Document Title:	**The Impact of Incarceration on Families: A Single-Jurisdiction Pilot Study Using Triangulated Administrative Data & Qualitative Interviews**
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SUMMARY OVERVIEW

The Impact of Incarceration on Families: A Single-Jurisdiction Pilot Study Using Triangulated Administrative Data & Qualitative Interviews

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Purpose

This project utilizes three strategies to investigating the impact of incarceration on families. First, we tap into a powerful, statewide integrated data system to examine impacts of incarceration in a novel way, using administrative data from corrections, juvenile justice, mental health, social services, substance use services, healthcare, and education. Statewide corrections visitation data from male and female adult offenders are linked to multi-agency administrative data to create a de-identified data processing "cube" representing service utilization for focal prisoners (n = 18,786) and their visitors (n = 44,848) including children, married and unmarried partners, parents, siblings, and others. The cube allows authorized users to easily manipulate multi-agency data to answer queries and create visual displays through tables and graphs. Inclusion of time as a variable standardized to pre-incarceration, incarceration, and post-release periods allows cube users to explore impacts of incarceration on service utilization and outcomes for families. Second, we link multi-agency data to address specific research questions regarding impact of incarceration on families, including impact of incarceration on family physical and mental health, children's involvement with the child welfare and juvenile justice systems, family receipt of economic services, and school performance. Third, we conduct focus groups and family interviews with 77 prisoners and 21 prisoner family members sampled from three correctional facilities. We identify qualitative themes regarding impact of incarceration in the lives of prisoners and their families. Here we summarize major points for each of our three strategies, with further detail available in published manuscripts, briefs, and presentations in the Appendix.

Strategy 1: Development of an Integrated Data Cube

Methods. Because the Department of Corrections has data including identifiers for security clearance of all visitors, these data served as a basis for creating a convenience sample of prisoner family members and developing an integrated multi-agency data profile for these individuals tied

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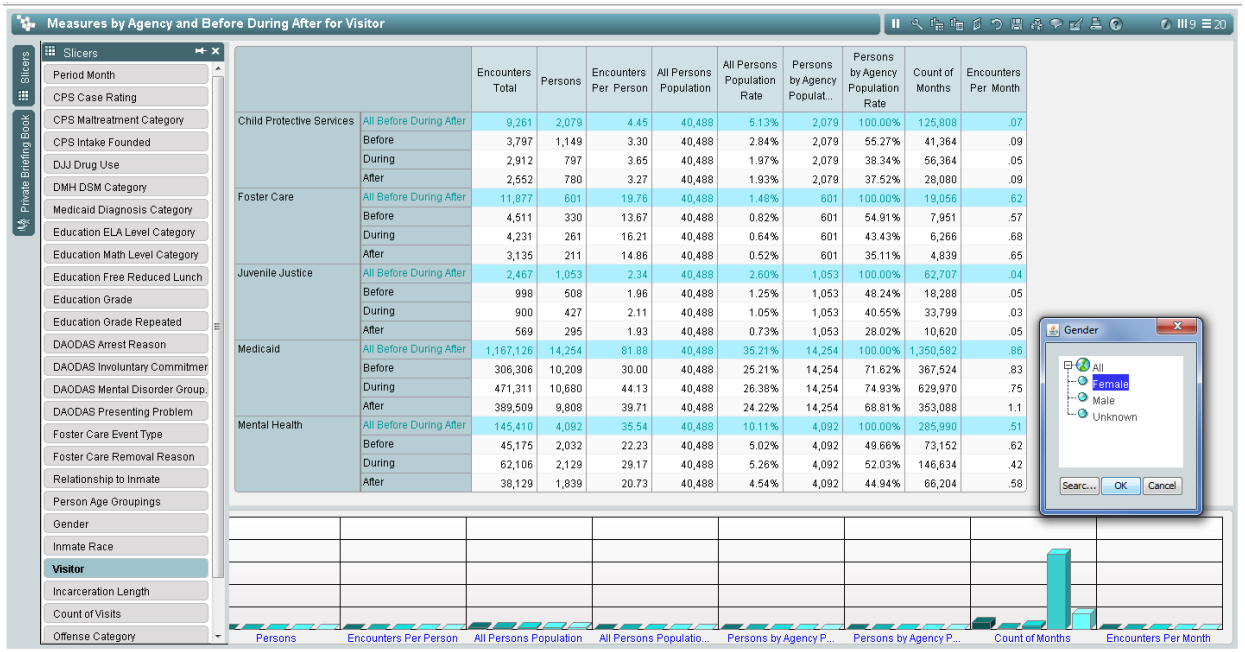
with respective prisoner data. Our sampling focused on three consecutive years (2006-2008) for all prisons statewide, sampling any prisoner who served time during this period as well as any person who visited these prisoners. We sampled multi-agency data for each prisoner and his/her visitors for the three years before and three years after his/her incarceration, as applicable in our 1996-2012 administrative data. This was accomplished on a "rolling" basis. For example, to look at family service access three years prior to incarceration, the data pulled for an offender who entered prison in 2006 would go back to 2003, but the data for an offender who entered prison in 2007 would go back to 2004. Similarly, for an offender who exited prison in 2007, data would extend to 2010.

Through the SC Data Warehouse (SCDW) at SC's Office of Revenue and Fiscal Affairs, we developed partnerships with the following agencies and linked their respective data for an Online Analytical Processing (OLAP) cube: Department of Juvenile Justice, Department of Mental Health, Department of Alcohol and Other Drug Abuse, Department of Social Services, Department of Health and Human Services, Department of Education, and Department of Health and Environmental Control. OLAP cubes allow users to query all data contained within an integrated, multi-agency database nearly instantaneously just by pointing and clicking a mouse. Cube terminology specifies "measures," dependent variables that can be counted, summarized, or aggregated; these serve as numbers that populate a table or graph. Examples include frequency of contacts with the mental health system, number of inpatient admissions to health facilities, costs of services, or scores on educational tests. "Slicers" are independent variables or dimensions by which measures are summarized; these become the column/row headings of data tables or the axes and legend units of graphs. Examples of slicers include age group, race, sex, family structure, crime type, and incarceration status (e.g., pre-incarceration, incarceration, post-release).

Findings. Including data on 18,786 prisoners and 44,848 family members, the cube is housed online, currently in the form of a restricted-use resource that requires researchers to garner permissions

from specific agencies prior to utilizing the cube. Further information about demographics of the sample and representation of cases across agencies can be found in Shapiro and DeHart (in press); further information about cube development can be found in DeHart and Shapiro (2016). Figure 1 shows a screen shot of the interface to the cube.



		Encounters Total	Persons	Encounters Per Person	All Persons Population	All Persons Population Rate	Persons by Agency Populat...	Persons by Agency Population Rate	Count of Months	Encounters Per Month
Child Protective Services	All Before During After	9,261	2,079	4.45	40,488	5.13%	2,079	100.00%	125,808	.07
	Before	3,797	1,149	3.30	40,488	2.84%	2,079	55.27%	41,364	.09
	During	2,912	797	3.65	40,488	1.97%	2,079	38.34%	56,364	.05
	After	2,552	780	3.27	40,488	1.93%	2,079	37.52%	28,080	.09
Foster Care	All Before During After	11,877	601	19.76	40,488	1.48%	601	100.00%	19,056	.62
	Before	4,511	330	13.67	40,488	0.82%	601	54.91%	7,951	.57
	During	4,231	261	16.21	40,488	0.64%	601	43.43%	6,266	.68
	After	3,135	211	14.86	40,488	0.52%	601	35.11%	4,839	.65
Juvenile Justice	All Before During After	2,467	1,053	2.34	40,488	2.60%	1,053	100.00%	62,707	.04
	Before	998	508	1.96	40,488	1.25%	1,053	48.24%	18,288	.05
	During	900	427	2.11	40,488	1.05%	1,053	40.55%	33,799	.03
	After	569	295	1.93	40,488	0.73%	1,053	28.02%	10,620	.05
Medicaid	All Before During After	1,167,126	14,254	81.88	40,488	35.21%	14,254	100.00%	1,350,582	.86
	Before	306,306	10,209	30.00	40,488	25.21%	14,254	71.62%	367,524	.83
	During	471,311	10,680	44.13	40,488	26.38%	14,254	74.93%	629,970	.75
	After	389,509	9,808	39.71	40,488	24.22%	14,254	68.81%	353,088	1.1
Mental Health	All Before During After	145,410	4,092	35.54	40,488	10.11%	4,092	100.00%	285,990	.51
	Before	45,175	2,032	22.23	40,488	5.02%	4,092	49.66%	73,152	.62
	During	62,106	2,129	29.17	40,488	5.26%	4,092	52.03%	146,634	.42
	After	38,129	1,839	20.73	40,488	4.54%	4,092	44.94%	66,204	.58

Figure 1: Screen Shot of IOI Data Cube. The interface to the cube displays tables that can be easily manipulated to show prisoner and family member encounters with services systems before, during, and after the focal prisoners' incarceration (e.g., child protective services, foster care, juvenile justice, Medicaid, mental health). The interface cube also can display data in the form of graphs for easy visualization of potential effects, and has 'slicers' (along the sidebar) that can be used to select particular cases for tabular display (e.g., female visitors).

Products. Products from this include: 1) the data cube, which may be accessed online with specific permissions; 2) a scholarly article in the *American Journal of Criminal Justice* describing benefits, challenges, and recommendations for using integrated data for criminal justice research (DeHart & Shapiro, 2016); 3) a how-to brief with recommendations for using integrated data (Petiwala, DeHart, & Shapiro, 2016); 4) a recorded Webinar describing the project and recommendations for using integrated data (DeHart, Shapiro, & Petiwala, 2016); and 5) a presentation to USC's Research Consortium on Children & Families on use of integrated data (DeHart, Shapiro, & Hayes, 2015).

