	Not NULL	Default Value	Encrypted
	SEG	CHAR	2		<input type="checkbox"/>		<input type="checkbox"/>
	NIBRS_RELEASED	NUMBER	4		<input checked="" type="checkbox"/>		<input type="checkbox"/>
	STATE_CODE	NUMBER	2		<input type="checkbox"/>		<input type="checkbox"/>
	ORI	CHAR	9		<input checked="" type="checkbox"/>		<input type="checkbox"/>
	INCIDENT	CHAR	12		<input checked="" type="checkbox"/>		<input type="checkbox"/>
	INCIDENT_DATE	DATE			<input checked="" type="checkbox"/>		<input type="checkbox"/>
	INCIDENT_DATE_HOUR	NUMBER	2		<input type="checkbox"/>	99	<input type="checkbox"/>
	TOTAL_OFFENSE_SEGMENTS	NUMBER	2		<input type="checkbox"/>		<input type="checkbox"/>
	TOTAL_VICTIM_SEGMENTS	NUMBER	3		<input type="checkbox"/>		<input type="checkbox"/>
	TOTAL_OFFENDER_SEGMENTS	NUMBER	2		<input type="checkbox"/>		<input type="checkbox"/>
	TOTAL_ARRESTEE_SEGMENTS	NUMBER	2		<input type="checkbox"/>		<input type="checkbox"/>
	CITY_SUBMISSION	CHAR	4		<input type="checkbox"/>		<input type="checkbox"/>
	CLEARED_EXCEPTIONALLY	CHAR	1		<input type="checkbox"/>		<input type="checkbox"/>
	EXCEPTIONAL_CLEARANCE_DATE	DATE			<input type="checkbox"/>		<input type="checkbox"/>
	NUMBER_OF_RECORDS_PERORI	NUMBER	3		<input type="checkbox"/>		<input type="checkbox"/>
	REPORT_DATE_INDICATOR	CHAR	1		<input type="checkbox"/>		<input type="checkbox"/>

- Indicates a Primary Key column
- Indicates a Unique Key column
- Indicates a SecureFile LOB column

Constraints

General

Name **OFFENSE**
 Schema **NIBRS**
 Tablespace **USERS**
 Organization **Standard (Heap Organized)**

Columns

Name	Data Type	Size	Scale	Not NULL	Default Value	Encrypted
SEG	CHAR	2		<input type="checkbox"/>		<input type="checkbox"/>
NIBRS_RELEASED	NUMBER	4		<input checked="" type="checkbox"/>		<input type="checkbox"/>
STATE_CODE	NUMBER	2		<input type="checkbox"/>		<input type="checkbox"/>
ORI	CHAR	9		<input checked="" type="checkbox"/>		<input type="checkbox"/>
INCIDENT	CHAR	12		<input checked="" type="checkbox"/>		<input type="checkbox"/>
INCIDENT_DATE	DATE			<input checked="" type="checkbox"/>		<input type="checkbox"/>
UCR_OFFENSE_CODE	CHAR	3		<input checked="" type="checkbox"/>	'N/A'	<input type="checkbox"/>
OFFENSE_ATTEMPTED_COMPLETED	CHAR	1		<input type="checkbox"/>		<input type="checkbox"/>
OFFENDER_SUSPECTED_USING1	CHAR	1		<input type="checkbox"/>	'N'	<input type="checkbox"/>
OFFENDER_SUSPECTED_USING2	CHAR	1		<input type="checkbox"/>	'N'	<input type="checkbox"/>
OFFENDER_SUSPECTED_USING3	CHAR	1		<input type="checkbox"/>	'N'	<input type="checkbox"/>
LOCATION_TYPE	NUMBER	2		<input type="checkbox"/>	25	<input type="checkbox"/>
NUMBER_OF_PREMESISSES_ENTERED	NUMBER	2		<input type="checkbox"/>		<input type="checkbox"/>
METHOD_OF_ENTRY	CHAR	1		<input type="checkbox"/>	'U'	<input type="checkbox"/>
TYPE_CRIMINAL_ACTIVITY1	CHAR	1		<input type="checkbox"/>		<input type="checkbox"/>
TYPE_CRIMINAL_ACTIVITY2	CHAR	1		<input type="checkbox"/>		<input type="checkbox"/>
TYPE_CRIMINAL_ACTIVITY3	CHAR	1		<input type="checkbox"/>		<input type="checkbox"/>
TYPE_WEAPON_FORCE_INVOLVED1	CHAR	3		<input type="checkbox"/>	'99'	<input type="checkbox"/>
TYPE_WEAPON_FORCE_INVOLVED2	CHAR	3		<input type="checkbox"/>	'99'	<input type="checkbox"/>
TYPE_WEAPON_FORCE_INVOLVED3	CHAR	3		<input type="checkbox"/>	'99'	<input type="checkbox"/>
BIAS_MOTIVATION	NUMBER	2		<input type="checkbox"/>	99	<input type="checkbox"/>
NUMBER_OF_RECORDS_PERORI	NUMBER	3		<input type="checkbox"/>		<input type="checkbox"/>