Strategy 2: Analysis of Linked Administrative Data

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Methods. Using our multi-agency data, we examined four specific research questions: 1) How does offender incarceration impact family members' physical and mental health? 2) How does offender incarceration impact their children's involvement with the child welfare and juvenile justice systems? 3) How does offender incarceration impact the receipt of economic services by family members? 4) How does offender incarceration impact the academic performance of children?[1]

Findings for Question 1A—Impact on Physical Health: To address this research question, we examined prisoner visitors' contact with health providers using a uniform billing claims database from hospitals. A total of 29,886 family member visitors of prisoners were identified the database. Based on ICD-9 codes in the data, we were able to identify the total number of family member visitors who had the following diagnoses: cardiac functioning n = 2,229; lung-related diagnoses n = 2,620; digestive disorders n = 8,728; and endocrine disorders n = 2,540. Log-binomial regression models were estimated to examine the difference in risk of a physical health diagnoses for family member visitors of prisoners across time (before, during, and after incarceration). Wald tests of regression coefficients associated with the indicator variables for time periods were used to assess whether there were temporal differences, with "after" as the referent temporal category. We also compared the average risk of a physical health diagnosis "during" to "before" incarceration using a post-regression Wald tests of the associated parameters. All statistical tests were adjusted for repeated observations per person using the modified sandwich variance estimator to ensure inference that is robust to any within-person correlation of the repeated measures.

Cardiac	**Risk Ratio**	**Std. Error**	**z**	**p-value**	**95% Confidence Interval**	
Before	1.32	0.13	2.71	0.007	1.08	1.61
During	1.57	0.17	4.27	<0.001	1.28	1.83
Recidivist	0.76	0.06	-3.43	0.001	0.65	0.89

Table 1: Log-Binomial GLM of Cardiac Disorders. This is the log-binomial generalized linear model of cardiac disorder on Before (an indicator of before incarceration relative to after incarceration), During (an indicator of

[1] Beyond academic performance, we had also proposed to assess impact of incarceration on school mobility of children; however, we were unable to obtain administrative data on school mobility.

during incarceration relative to after incarceration), and Recidivist (an indicator of whether the incarcerated person is a recidivist). Standard errors are based on a modified sandwich variance estimator such that inference is robust to within-person correlation.

The risk of cardiac disorders was 32% higher for family members before incarceration relative to after incarceration ($z = 2.71$), $p < .01$, and 57% higher during incarceration relative to after incarceration ($z = 4.27$), $p < .001$. The increase in cardiac disorders from before incarceration to during incarceration was also significant, χ^2 (1, N = 29,886) = 9.78, $p < .001$.

Lung	**Risk Ratio**	**Std. Error**	**z**	**p-value**	**95% Confidence Interval**	
Before	1.68	0.16	5.36	<0.001	1.39	2.02
During	1.60	0.15	4.84	<0.001	1.32	1.93
Recidivist	0.92	0.06	-1.26	0.207	0.67	1.05

Table 2: Log-Binomial GLM of Lung Disorders. This is the log-binomial generalized linear model of lung disorder on Before (an indicator of before incarceration relative to after incarceration), During (an indicator of during incarceration relative to after incarceration), and Recidivist (an indicator of whether the incarcerated person is a recidivist). Standard errors are based on a modified sandwich variance estimator such that inference is robust to within-person correlation.

The risk of lung disorders was 68% higher for family members before incarceration relative to after incarceration ($z = 5.36$), and 60% higher for family members during incarceration relative to after incarceration ($z = 4.84$), ps $< .001$. This slight decrease in risk from before to during was nonsignificant, χ^2 (1, N = 29,886) = 1.07, $p = .30$.

Digestive	**Risk Ratio**	**Std. Error**	**z**	**p-value**	**95% Confidence Interval**	
Before	1.66	0.09	9.16	<0.001	1.49	1.84
During	1.65	0.09	8.90	<0.001	1.48	1.85
Recidivist	0.96	0.04	-1.02	0.306	0.89	1.04

Table 3: Log-Binomial GLM of Digestive Disorders. This is the log-binomial generalized linear model of digestive disorder on Before (an indicator of before incarceration relative to after incarceration), During (an indicator of during incarceration relative to after incarceration), and Recidivist (an indicator of whether the incarcerated person is a recidivist). Standard errors are based on a modified sandwich variance estimator such that inference is robust to within-person correlation.

Similar to lung disorders, the risk of digestive disorders was 66% higher for family members before incarceration relative to after incarceration ($z = 9.16$), and 65% higher for family members during incarceration relative to after incarceration ($z = 8.90$), ps $< .001$. There was no difference in risk from before to during incarceration, χ^2 (1, N = 29,886) = 0.01, $p = .94$.

Endocrine	**Risk Ratio**	**Std. Error**	**z**	**p-value**	**95% Confidence Interval**	
Before	1.49	0.12	4.95	<0.001	1.27	1.75
During	1.69	0.15	5.97	<0.001	1.42	2.01
Recidivist	0.98	0.07	-0.25	0.306	0.85	1.14

Table 4: Log-Binomial GLM of Endocrine Disorders. This is the log-binomial generalized linear model of endocrine disorder on Before (an indicator of before incarceration relative to after incarceration), During (an indicator of during incarceration relative to after incarceration), and Recidivist (an indicator of whether the incarcerated person is a recidivist). Standard errors are based on a modified sandwich variance estimator such that inference is robust to within-person correlation.

The risk of endocrine disorders was 49% higher for family members before incarceration relative to after incarceration ($z = 4.95$), and 69% higher during incarceration relative to after incarceration ($z = 5.97$), ps < .001. The increase in risk from before to during incarceration was also significant, χ^2 (1, N = 29,886) = 5.20, $p < .05$. Taken together, these findings indicate that physical health disorders present a higher risk to family members before and during the incarceration of the prisoner compared to after the incarceration. A possible explanation is that criminal behavior, arrest, and incarceration of a loved one are stressors that create or exacerbate physical health problems of family members.

Findings for Question 1B—Impact on Mental Health: A total of 29,886 family-member visitors were identified in the state mental health outpatient database. The number of family member visitors who had a mental health diagnosis of any type was 2,787. Log-binomial regression models and Wald tests, as described above, were estimated to examine the difference in likelihood of a mental health diagnosis for family members across time.

Mental Health	**Risk Ratio**	**Std. Error**	**z**	**p-value**	**95% Confidence Interval**	
Before	3.53	1.00	4.46	<0.001	2.03	6.16
During	4.67	1.54	4.68	<0.001	2.45	8.91
Recidivist	1.28	0.46	0.70	0.486	0.64	2.59

Table 5: Log-Binomial GLM of Mental Disorders. This is the log-binomial generalized linear model of mental health (substance abuse) disorder on Before (an indicator of before incarceration relative to after incarceration), and During (an indicator of during incarceration relative to after incarceration), and Recidivist (an indicator of whether the incarcerated person is a recidivist). Standard errors are based on a modified sandwich variance estimator such that inference is robust to within-person correlation.

The risk of a mental health diagnosis (including substance abuse) for family members before the incarceration is 253% higher than risk after incarceration ($z = 4.46$), $p < .001$. Likewise, the risk during incarceration is 367% higher than risk after incarceration ($z = 4.68$), $p < .001$. A post-regression Wald test illustrates that the risk of a mental health diagnosis during incarceration is no different than before incarceration, χ^2 (1, N = 29,914) = 1.23, p =.267. Thus, mental health diagnoses for family members appeared to increase during incarceration of their family member, then after incarceration dropped lower than prior to incarceration. The increase in mental health diagnoses during incarceration is in agreement with our findings on physical health.

Findings for Question 2A—Impact on Child Welfare Involvement: Based on state social service data, of the total population of 4,646 children of 2,831 prisoners, a total of 356 children of prisoners were identified as having entered the foster care system. At the time of their first visit, these children ranged in age from 0 to 21 with a mean age of 7.6. Because research has demonstrated that mothers are more likely than fathers to be living with a child prior to incarceration (Glaze & Maruschak, 2008), we included parental sex as a variable in these analyses. A total of 216 children of female prisoners entered the foster care system while a total of 140 children of male prisoners entered the foster care system. Using two-sample tests of proportions, we examined the ratios for the time frames of "before" as compared to "during" incarceration of a family member, and "after" as compared to "during" the incarceration of a family member. For female prisoners, the proportion of children who entered foster care before incarceration (n = 104, 48%) was greater than the proportion who entered during incarceration (n = 43, 20%; $z = 6.19$), and the proportion during was less than after (n = 69, 32%; $z = 2.85$), ps = .004. For male prisoners, the proportion of children who entered foster care before incarceration (n = 38, 27%) did not differ from the proportion who entered during (n = 48, 34%; $z = 1.30$), p = .195, and the proportion during did not differ from the proportion who entered after incarceration (n = 54, 39%; $z = 0.75$), p = .456. Thus, for female

prisoners but not for male prisoners, children were more likely to enter foster care prior to or after the incarceration than during. It is possible that the children are at less risk of foster placement during incarceration because they are staying with fathers or other relatives.

Findings for Question 2B—Impact on Juvenile Justice Involvement: We identified 4,633 children of 2,802 prisoners in our data. At the time of their first visit, these children ranged in age from 0 to 21 with a mean age of 7.6. We used juvenile justice records to examine contact with the juvenile system before, during, and after the parent's incarceration. For our analyses, we identified the 682 children who had contact with the juvenile justice system as well as the 3,951 children who did not have contact with the juvenile justice system. Log-binomial regression models were estimated to examine of the likelihood of a child being in contact with the juvenile justice system, adjusted for the child's sex.

DJJ	**Risk Ratio**	**Std. Error**	**z**	**p-value**	**95% Confidence Interval**	
Male	1.44	0.10	5.07	<0.001	1.25	1.66

Table 6: Log-Binomial GLM of DJJ Contact. This is the log-binomial generalized linear model of a child involvement with the DJJ system on Male (an indicator of male relative to female).

Analyses indicate that male children of prisoners are 44% more likely to come into contact with the justice system compared to female children of prisoners ($z = 5.07$), $p < .001$. A chi-square analysis examined the timing of involvement for those children who had contact with the juvenile justice system. As can be seen in Table 7, while the number of children who have contact with the juvenile justice system increases over time from before to after incarceration of a family member, our analyses indicate no significant difference for male and female children with regard to timing of juvenile justice involvement, χ^2 (1) = 1.91, p = .385. The increase in contact over time could be due to stress of parental incarceration as well as due to unrelated factors such as maturation, in that youth moving from childhood to adolescence may experience greater risk of justice involvement.

Timing	Female	Male	Total

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Before	48	53	101
During	91	140	231
After	146	204	350
Total	285	397	682

Table 7: Timing of juvenile justice involvement for children of prisoners. This is timing of contact with the juvenile justice system Before, During, and After the parental incarcerative period for males versus females.

Findings for Question 3—Impact on Receipt of Economic Services: We identified 30,323 family members of prisoners with economic social service records (i.e., food stamps, aid to needy families). Of these, 23,322 (77%) received no benefits. The proportion of family members who received economic services prior to incarceration (n = 3,705, 12%) was greater than the proportion who received services during the incarceration (n = 1,465, 5%), z = 27.77, or after the incarceration (n = 1,831, 6%), z = 19.23; the proportion who received economic services during the incarceration was less than the proportion who received services after the incarceration, z = -8.30, ps < .001. The reasons behind these findings are not immediately evident, although some youthful offenders told us during their interviews (detailed below) that their families lost benefits once the youthful offenders were no longer in the household. It is possible that other children exit the household upon the incarceration of the family member, causing loss of benefits.

Findings for Question 4—Impact on Academic Performance: We identified 3,428 minor family members of prisoners who had educational testing scores in our administrative data; 2,131 children had one or more scores for exams taken before the incarceration, 949 children had 1 or more scores during the incarceration, and 832 children had one or more scores after the incarceration. The 9,998 total test scores of these children were from exams taken during grades 3 through 8. Chi-square tests indicate that children's math scores were higher before the incarceration than after incarceration, χ^2 (1) = 4.38, p < .05, and higher than scores during incarceration, χ^2 (1) = 10.32, p < .001. The difference between math scores during incarceration and after was nonsignificant, χ^2 (1) = 0.91, p = .339. Similarly, children's reading scores were higher before the incarceration than during

incarceration, χ^2 (1) = 17.24, or after incarceration, χ^2 (1) = 22.59, *p*s < .001. The difference between reading scores during incarceration and after was nonsignificant, χ^2 (1) = .23, p = .629. These findings may indicate that stress of parental incarceration impacts minor children's academic performance negatively, although further research is warranted to further examine these associations.

Products. Products include: 1) raw archived data that may be accessed with specific permissions; 2) an article in *Families in Society* describing the visitor sample (Shapiro & DeHart, in press); and 3) additional scholarly articles describing inferential analyses of our four research questions (Shapiro, DeHart, & Hardin, in preparation).

Strategy 3: Prisoner Focus Groups & Family Interviews

Methods. For prisoner focus groups and family interviews, we recruited via flyers at three institutions, including: 1) one prison for adult males, including those sentenced under the Youthful Offenders Act, with intensive services focused on needs of prisoners 17-25 years old; 2) one maximum security prison for general population females and special-needs females; and 3) one maximum security prison for general population males, special-needs males, and males in sex offender treatment. Prisoner participants included 38 males and 37 females, and family participants included 5 mothers, 1 father, 2 wives, 1 husband, 5 sisters, 6 daughters, and 1 son. Open-ended interviews addressed changes to family relationships, finances, physical and mental health, child behavior, and community supports. Field notes/transcripts were analyzed using MaxQDA software to identify themes.

Findings. Table 8 displays the most common themes discussed by prisoners and their families in the order of frequency mentioned by participants. Subthemes for each themes are also represented in the table, along with examples of each.

THEME	SUBTHEME	EXAMPLE
Family mental health	Family stress	*My mom is stressed out.…She hears my voice and cries.*
	Loneliness & isolation	*Just the loneliness of him not being here.…It's a void.*
	Escalation of substance use	*My mom can't stay sober long enough to visit me.*

	Mental health disorders	*My dad has panic attacks and keeps going to the hospital for those.*
	Children's mental health	*He is not the kind, gentle, little boy I left. He is now a very angry man.*
Family finances	Loss of income from prisoner	*I will eat bread, I can eat rice. If he's okay, I'm okay. But I get no assistance because I am working, going to school.*
	Having a new financial head of household	*People pay your bills and all, that takes away from what they can do. It puts a lot of weight on other people's shoulders.*
	Loss of goods or housing	*My grandma sold land and cattle for my legal fees.*
	Additional costs of incarceration	*Legal fees, phone, visits. They send you money. My dad keeps a stack of the money orders he sends me. He calls it his retirement fund.*
Family communication	Holding back information	*You have to hold back and put up a façade to be strong for one another. I can't talk to my brothers and sisters because they get worried.*
	Conflict with the prisoner	*And if y'all disagree or have a conflict, they can hang up on you and did not answer when you call back. You can't get back in touch with them to make stuff right.*
	Dissolution of relationships	*My wife said, "SCDC got the man that I want, why should I stay?"*
	Decreased quantity of communication	*You can't just waste hours on a conversation or send a text smiley face. You have to pack meaning in.*
	Emotional & physical distance	*I end up parenting over speaker phone. I can't discipline 'em. I'm just a voice over the phone.*
	Improved communication	*Communication is more open because I was keeping stuff from them before.*
Family physical health	Stress-related conditions	*My son has bleeding ulcers, and they say it's probably because he worries about me all the time.*
	Aging & disability	*My grandma, I used to be the one that said, "Grandma take your meds, take your meds." Some days that I haven't been there, and she has had to go to the hospital. She was relying on me.*
	Abuse/neglect of family	*I was the lifeline to stop neglect and abuse.*
	Changes to physical activity or medical care	*I see guys come in here that are in good shape, but they've implemented that controlled movement. You'll get diabetes in here eating the food, nothing but starch.*
Community supports	Support from friends	*I came from a small town, and the whole town—the sheriff and everything—gave me support. The lawyers, the bankers, everyone—because we were from there.*
	Support from churches	*I have a good support group with my church. I mean as far as my preacher's wife and another member, they actually send mail to them and help with their boxes.*
	Government benefits	*My mom can't get [government assistance]. She has too many jobs.*

Table 8. Themes from qualitative analyses. This table displays themes, subthemes, and examples of these. These were identified in qualitative analyses of inmate focus groups and family interviews. Major themes are displayed in order of frequency of mention by participants.

Products. Products include: 1) a scholarly research article in the *Prison Journal* (DeHart, Shapiro, & Clone, in press); 2) a paper presentation at the *American Society of Criminology* conference (DeHart,

Shapiro, & Clone, 2015); and 3) a paper presentation at the *International Congress on Mental Health and the Law* (DeHart, Shapiro, Priester, & Clone, 2015).

Implications for Research, Practice, & Policy

We were able to gain permissions from multiple agencies and develop a strong research infrastructure for use of these integrated data to be used for criminal justice research. The online processing cube has been built and may be accessed free of charge once the user is authorized, and the raw archived data files contain assigned unique identifiers to facilitate linking by researchers who wish to explore specific research questions. This has enormous potential for research on a range of complex social issues involving offenders and their family members.

Our quantitative analyses indicate that families of prisoners are most likely to experience stress-related physical health disorders of the heart, lungs, digestive, and endocrine systems prior to and during the incarceration of their loved one. Similarly, mental health diagnoses for these family members were highest during the incarceration. These findings merit further exploration, including replication as well as direct inquiry into causes and levels of stress before, during, and after a loved one's incarceration, as well as contributors to physical and mental disorders during these times.

Quantitative analyses indicated that risk for foster placement among children of prisoners is decreased during the incarcerative period, which may be due to alternative living arrangements or other reasons; further research is merited to examine this finding. Children's risk of involvement in the juvenile justice system increased over time from before the parent's incarceration to after, but it is difficult to tease incarcerative effects (e.g., due to stress) from those of maturation in these data. Regarding children's educational performance, minor family members' math and reading scores were higher before incarceration than during incarceration; while this may indicate stress of parental incarceration negatively impacts school performance, additional research is needed to demonstrate replicability and to explore underlying dynamics. Data on economic social services indicate that

families experienced a drop in use of economic services during incarceration (and possibly after incarceration); reasons for loss of benefits also warrant further exploration.

Our qualitative data attest to the variety of ways in which incarceration affects prisoners and their families, underscoring that incarceration is not simply a criminal justice or correctional issue. The impacts of incarceration are spread across communities in areas including health, mental health, education, and family services. To effectively address impacts in these areas, we must break down service silos to develop networked interventions. Doing so requires that agencies begin to collect data in systematic ways that allow us to uncover impacts of incarceration on families throughout various service systems, identify gaps and duplication in services, and explore coordinated approaches to ameliorating incarceration's impact.

Appendices

Peer-Reviewed Publications

DeHart, D., & Shapiro, C. (2016). Integrated administrative data & criminal justice research. *American Journal of Criminal Justice.* DOI: 10.1007/s12103-016-9355-5.

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Presentations

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Brief & Webinar

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Integrated Administrative Data & Criminal Justice Research

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Abstract Using integrated administrative data from criminal justice and social service systems can harness information in meaningful ways that transcend traditional "silos" and allow communities to focus collective attention on important social issues that cross systemic boundaries. Despite recent advances in use of integrated administrative data, practical information to promote adoption by new users is lacking. Here we provide an introduction to potential uses of integrated administrative data for criminal justice researchers, including general benefits of using integrated data as well as implications for innovative research design. We describe a case example of data integration through a state data warehouse for a federally funded project on impact of incarceration on families. The project utilizes data from eight agencies (corrections, juvenile justice, mental health, substance use, social services, health, education, and environmental control) and includes development of an Online Analytical Processing cube. We draw from lessons learned to provide specific recommendations for developing researcher-practitioner partnerships that use integrated administrative data to improve translational criminal justice research and evidence-based practice and policy.