Indicates a Primary Key column

Indicates a Unique Key column

General

Name **VICTIM**
 Schema **NIBRS**
 Tablespace **USERS**
 Organization **Standard (Heap Organized)**

Columns

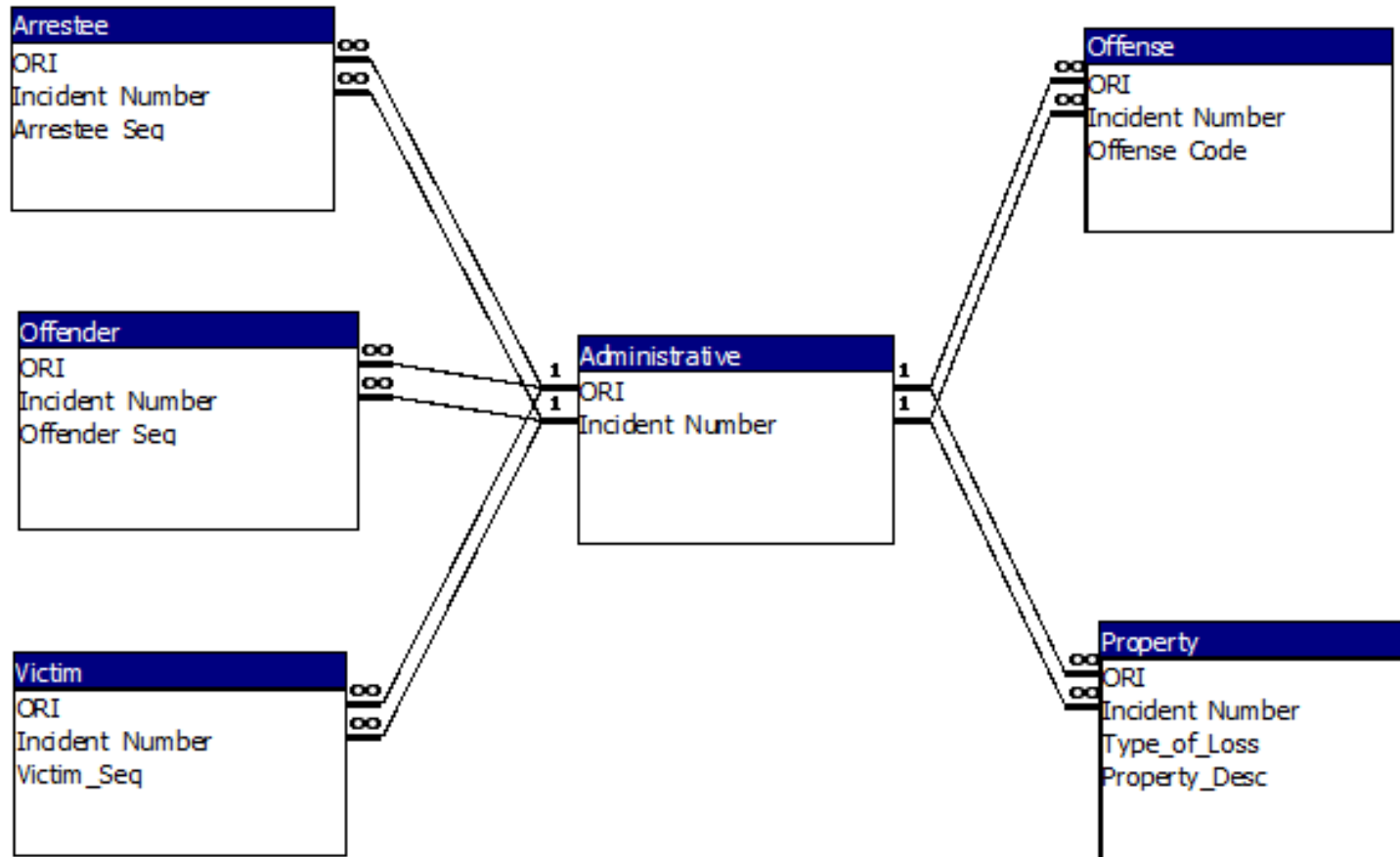
	Name	Data Type	Size	Scale	
	SEG	CHAR	2		
	NIBRS_RELEASED	NUMBER	4		
	STATE_CODE	NUMBER	2		
	ORI	CHAR	9		
	INCIDENT	CHAR	12		
	INCIDENT_DATE	DATE			
	VICTIM_SEQUENCE_NUMBER	NUMBER	3		
	UCR_OFFENSE_CODE1	CHAR	3		
	UCR_OFFENSE_CODE2	CHAR	3		
	UCR_OFFENSE_CODE3	CHAR	3		
	UCR_OFFENSE_CODE4	CHAR	3		
	UCR_OFFENSE_CODE5	CHAR	3		
	UCR_OFFENSE_CODE6	CHAR	3		
	UCR_OFFENSE_CODE7	CHAR	3		
	UCR_OFFENSE_CODE8	CHAR	3		
	UCR_OFFENSE_CODE9	CHAR	3		
	UCR_OFFENSE_CODE10	CHAR	3		
	TYPE_OF_VICTIM	CHAR	1		
	AGE OF VICTIM	CHAR	2		