Keywords Administrative data · Archival data · Big data · Data linkage · Data warehouse · Impact of incarceration

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Introduction

Criminal justice practitioners and policymakers are increasingly using integrated administrative data (IAD) to enhance everyday decision-making and improve justice policy. Parsons & Sandwick (2012), for instance, describe integrating data on arrests, court and pretrial services, corrections, probation and parole, and mental health for arrestees in the District of Columbia; the hope is that integrated data may help to determine ways that client criminal history and psychiatric markers of need might be used to inform and improve delivery of mental health services to people involved in the criminal justice system. Accordingly, archival integrated data systems are also rapidly gaining attention among both researchers and the practice/policy community–not only in criminal justice, but also in fields such as human services and public health (Bradley, Penberthy, Devers & Holden, 2010; Brownell & Jutte, 2013; Stewart, Dennison, Allard, Thompson, Broidy & Chrzanowski, 2015). As testament to the broad appeal of IAD, the White House administration, in its 2016 Fiscal Year Budget and Analytical Perspectives, committed to "making better use of already collected data within government agencies" as part of a broader strategy that included promotion of high-quality and low-cost evaluations, rapid and iterative experimentation, and building agencies' evaluation capacity. The White House report describes use of administrative data as an important next step in an "evidence agenda" (p. 65). Integrating administrative data from across public and private agencies provides a vehicle through which leaders at the local, state, and federal levels share access to common data elements to inform practice, policy, and research. That is, combining data from multiple service systems can harness information in meaningful ways that transcend service silos and allow community members to focus collective attention on important issues across systemic boundaries. Despite recent advances in use of IAD, practical information to promote adoption by new users is lacking. In this paper, we provide an introduction to IAD's potential uses, and gear our discussion specifically to researchers addressing criminal justice issues. We review IAD's benefits and challenges, describe a case example of data integration and its use for a federally funded project on incarceration, and provide practical guidance for developing researcher-practitioner partnerships to use IAD to improve criminal justice research, practice, and policy.

What Is Integrated Administrative Data

Duran, Wilson & Carroll (2005) define administrative data as "data collected by state agencies and primarily used for record-keeping and case management; monitoring and evaluating program performance; and ensuring agency accountability" (p. 7). Integration of such data involves merging data from different sources into a single data source software platform. Integrating administrative data at the client level (e.g., for someone being held in the county jail) involves merging records from two or more administrative systems (e.g., jail records, law enforcement records, mental health records) for the same individual(s). At times, this is done by individual researchers in collaboration with one specific agency; however, the process may take place on a grander scale using a centralized "linkage center."

As described by Brownell & Jutte (2013), a linkage center may receive data files from multiple agency partners, such as child protective services or health care

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providers, with these files containing only identifying information for clients (e.g., name, date of birth). This data is used to identify those individuals for whom data exists in multiple agencies across service systems, and a unique personal identifier is then assigned to these individuals. This unique personal identifier can then be sent back to each agency so that they may use it instead of publicly and personally identifiable information as they share actual program data with researchers. Files from different agencies may then be linked to one another using the unique assigned identifier. Through this process, neither the linkage center nor the researchers ever possess both the publicly identifiable information and the program data; rather, possession of both remains with the program agencies–effectively de-identifying the data for researcher use and enhancing confidentiality beyond what is routinely encountered in investigator-initiated research (Brownell & Jutte, 2013; Roos, Menec & Currie, 2004).

Integrated Administrative Data in Research on Justice Systems & Services

Use of IAD for research on criminal justice systems and services has numerous practice-and-policy-relevant benefits for evaluators, agency partners, and persons served. Relative to traditional research and evaluation designs, IAD may offer cost savings, in that administrative data already exists for programmatic purposes and can be a tool for measurement of service provision, examining policies, and conducting program-related research or reporting across agencies. IAD can mutually engage practitioners, policymakers, and researchers to foster a "culture" of research (Duran et al., 2005; Lyon, Gyateng, Pritchard, Vaze, Vickers & Webb, 2015), facilitating formative evaluation for refinement of service delivery patterns as well as integration of new data collection into program designs. To facilitate coordination across agencies, IAD can be used to identify the extent to which clients are served by multiple agencies, determine whether referrals are taking place, identify gaps and duplication in services, identify barriers to service access, examine whether outcomes are associated with service provision, examine geographic patterns of service provision, and provide a profile of populations served (Duran et al., 2005; Reidy, George & Lee, 1998). Examining patterns of service utilization across systems can help identify any "ripple effects" that occur when service use for one agency may impact access or outcomes for another agency (e.g., drug treatment influencing use of mental health services; Evans, Grella, Murphys & Hser, 2010). Cross-system patterns may also elucidate system-wide impacts of major policy changes, including intended and unintended consequences (Evans et al., 2010).

In addition to informing efficiency and coordination of programs, IAD can also assist in converging attention around holistic needs of clients. Individuals and families coming into contact with juvenile or adult criminal justice systems often have a history of multi-agency involvement. Furthermore, Jonson-Reid & Barth (2000) note that at-risk populations often face more than one type of risk (e.g., abuse, teen pregnancy, poverty); these authors and others (e.g., Duran et al., 2005) emphasize that it is unlikely that a single service system can effectively serve multi-problem families living in troubled communities. Thus, research that can span multiple systems is very useful for developing client-centered practice and policy.

An excellent illustration of the practice and policy relevance of data sharing derives from the Justice and Health Connect website developed by the VERA Institute of Justice (Parsons, Cloud & Sideman, 2016). While the website focuses on real-time data

sharing between justice and health agencies (e.g., Health Information Exchanges, Cloud-Based Technologies), many of the cited benefits of such data sharing generalize to integration of archival administrative data. This may particularly be the case when agencies come together to plan strategically around analysis, interpretation, and application of findings from integrated administrative data. As noted on the website, benefits in the justice/health realm might include improved communication between corrections and community-based providers, leading to greater continuity of care around mental health and health issues during transitions across jails, prisons, and communities. Benefits may also extend to prevention and diversion efforts to address severe and persistent mental illness and substance abuse. Greater coordination among social service providers and the criminal justice system can facilitate policymaking to ensure better access to alcohol and drug treatment, job training and education, healthcare for chronic conditions, and other needs. Among other benefits, increased access to appropriate services by individuals involved in criminal justice systems could in turn impact recidivism, mortality, public safety, and healthcare costs.

Another example of practice and policy-relevant IAD research comes from the United Kingdom. The Justice Data Lab (JDL) was established to allow researchers to use secure, integrated administrative data to provide service agencies with evaluation and statistical data to understand impact of agency interventions relative to outcomes for matched comparison groups (Lyon et al., 2015). Specifically, the JDL was developed to address the difficulty agencies had in accessing re-offending data from local and national sources, as data was often piecemeal across jurisdictions, and agencies were limited in their ability to access high-quality information to demonstrate program impact to funders or to use data for formative refinement of services. The JDL is intended as a service to smaller organizations that lack resources to collect and process outcome data. Consistent with this focus on smaller organizations, as of 2014, the JDL had provided over a hundred separate analyses to charities, social enterprises, and public or private organizations, with specific emphasis on analyses of re-offending among service program recipients. Lyon & associates (2015) describe the JDL as a low-cost and robust way to inform policy and practice.

Drawing from research in the field of health services, one can readily see parallels in how IAD could be cultivated for other types of practice and policy-relevant research on crime and the justice system. Horner & Cullen (2015) noted numerous ways in which administrative data can help further our understanding of a range of phenomena in order to develop health policy. For instance, administrative data can be used to examine health trajectories, how chronic diseases evolve, and how work-life characteristics (e.g., employment, income, type of insurance coverage) affect health–all issues of concern to healthcare "payers" (i.e., employers, government). Similarly, IAD can be used to examine criminal trajectories and evolution of criminal careers, as well as to examine how these and other life factors impact recidivism and costs of crime to communities. Most recently, Allard, Chrzanowski & Stewart (2015) utilized linked administrative data from a 1990 birth cohort of the Queensland Longitudinal Database to examine offending trajectories and associated criminal justice costs (e.g., for police response, court processing) of 14,171 individuals with 71,413 documented criminal offenses. These authors found that chronic offenders cost about twenty times more than their low-offending peers, consuming a higher proportion of overall systemic costs. The findings of disproportionate costs of chronic-trajectory offenders are consistent with

earlier longitudinal research utilizing another birth cohort in the Queensland data (Allard, Stewart, Smith, Dennison, Chrzanowski & Thompson, 2014), as well as research using the Cambridge Study in Delinquent Development (Piquero, Jennings, & Farrington, 2011) and the Second Philadelphia Birth Cohort (Cohen, Piquero and Jennings, 2010). The most recent exploration (Allard et al., 2015), however, also delved into geographic location and community disadvantage as additional variables; thereby, the authors were able to expand scientific understanding by demonstrating that chronic and costly offenders were disproportionately concentrated in disadvantaged communities. This heightened practical importance of the research for targeting interventions not only toward chronic offenders, but also toward specific geographic locations.

Integrated Administrative Data in Innovative Research Design

Beyond benefits of IAD to research on justice and service systems, use of IAD allows for a number of innovations that can enhance research design. Foremost, in assuring that research incorporates sound theoretical framing, Putnam-Hornstein, Needell & Rhodes (2013) note that integration of administrative data can overcome barriers of single-agency data in development of theory. As an example, they describe child protection data, in isolation, as addressing a narrow range of questions and focus on pathology rather than strengths or protective factors. By integrating data across agencies, researchers may develop causal understanding of individual, group, and environmental dynamics relating to maltreatment.

For studies involving collection of survey or interview data, matched administrative data on these clients or on services utilized can strengthen study designs by providing more complete information on study participants, lessening response burden on participants, or by serving as a source of triangulated data for self-reported key events in an individual's life (Evans et al., 2010; Glasson & Hussain, 2008; Sakshaug, Couper, Ofstedal and Weir, 2012). Reidy et al. (1998) note that social desirability bias may influence self-reporting, or that people may have trouble recalling detailed information such as benefit amounts or dates of services utilized; both problems may be ameliorated by administrative data. Indeed, Hser and Evans (2008) compared self-reports to administrative data on motor vehicle incidents, criminal history, and mental health service utilization. They found that the administrative data provided similar information on outcomes such as presence/absence of service use and arrest, and more accurate information on outcomes regarding frequency of service use and arrests.

Brownell & Jutte (2013) note that administrative data can be a powerful, population-wide tool for examining risk and protective factors for a range of outcomes (see also Horner & Cullen, 2015; Putnam-Hornstein et al., 2013), with large and unbiased samples, objective measures, comprehensive long-term follow-up, ongoing data collection, and relatively low expense. This not only facilitates longitudinal designs that circumvent some typical problems of non-random attrition of research participants, but also allows examination of rare events that are sometimes difficult to investigate when underpowered studies lack sufficient exposure to the events in question (Brownell & Jutte, 2013; Reidy et al., 1998). Jonson-Reid and Barth (2000), for instance, described the difficulty for researchers to study sufficient numbers of children for rare subpopulations and critical events. For their own study of outcomes involving the intersection of child welfare involvement and juvenile justice involvement, they were able to utilize

administrative data on 159,549 youth reported as victims of abuse or neglect, 8 per 1000 of whom were later incarcerated in the juvenile system. They noted that their ability to examine multivariate patterns was contingent upon the large sample size made possible through administrative data. Because data collection is ongoing, researchers may be able to collect new and/or follow-up data, permitting examination of new life periods, new constructs, and comparison of findings across cohorts (Stewart et al., 2015). Beyond studying rare events, IAD can also be beneficial for studying small subsets of the population, as in Broidy & associates' (2015) study that included modeling of offending trajectories of Indigenous Australians.

Administrative data allows for research with large samples, and the variety of variables available for analyses can assist in strategic selection of quasi-experimental control groups (e.g., through propensity score matching; Glasson & Hussain, 2008) and methodologically adjusting for group differences with covariates (e.g., demographics, service utilization, employment, benefits), or exploring complex interaction effects for differential impacts of phenomena under study (Evans et al., 2010). Because administrative data most often includes data that is both longitudinal and spans multiple cohorts, it can be useful for teasing out "history effects" of events, including for conducting interrupted time series analyses to compare outcomes before and after a temporally defined event (Evans et al., 2010). Finally, the range of variables addressed by administrative data allows selection of constructs that may be used in the most innovative techniques for causal modeling, such as instrumental variables regression. This approach helps approximate causal effects of one variable (x) on another (y) by utilizing a third variable (the instrument) that is related to y only indirectly via effects on x. For instance, Doyle (2007) used placement tendency of child protection investigators as an instrumental variable in order to examine effects of foster care on delinquency and other outcomes for youth. For marginal cases, in which there is disagreement among investigators regarding whether a child should be removed from the home, some investigators are more likely to remove a child than other investigators, but assignment to these investigators is essentially random given the rotational basis for case assignment. By examining outcomes (e.g., delinquency) for such marginal cases relative to placement tendency of case investigators (e.g., those investigators with high removal rates versus low), one can make inferences about causal effects of removal from the home. Doyle's findings suggest that children on the margin of placement had better outcomes when they were assigned to investigators with low removal rates rather than those with high removal rates, suggesting better outcomes if children remain at home versus if they are placed in foster care. Instrumental variables regression is a statistical technique that may be used with integrated administrative data to examine phenomena that do not lend well to traditional randomization.

Challenges in Using Integrated Administrative Data

One challenge of using IAD stems from the very nature of the data. The White House (2016) has described administrative data as that used for a wide range of purposes such as reimbursing providers, determining benefits eligibility, and ensuring compliance with regulations. This is distinguished from use of administrative data for statistical purposes (e.g., research re-use of archived data), which excludes uses that affect the rights, benefits, or privileges of individuals. Thus, administrative data is collected for

day-to-day program operations rather than for research purposes (Parsons & Sandwick, 2012; Putnam-Hornstein et al., 2013), and researchers are typically not involved in determining what constructs and operationalizations will be most useful for agencies to collect (Brownell & Jutte, 2013). Accordingly, Stewart & associates (2015) note that administrative data is "a blunt measure for most theoretical constructs of interest" (p. 414). Data may not precisely capture constructs under study, so researchers may need to use proxy variables or refine research questions based on data that is available (Glasson & Hussain, 2008). Data sets also often lack information on important covariates (Brownell & Jutte, 2013) and information necessary for understanding how policies or programs affect different groups within the population (White House, 2016), such as client-level socioeconomic status. Finally, IAD has potential to produce such large and complex datasets that researchers may need to focus on narrower models or selected hypotheses (Glasson & Hussain, 2008).

A second major challenge of IAD is the potential for unlinked or missing data (Glasson & Hussain, 2008). Administrative data only includes those individuals and events that have come to the "official" attention of agencies (Brownell & Jutte, 2013); thus, those not eligible or not participating in programs–often the most relevant comparison groups for a study–may be missing from the data (White House, 2016). Evans et al. (2010) note that absence of a matched record is sometimes interpreted as non-occurrence of an event (e.g., no arrest record means no criminal history); yet, numerous other reasons could exist, such as insufficient data for matching. Another potential source of such absent records may include migration of an individual into or out of the jurisdiction in question. For example, if the arrest occurred prior to moving to the state represented in the data, or if the individual moved out of range in one of the years represented in the data, then some relevant administrative data may not be available (Glasson & Hussain, 2008; Stewart et al., 2015). This is more likely to be a problem using state data sets rather than national data (Glasson & Hussain, 2008). There also may be left censoring of available electronic data because agencies used paper-based systems until recently (Stewart et al., 2015); thus, data prior to the establishment of electronic records is not included in many databases.

Integration of the data presents additional challenges. The data is often widely disbursed in their respective agency "silos," requiring researchers to piece together information from different agencies to gather a more comprehensive perspective on any given phenomenon that crosses disciplinary boundaries. The quality of codebooks and data definitions is likely to vary across agencies, with some data being poorly coded or vaguely defined (Glasson & Hussain, 2008). Obtaining each agency's data typically requires additional permissions (e.g., ethics boards, regulatory authorities, funders), trust-building with new agency partners, and complex processes of linkage of data across service agencies (e.g., establishing unique identifiers and linkage algorithms). These processes often take months or years to accomplish (e.g., Bradley et al., 2010), causing delays in acquisition of data that disallow timely analyses.

In some cases, state or federal laws may prohibit data sharing or even re-using data for statistical purposes; however, a recent federal Office of Management and Budget memo creates a "presumption in favor of openness" so that agencies can develop systems of data management for statistical use of administrative data (White House, 2016, p. 68). The FY2016 budget report from the White House states that, consistent with the administration's "Open Data Initiative," government-funded data should be

available for public purposes under strong privacy, confidentiality, and data security protections. These purposes include use by public agencies and outside researchers to answer policy-relevant questions.

Beyond sheer logistics of accessing and integrating data, agency reticence to provide permission for data use is another challenge of using IAD. Reidy et al. (1998) note that wariness is understandable given agencies' functions serving sensitive public responsibilities under great scrutiny and with scarce resources. Hser & Evans (2008) identified major concerns expressed by agencies regarding data sharing, including confidentiality and workload. Reidy et al. (1998) point out that, while confidentiality agreements typically address issues such as reporting data in aggregate versus at the individual level, agencies must also be concerned about the potential for deductive disclosure of client identities (information about individuals that can be inferred from published reports based on the sample in which the individual is included). Agencies may also be concerned that findings of research will portray the agency in a negative way, with potential damage to agency reputation and credibility to funders. As we will describe, these concerns may be alleviated by providing agencies with voice throughout the research process as well as by providing basic assurances around review of written reports.

Involvement of agency stakeholders may also help to address a final concern of working with IAD–interpretability of data and dissemination of results to a wide range of users. Fully utilizing integrated administrative data requires expertise in numerous areas. Foremost, understanding the sources of data, the variable names, completeness of data, and data limitations requires facile knowledge most often possessed by those working directly within the agency (Bradley et al., 2010; Stewart et al., 2015). Further, a strong degree of competence in data cleaning and statistical analyses is required to ensure that data is manipulated and analyzed in ways consistent with statistical assumptions. Finally, valid interpretation of findings and translation of research findings to evidence-based practice and policy may be ideally accomplished by multidisciplinary teams (Bradley et al., 2010). Lyon & associates (2015) note that such teams require not only the skills to analyze the data, but also those to present it in a way that is interpretable to non-statisticians, including agency staff.

Case Example: the Impact of Incarceration Project

To provide a more tangible example of the benefits and challenges of IAD, here we describe a case example from our own research funded by the United States Department of Justice, National Institute of Justice. The Impact of Incarceration (IOI) project utilizes IAD to address the complex social problem of incarceration's impact on families and communities. Specifically, correctional systems in the U.S. and abroad often fail to acknowledge impacts of incarceration on families and communities, and correctional institutions rarely collect systematic data about the families of prisoners (Robertson, 2007). Yet, incarceration has potential to disrupt parent-child relationships, alter familial support networks, and increase burdens on governmental systems such as schools, juvenile justice, mental health, and social services. Federal and private funders have been encouraging research that will increase understanding of incarceration's impact. We developed a study using integrated administrative data from multiple agencies to increase scientific understanding regarding the impact of incarceration on

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families, how this impact is spread across community systems, and the implications for breaking down service silos to develop networked interventions across multiple public and private agencies. The project addresses a critical gap in knowledge (Robertson, 2007; Travis, McBride and Solomon, 2005) and will inform policies and practices to support families and provide more amenable contexts for reentry, with benefits for individuals, families, and communities.

Our project was greatly facilitated because much of the groundwork for data integration was established; South Carolina has a state-operated warehouse dedicated to integrating administrative data. Duran et al. (2005) define a data warehouse as a central repository for data integration, with data routinely updated by multiple agencies so that the warehouse may generate data extracts per specifications of end-users. In SC, the state Revenue and Fiscal Affairs Office is the neutral entity that gathers and maintains demographic, economic, redistricting, financial, geodetic, health, and other data, as well as provides independent analysis of this data. The purpose of these activities is to inform state and local officials on issues pertaining to public policy, fiscal stability, and effective administration of programs. Within this office, the South Carolina Data Warehouse (SCDW) was established as a central setting to house data and link client-level data across multiple service agencies.