INJURY1	CHAR	1		
INJURY2	CHAR	1		
INJURY3	CHAR	1		
INJURY4	CHAR	1		
INJURY5	CHAR	1		
OFFENDER_NUMBER_RELATED1	NUMBER	2		
RELATIONSHIP_VICTIMOFFENDER1	CHAR	2		
OFFENDER_NUMBER_RELATED2	NUMBER	2		
RELATIONSHIP_VICTIMOFFENDER2	CHAR	2		
OFFENDER_NUMBER_RELATED3	NUMBER	2		
RELATIONSHIP_VICTIMOFFENDER3	CHAR	2		
OFFENDER_NUMBER_RELATED4	NUMBER	2		
RELATIONSHIP_VICTIMOFFENDER4	CHAR	2		
OFFENDER_NUMBER_RELATED5	NUMBER	2		
RELATIONSHIP_VICTIMOFFENDERS5	CHAR	2		
OFFENDER_NUMBER_RELATED6	NUMBER	2		
RELATIONSHIP_VICTIMOFFENDER6	CHAR	2		
OFFENDER_NUMBER_RELATED7	NUMBER	2		
RELATIONSHIP_VICTIMOFFENDER7	CHAR	2		
OFFENDER_NUMBER_RELATED8	NUMBER	2		
RELATIONSHIP_VICTIMOFFENDER8	CHAR	2		
OFFENDER_NUMBER_RELATED9	NUMBER	2		
RELATIONSHIP_VICTIMOFFENDER9	CHAR	2		
OFFENDER_NUMBER_RELATED10	NUMBER	2		

Relationship Table – 27 Rows

NA	Not applicable	SE	Victim was Spouse
CS	Victim was Common-Law Spouse	PA	Victim was Parent
SB	Victim was Sibling	CH	Victim was Child
GP	Victim was Grandparent	GC	Victim was Grandchild
IL	Victim was In-Law	SP	Victim was Stepparent
SC	Victim was Stepchild	SS	Victim was Stepsibling
OF	Victim was Other Family Member	VO	Victim was Offender
AQ	Victim was Acquaintance	FR	Victim was Friend
NE	Victim was Neighbor	BE	Victim was Babysitter
BG	Victim was Boyfriend/Girlfriend	CF	Victim was Child of Boyfriend / Girlfriend
HR	Homosexual Relationship	XS	Victim was Ex-Spouse
EE	Victim was Employee	ER	Victim was Employer
OK	Victim was Otherwise Known	RU	Relationship Unknown
ST	Victim was Stranger		