SCDW began the process of housing and linking data with a limited number of agencies, private providers, and non-profit organizations. SCDW grew in scope as recognition of the potential for the data to address disparities in health, education, law enforcement, and social services increased. Accordingly, a series of statutes and agreements were developed for organizations to entrust their data systems to SCDW while retaining control of their own data at all times. SCDW staff emphasize that the integrated system was built for everyone, with goals of enhancing understanding of the interconnectedness of multiple problems that face families, and of strengthening the ability of researchers, practitioners, policymakers, and educators to address these problems. The SCDW was built on the philosophy that, "It is the entire human experience that influences health and social well-being and should therefore be captured in an integrated data system," (RFA, 2013). Using algorithms and combined personal identifiers, SCDW established unique identifiers that enabled statistical staff to link data across providers, and procedures were put in place for data requests to be approved by all participating agencies as well as a statewide data oversight board (as defined in SC Code of Laws, Section 44–6-170). Data specialists at SCDW are accustomed to working with researchers and lend technical support throughout the process, including collaborating with researchers to refine ideas, gaining permissions from agencies for data access, and structuring user-friendly analytic "cubes" for queries and visualization of integrated data. Requestors are responsible for costs to cover staff time and computer usage, and requestors are advised to build time and resources into proposals for implementation. SCDW now taps public and private data systems including those for legal and safety services, social services, physical and mental health services, claims systems, education, and registries, among others. While some other states are developing integrated data from a handful of public agencies, SCDW is unparalleled in the quality, duration, and comprehensiveness of data available. Currently, integrated data exists in 28 areas with "very good" complete data back to 2000.

We partnered with the SCDW, the Department of Corrections, and other key agencies to harness this IAD to better understand impacts of incarceration. Because

the Department of Corrections already has data including identifiers for all visitors (i.e., for security clearance), we were able to utilize this as a basis for creating a convenience sample of inmate family members and developing an integrated multi-agency data profile for these individuals in conjunction with inmate data. Our sampling strategy focused on three consecutive years (2006–2008) for all prisons statewide, sampling any inmate who served time during this period as well as any person who visited these inmates. This timeframe allowed multiple years of data prior to that time (pre-2006) as well as multiple years after that time (post-2008) in which to explore patterns of systemic contact before, during, and (as applicable) after incarceration; we sampled multi-agency data for each inmate and his/her visitors for the three years before and three years after his/her incarceration, as applicable in our 1996–2012 integrated data. This was accomplished on a "rolling" basis. For example, if we want to look at family service access three years prior to incarceration, the data pulled for an offender who entered prison in 2006 will go back to 2003, but the data for an offender who entered prison in 2007 will go back to 2004. Similarly, for an offender who exited prison in 2007, data captured would extend to 2010.

We understood that data on those persons who visit versus those who do not visit inmates presents a selection bias in studying impact of incarceration on families; however, this strategy offered advantages over alternative methodologies and set a sound base for preliminary IAD research on impact of incarceration. Based on Mumola's (2000) findings on visitation from children, at least half of all inmates received at least one visit. Correctional departments do not routinely collect identifying information on children and extended family of all inmates, particularly information at a level sufficient for file matching within integrated multiagency datasets. Further, distributing surveys to collect such information (e.g., full names, birthdates, social security numbers) on children and other relatives would likely yield incomplete and erroneous information as well as arouse distrust among potential study participants. Instead, we chose to use existing data collected for visitation purposes, allowing a window into the varied types of family and non-family relationships that are most central in the lives of inmates, and presenting us with complete data necessary for multiagency file integration for different family members (not just children).

In order to keep our project manageable, we selected a small set of four research questions:

1. How does offender incarceration impact family members' physical and mental health? (e.g., stress-related diseases, mental health diagnoses)
2. How does offender incarceration impact their children's involvement with the child welfare and juvenile justice systems? (e.g., out-of-home placements, juvenile incarceration)
3. How does offender incarceration impact the economic status of family members? (e.g., economic benefits such as TANF)
4. How does offender incarceration impact the academic performance of children? (e.g., repeat grades, educational testing scores)

Beyond the SCDW and the Department of Corrections, we developed partnerships with the following agencies, providing honoraria for agency efforts and convening agency representatives on a project advisory board: Department of Juvenile Justice,

Department of Mental Health, Department of Alcohol and Other Drug Abuse, Department of Social Services, Department of Health and Human Services, Department of Education, and Department of Health and Environmental Control. We completed separate data applications for each agency, noting the rationale for our study, agreeing to agency-specific data-sharing conditions, and specifying variables needed for our analyses. This agency data allows for conceptualizations including binary use of services (yes/no), number of visits, type of services rendered, service outcomes (e.g., diagnoses, educational testing scores), and (when available) service costs. Corrections data provides the ability to conceptualize family members' service/justice contacts in terms of standardized timeframe before, during, and after incarceration of the focal inmate, and to compare various constructs across timeframes, services systems, and types of familial relationships. Corresponding manuscripts are in development for publication in academic journals.

To render examination of this rich data more accessible to other researchers and our agency partners, our contract with SCDW also included development of an Online Analytical Processing (OLAP) data cube. OLAP cubes are specially designed databases developed for efficiency in data-visualization and retrieval. They allow users to query all data contained within an integrated, multi-agency database—millions of records—nearly instantaneously just by pointing and clicking a mouse. They are based on predefined variables, and anticipated queries are pre-aggregated for quickest retrieval; thus, while regular relational databases treat all fields in the database similarly, OLAP cubes pre-define specific dependent and independent variables that can be easily manipulated for data exploration. Cube terminology specifies "measures," dependent variables that can be counted, summarized, or aggregated; these serve as numbers that populate a table or graph. Examples include frequency of contacts with the mental health system, number of inpatient admissions to health facilities, costs of services, or scores on educational tests. "Slicers" are independent variables or dimensions by which measures are summarized; these become the column/row headings of data tables or the axes and legend units of graphs. Examples of slicers include age group, race, gender, family structure (e.g., two-parent, single-parent, foster/kinship care), crime type (e.g., violent offense, drug offense, sex offense), and incarceration status (e.g., pre-incarceration, incarceration, post-release). The latter slicer (incarceration status) allows our research team and future users to easily explore impacts of incarceration for the inmate and his/her family members via queries based on real-life circumstances. OLAP cubes are extraordinary tools for developing a thorough understanding of the service-use patterns of these different populations. Figure 1 provides sample screenshots of our IOI data cube. We plan to archive all raw data so that future researchers may request its use (with agency permissions) to examine questions relevant to their own research, and we are working to develop a basic version of the IOI cube to be accessible for open-access to the field.

Discussion & Recommendations for Using Integrated Administrative Data

Despite the strong foundation for our research in South Carolina's data warehouse, we still encountered challenges, worked with partners to develop solutions, and learned valuable lessons from our experiences. Although considerations for using IAD will

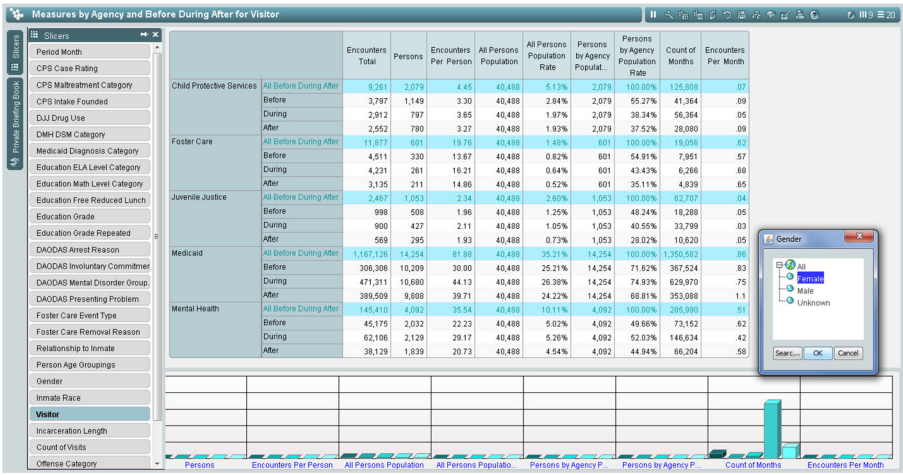

Fig. 1 Screen Shot of IOI Data Cube. The cube displays tables that can be easily manipulated to show inmate and family member encounters with services systems before, during, and after the focal inmates' incarceration (e.g., child protective services, foster care, juvenile justice, Medicaid, mental health). The cube also can display data in the form of graphs for easy visualization of potential effects, and has 'slicers' (along the sidebar) that can be used to select particular cases for tabular display (e.g., female visitors)

vary depending on level of data integration in any given researcher's locale, we distilled a series of recommendations that may facilitate effective researcher-practitioner partnerships for using IAD. Specific recommendations are presented in Table 1 and will be discussed in terms of securing buy-in from stakeholders, logistics of data linkage and access, research design, and data management.

Securing Buy-in from Stakeholders for Data Integration

As researchers approach the idea of using IAD in their work, essential first steps include identifying stakeholders and gaining buy-in from these individuals. Stakeholders may come from a variety of professional and political backgrounds and may represent academic institutions and research organizations, government and community-based agencies, legislators or community leaders, and individuals or entities whose data is represented in the IAD. At the most essential level, partners in the research endeavor should include representatives from those agencies that will provide administrative data for integration, including support from agency leadership, as well as input from frontline staff, data managers, and information-technology staff (Duran et al., 2005).

Building these relationships often begins by approaching agency staff to discuss potential research collaboration, but researchers are cautioned to cultivate such relationships thoughtfully. For instance, we often begin by attending open-interagency meetings (e.g., community boards, task forces, coalitions, coordinating committees), familiarizing ourselves with key concerns of different stakeholders, and establishing our presence, commitment, and credibility to help address these concerns. Providing information and resources (e.g., on the research evidence base) and donating efforts (e.g., providing brief trainings, assisting with small evaluations, serving on working groups) can help researchers develop rapport and earn trust with key players in the professional or lay community.