Entity Relationship (6 main segments)



Incidents with Multiple Records 1995-2005
(number of records per incident)

Segment	1	2	3	4	5	6	7	8
Arrestee	5,797,342	726,208	147,954	45,077	13,533	5,006	2,072	1,152
Offense	26,512,070	1,970,541	453,323	149,425	49,540	19,576	7,998	4,339
Offender	26,661,053	2,307,215	188,159	14,760	1,699	271	42	7
Victim	27,216,408	1,618,605	223,317	62,266	23,747	11,359	5,629	3,435

Victim/Offender Join

	ORI Code	Incident Number	Offender Sequence No.	Offender Age	Victim Sequence No.	Victim Age	Incident Date
1	CO0030400	CI0BRFRH-2 N	1	23	1	33	09-Nov-00
2	DE0020300	LT01KETVV0 N	0	00	1	39	16-DEC-02
3	DE0020600	LI01KVBRTU N	1	11	1	09	06-OCT-0
4	DE0020600	LI01KVBRTU N	1	11	2	08	06-OCT-0
5	DE0020600	LI01KVBRTU N	2	10	1	09	06-OCT-0
6	DE0020600	LI01KVBRTU N	2	10	2	08	06-OCT-0
7	DE0020600	LI01KVBRTU N	3	10	1	09	06-OCT-0
8	DE0020600	LI01KVBRTU N	3	10	2	08	06-OCT-0
9	DE0020600	LI01KVBRTU N	4	12	1	09	06-OCT-0
10	DE0020600	LI01KVBRTU N	4	12	2	08	06-OCT-0
11	IA0820200	7Z1C7REMQ-F	1	40	1	41	24-JAN-02

NIBRS Released Year vs. Incident Year (1995 – 2005 data sets)

NIBRS Released Year	Incidents where Released year is not the same as Incident year	Percentage of incidents where released year not the same as incident year	Total Release year Records
2005	52,351	1.13%	4,614,054
2004	46,490	1.14%	4,083,571
2003	39,856	1.10%	3,637,432
2002	36,941	1.07%	3,455,589
2001	200	*	3,232,281
2000	22,407	0.89%	2,841,523
1999	20,484	0.95%	2,157,326
1998	102	*	1,822,675
1997	56	*	1,426,978
1996	81	*	1,064,763
1995	168	*	837,014

Spreadsheet Pivot Tables

Offender Counts (Offender suspected of using a computer)									
Aggregated by Offense, Age and Gender			Year						
Offense Description	Age Group	Gender	2000	2001	2002	2003	2004	2005	Grand Total
Embezzlement	11 – 20	F	11	7	5	8	8	14	53
		M	4	5	6	8	6	7	36
	20 – 30	F	17	18	19	22	20	29	125
		M	11	13	14	14	12	23	87
	31 – 40	F	9	9	18	20	13	31	100
		M	8	9	12	7	12	13	61
	41 – 50	F	5	7	7	6	8	21	54
		M	3	8	4	4	4	10	33
	51 – 60	F		2	4	1	1	4	12
		M	1	4			2	3	10
Wire Fraud	11 – 20	F	1	3	3	4	2	2	15
		M	9	9	9	13	13	12	65
	20 – 30	F	1	6	3	6	14	16	46
		M	7	12	18	22	27	22	108
	31 – 40	F		3	2	8	9	8	30
		M	4	8	11	12	13	21	69
	41 – 50	F	1	5	3	3	3	6	21
		M	4	2	2	8	4	5	25
	51 – 60	F		1	3	1	2	4	11
		M	2	2	2	1	1	6	14

Comments on NIBRS

- Compare NIBRS with SHR data and other crime data to test for bias
- NIBRS compliant operational systems will increase NIBRS reporting
- Time series studies to examine NIBRS missing data
- Extract data for specific studies and make it available in Pivot Tables or Data Cubes (NCOVR-CMU)

Thank You

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