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Table 1 Recommendations for Using Integrated Administrative Data

1. Identify stakeholders including those from academic institutions and research organizations, government and community-based agencies, legislators and community leaders, and individuals whose data is represented in administrative data.
2. Establish rapport and trust with stakeholders by familiarizing yourself with their key concerns and offering information and resources.
3. Meet with agency representatives to discuss how IAD can support mutual goals, and commit to integrate agency information needs into the research design.
4. Secure a commitment to collaboration from agency leadership, and offer the agency voice throughout the process on a project advisory board and with opportunities for review of written reports.
5. Assess agency preparedness for data sharing with consideration of data infrastructure at each partner agency.
6. Use data flow modeling and develop a strategic plan for data transfer and archiving, restricting identifiable information to only those staff with a need to know.
7. If possible, utilize a single application that addresses project information needed by all partner agencies, supplementing this as needed with agency-specific appendices and a streamlined process for approving amendments to approved applications.
8. Review available data and catalogue data limitations, comparability of data across agencies, variable definitions, value codes, and if possible, effective dates for variables and counts of missing values.
9. Inventory information needs of agency partners as well as essential constructs for the research project to ensure that these are represented in the design, focusing on key variables and a well-defined sample.
10. Consider existing models of individual consent as well as ethical statements for human subject's review of research.
11. Establish file-naming conventions and criteria for documenting sampling frames for each data set transferred.
12. Check the data to ensure that the sampling frame and included variables include information required for analyses, and clean/transform data as needed prior to analyses.
13. Be strategic and selective in determining what variables to include as data files are merged, focusing on a few key analyses within each set of merged files.
14. Keep agency partners informed and involved throughout the project, including interagency advisory board meetings as well as agency-specific debriefings and strategic planning meetings.
15. Encourage agency partners to consider allowing data archiving as well as public data dictionaries to promote future use of administrative data by researchers.

Researchers might schedule appointments with key stakeholders to meet to discuss how IAD can support mutual goals. During this process, researchers should attempt to minimize the burden of collaboration on the agency partners (e.g., meet at their offices or buy them lunch, provide at-a-glance handouts of key discussion points), articulate how they will benefit from data sharing (e.g., improved ability to track outcomes across programs), and discuss how their agency information needs can be integrated into the research design (Duran et al., 2005).

Securing a formal commitment from agency leadership for data access can be challenging, so researchers should be prepared to demonstrate ways that the agency will have a voice in the research process. We typically provide assurances that any project, if funded, will include a project advisory board with agency representation. The advisory board plays a valuable role during project planning (e.g., input on sampling, research questions, data security), implementation (e.g., helping to address barriers, raising community awareness of the project), and dissemination (e.g., helping define format for reports, policy recommendations, media coverage). The advisory board can

also help cultivate project "champions" and become a forum for showcasing success stories of data integration that help build project support (Duran et al., 2005). We also provide honoraria for agencies (i.e., a few thousand dollars) to help compensate for staff time attending meetings, assisting with data specification and interpretation, and conducting necessary transfers of data. Finally, for sensitive data, we sometimes include language in our contracts or memoranda of agreement that allow the agency a period of review and input on any written report utilizing their administrative data. It should be noted that this period is time-limited (typically a month is provided for review of manuscripts and two weeks for presentations) and that we value *input* but do not specifically provide agencies with the ability to *approve* reports. That is, as a product generated through federal funding to an academic institution, our research findings must be reasonably available for publication and presentation.

Logistics of Administrative Data Linkage & Access

Once key stakeholders are committed to data integration, logistics of data linkage will need to be developed–or clarified for all partners if linkage processes are already established. Much of this effort will necessarily come under the purview of partner agencies, and particularly their information-technology staff. To reiterate, integrated administrative data does not necessitate a single storage location; rather, data sources can remain decentralized but share standardized data structures, formats, and coding schemes, then be integrated as needed under institutional agreements for sharing, analysis, and joint planning. Keeping data in disaggregated formats is essential for statistical analyses, while common structures, codes, and formats allow aggregation when necessary (Hua & Herstein, 2003). In some locales, data warehouses may serve as a central "hub" or custodian for gathering, linking, de-identifying, storing, and distributing linked data; such a structure can help streamline the process for implementing data requests and may serve to link data at a broader level with other such agencies on a national or regional basis (Bradley et al., 2010; Glasson & Hussain, 2008). Such data warehouses may include dedicated leadership staff, project managers, and technical staff. In addition, committees of staff from partner agencies can be used to help achieve duties.

In locales that do not have dedicated data linkage facilities, researchers may need to work directly with individual agencies for linkage. The process of data transfer may be clarified through modeling (i.e., process mapping) of inputs, outputs, and data flow across agencies, as well as a strategic plan for data transfer and archiving (e.g., automated/manual, full/partial, frequency), as applicable (Duran et al., 2005). Data transfer often occurs through secure file transfer protocols (FTPs). This helps to carefully maintain security of data including attention to using "the 4 As″ of data security to ensure that individual user identities are *authenticated* (e.g., through password access), *authorized* for specific levels of access, *accounts* are user-specific and managed over time (e.g., removal when access is no longer granted), and that access can be *audited* through logs of what applications users have accessed (Ping Identity, 2016). A common mechanism for actually determining which client records to match is using probabilistic linkage, a method covered extensively elsewhere (e.g., Reidy et al., 1998) and which calculates the likelihood that two records belong to the same person based on a combination of individual identifiers (e.g., Social Security Numbers,

medical record numbers, names, birth dates, race, ZIP codes; Bradley et al., 2010). Duran et al. (2005) have developed excellent measures of agency readiness for data sharing initiatives (i.e., the *Data Research and Infrastructure Assessment Checklist*), which may be especially useful for self-assessment as researchers and agency partners consider taking on IAD projects.

Under its "Open Data Initiative," the White House (2016) encourages strong data management processes with data access limited only to those staff with a need to know for approved projects, minimizing direct access to personally identifiable information. Yet, many agencies lack formal processes for application, review, and approval of requests to access administrative data. Others (Hser & Evans, 2008; Stewart et al., 2015) have noted that even when processes exist, these tend to differ across agencies, as do rules, regulations, and security procedures. Accordingly, integration of multi-agency data can be a time-consuming and labor-intensive process. Hser and Evans (2008) note that time from initial request to receipt of data averaged one to two years, and the process was facilitated by prior experiences with the agencies, research findings that addressed agency aims and mission, and agency knowledge of the researchers' partnerships with other agencies.

In our own experience with SCDW, different agencies had adopted highly similar applications for data access, but there were still separate applications for each agency to accommodate slight variations in information needed to approve requests. This created an added burden throughout the research process, as slight changes to data requests required completing all of these separate applications and resubmitting each for approval every time a change was needed. For instance, we discovered that inmate visitor identifiers were only captured in Department of Corrections data within a certain timeframe. We thereby changed our sampling timeframe to correspond (e.g., moving the sampling frame from 2004 to 2006 to 2006–2008), necessitating reapplication/reapproval for the seven other agencies from which we were requesting data.

A preferable (and recommended) process would be the development of a single application that would be acceptable to all participating agencies, with agency-specific appendices for any additional information that may be needed by a subset of partner agencies. The core application would include pertinent information such as names of principal investigators, funding sources for the project, a project title and description, objectives, hypotheses, basic research design, sampling frame, recruitment/consent procedures (if applicable), benefits or risks of the research, and data storage/disposal procedures. Further, it would also be desirable to establish a process for amending applications with minor changes rather than requiring entirely new applications and approvals. If the application serves as the contractual agreement for data sharing, it should also include information regarding penalties for disclosure of personal information and data security procedures to protect data through a chain of custody (White House, 2016). Development of such applications should include considerations of state and federal policies on data sharing (Duran et al., 2005).

Research Design with Integrated Administrative Data

Beyond the more structural and technical aspects of linking and accessing administrative data, a number of design issues remain for the researcher. Foremost, the researcher must examine available administrative data from which to select

variables for inclusion in the linked data set. This can be difficult, particularly because data dictionaries are often not available to the general public. Further, agencies may differ in level of detail provided in their data dictionaries. Reidy et al. (1998) describe procedures for reviewing data from various linkage sources, including documenting possibilities and limitations of each data set, assessing comparability of codes across data sets (e.g., exact age versus age range), identifying how each data item is defined by the source agency, and compiling reference catalogues for data. The latter should include variable definitions, value codes, original data entry rules, and any available information about alteration or effective dates for specific variables. Further, data quality review is desirable, if possible. At the most basic level, this might include counts of missing values and date ranges associated with completeness of data (e.g., "before 2010, this field was only completed by case managers in half of county offices"). Data review might also include review for duplicate or redundant information. Unfortunately, as Reidy & associates (1998) point out, reliability, validity, and accuracy of data may sometimes be evident only after data has been analyzed.

Simultaneous to considering what data is available and valid, the researcher should also inventory the information needs of the research study as well as those of agency partners; this can help ensure that IAD captures the most essential elements for advancing the research (e.g., key constructs, covariates, instrumental variables) as well as capturing information for agency program planning, service delivery, and policy development (Duran et al., 2005).

When faced with the vast number of data sets, variables, and case records available from administrative data sources, many researchers may be tempted by the assumption that "more is better"; however, researchers are cautioned that such an approach may become overwhelming for both the researchers and project partners, as more complexity in the dataset is accompanied by more complexity in file transfer, file linkage, file management, and day-to-day use of the data sets for analyses. Researchers are urged to take a pragmatic approach and to focus on key variables within a well-defined sample–particularly as a first foray into IAD. Triangulating data can help to strengthen the research design and reveal sources of potential bias in measurement of constructs; for instance, researchers might gather data on the same constructs from multiple agencies (e.g., mental health diagnoses from hospitals, mental health services, and substance abuse services).

Once sampling and measures are established, issues of human subjects research ethics must be considered. Brownell & Jutte (2013) note that individual consent for linkage of administrative data is typically not possible within de-identified cohorts of data. Further, if individuals could be contacted for consent, it is likely that inability to reach certain respondents as well as non-random patterns of declined consent would render any data highly biased, negating its scientific utility. Sakshaug et al. (2012), for instance, found that existing surveys of consent to link administrative data ranged from 19 % to 97 % consent rates, raising concerns about representativeness of samples when client consent is used. Horner & Cullen (2015) note that garnering individual consent for use of IAD may be a requirement waived by institutional review boards under the epidemiological exemption; this exemption was established with consideration that epidemiological studies require a very high degree of participation (e.g., 90 %), and significant rates of non-participation would likely produce biased findings (Pensler, 1993). Accordingly, in working without consent for linkage, Brownell & Jutte (2013)

suggest strict policies and procedures be enacted to protect privacy and confidentiality, and to assure ethics committees that benefits to public good outweigh risks to individuals. As researchers develop their own approaches to these issues, existing literature provides excellent language that can be used in both 1) individual consent documents (Sakshaug et al., 2012), and 2) ethical statements for human subject's internal review processes (Somers, Rezansoff, Moniruzaman, & Zabarauckas, 2015).

Integrated Administrative Data Management

Researchers should be prepared–cognitively and with time and resources–to address numerous issues once data is "in hand." The exhilaration of receiving the long-awaited data is sometimes dampened by the data volume and complexity, as well as unexpected issues pertaining to the sample or variables selected. For instance, when the first author began using integrated data, she anticipated receiving a single, integrated file with all the necessary data and dictionary information; instead, she received 17 separate files from various agencies, some in single-record format and some with multiple records per case, and few with detailed data dictionaries. Although all files were linkable given the unique case identifiers assigned to cases, the necessity of data transformations (e.g., changing multiple-record format to single-record format) and the sheer number of resulting fields was prohibitive for compiling data into a single analytic file. Instead, the researcher typically must be quite selective for each file merge, often conducting merges specific to small sets of analyses (e.g., a file focusing on mental health diagnoses across agencies).

Further, we have also found that different agencies (and even different staff within agencies) varied widely in their conventions for naming files and documenting sampling criteria. Thus, aside from archiving each file transferred in its original format in a dedicated folder, specific protocols should be established for naming working files (e.g., file recipient's name, project name, agency name, date, initials of person who collated the data) and for documenting details regarding the sampling frame (e.g., brief description, plus programming code when available).

Before even delving into analyses or file merges, however, it is advisable to carefully check the sampling frame as well as data for key constructs to ensure these provide the information necessary for analyses. As an example, for our project on impact of incarceration on families, we originally requested prison data on "family members" of inmates. In our naiveté, we neglected to consider that this failed to include any dating partner, unmarried cohabitating partner, or even partners who shared a child with the inmate. These were all coded as "friends" in the prison administrative data. We thereby went back to the applications to change the language of our sampling criteria to include friends, re-applied to all involved agencies and the internal review board, received new approvals, and obtained all new data files with the necessary information. The researchers should also be prepared for substantial data "cleaning" (e.g., for out-of-range values) and/or data transformations (e.g., recoding string variables to integers for analyses, assuring that constructs are coded with the same values across agency data sets).

As researchers struggle with puzzling aspects of the data, they will appreciate having kept their agency partners informed and involved throughout the process, as these agency partners can be a valuable resource in understanding data structure and content,

identifying the most essential variables for each analysis, and serving as a liaison if the agency is needed for additional approvals due to unforeseen changes. Aside from working with agency representatives individually, researchers might also offer to conduct agency-specific debriefings and strategic planning sessions. These can be used to present key findings, gather input on interpretations and implications for practice, and develop recommendations for procedural or policy changes based on the research evidence. Similarly, bringing various agency representatives together on a project advisory board may foster broader discussion of trends and patterns across agencies (Chan-Sew, Sherwood, Romney and Reyes, 2007) and implications for community action or systemic change. Ideally, researchers can also use the advisory board as a forum to discuss archiving project data and data dictionaries for re-use by other teams of researchers, maximizing utility of the data and contributing to advancement of science for criminal justice research, practice, and policy.

Conclusions

IAD offers a promising approach to examining criminal justice issues through a broader lens that spans justice and service systems, enhancing ability to assess impacts of justice programs on client and community outcomes in a variety of realms. The use of integrated data can save costs as well as allow for innovative research designs, yet IAD comes with its own challenges. The process of securing and utilizing IAD may be especially intimidating for early-career researchers and those accustomed to collecting their own research data. Here, we have provided an example of how IAD can be utilized to examine impacts of incarceration on families via data obtained through SC's Data Warehouse. We have shared the lessons learned from this process, ranging from those pertaining to the need to build stakeholder support for projects, to data linkage and access, to research design, and data management. Such partnerships between researchers and practitioners can play an important role in fostering system-wide collaboration around criminal justice issues, ensuring that the work researchers do is informed by the experiences of those in the community, and facilitating the translation of research findings into evidence-based practice and policy.

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Understanding Families Impacted by Incarceration: Use of a Unique Data Source

(Research Note)

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Understanding Families Impacted by Incarceration: Use of a Unique Data Source (Research Note)

Abstract

Incarceration in the US impacts millions of prisoners and families each year. While research demonstrates an impact of incarceration on children of inmates, practice and policy implications drawn from this research are limited. Prisons do not routinely track children and families of inmates, making it difficult to identify those impacted. Also, research usually does not isolate the impact of incarceration from predisposing risks and other confounds. To address these barriers, we introduce the Impact of Incarceration (IOI) project, utilizing integrated administrative data that spans justice and service systems in a single state for prisoners (n=18,790) and their visiting family members (n=40,488). We describe our methodology, preliminary data, and implications for improving wellbeing of prisoners and their families.

Keywords: inmates, big data, archival data, human services.

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Understanding Families Impacted by Incarceration: Use of a Unique Data Source (Research Note)

Introduction

The United States has the highest incarceration rate in the world, with almost 1.6 million prisoners at year-end 2014 (Bureau of Justice Statistics, 2015). Incarceration at this rate directly and indirectly impacts millions of family members each year, permanently alters the lives of those incarcerated, and taxes service systems including health care, mental health, education, child welfare and others. The impact of incarceration may be most pronounced among the most vulnerable families (Wildeman & Western, 2010). Yet, specifying these impacts on children, youth, families, and service systems remains a challenge.

Challenges to Understanding Families of Prisoners

First, while correctional systems maintain data on prisoners, there is an absence of routine, systematic, comprehensive data collection on family members of prisoners. When data is collected by correctional agencies, collection procedures are likely to vary across jurisdictions, and data is unlikely to be independently verified by sources such as birth certificates that clarify the prisoner-family relationship. In other service systems (e.g., child welfare, juvenile justice, mental health), collection of data on whether the individual has a family member in prison is also likely to be variable across organizations. Thus, the lack of information regarding who the family members of prisoners are represents a substantial barrier to understanding the needs of this population, which in turn has implications not only for prisoner reentry but also for the multiple generations of family members whom incarceration may impact. Accordingly, multiple authors have urged greater investigation in to the characteristics, living conditions, and service experiences of families of prisoners (e.g., Johnston, 2006; Miller, 2006).

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Second, there are few large-scale quantitative studies of impact on children, partners, or parents of incarcerated individuals, especially those attesting to the causal role of imprisonment on this impact (Murray, Farrington, & Sekol, 2012; Wildeman & Western, 2010). Specifically, existing research has typically used methodologies that do not sufficiently isolate impact of incarceration from pre-existing risk factors and other confounds. That is, families of prisoners, aside from incarceration of the family member, often face a range of risk factors for poor developmental outcomes, such as familial histories of poverty, mental health problems, and substance abuse (Kjellstrand & Eddy, 2011; Myers et al., 1999). Disentangling these pre-existing or concurrent risk factors from the impact of incarceration itself requires carefully designed studies, as randomized designs are not typically feasible or ethical.

Linked Administrative Data and the Impact of Incarceration Project

One potential solution to the challenges of understanding families of prisoners involves use of integrated administrative data . This methodology links data from multiple service agencies, providing unparalleled opportunity to examine the impact of incarceration on families in a more comprehensive way than has been achieved previously. Administrative data also offer the opportunity to explicitly understand family needs in relation to their contacts with justice and human service systems, such as mental health, health care, and child welfare. Indeed, Tasca, Rodriguez, and Zatz (2011) underscore the importance of using data management systems to track children of incarcerated parents across multiple agencies and to guide development of service interventions.

The Impact of Incarceration (IOI) project is intended to address a gap in research, practice, and policy knowledge by linking data on prisoners and their families across multiple service systems for a multi-year period. The project provides a source of cross-system,

longitudinal data on a large number of inmates and their family members, helping us to understand who the families of prisoners are as well as their contacts with justice and service systems including corrections, juvenile justice, mental health, substance use, health care, and education. The IOI project is made possible by existing procedures in the prison system within one southeastern state that requires specific identification of visitors to prisoners. All visitors must undergo a pre-approval process that includes providing valid identification (e.g., drivers' licenses for adults, birth certificates for children). The prison system retains the specific information on the visitors, including the relationship of the visitor to the prisoner (although information about the visits themselves is not included). These identification procedures allowed us to match family members to prisoners—particularly parents and children—more directly than has been accomplished in the past (e.g., compared to probabilistic matching as in Dworsky et al., 2011). We understand that this sample of family members is subject to selection bias regarding those family members who visited (e.g., those who applied and were accepted for visitation). However, we believe this data sets a valuable foundation for examining multi-systemic impacts of incarceration, as well as serves as a model for integrated data approaches to address complex family issues in the US and internationally.

For the IOI project, we have focused on visitors to inmates incarcerated during the 2006-2008 time frame. Because we are interested in the relationship between the visitors and the inmates, data for both the prisoners and their visitors is included in the larger IOI data set. For both prisoners and family members, the temporal timeframe of the multi-system dataset established for IOI includes not only the period during which the prisoner was incarcerated, but also a three-year time frame prior to his/her incarceration, as well as a three-year time frame after his/her incarceration (as applicable, if the prisoner has been released). In contrast to the between-

subjects approaches often used to examine impact of incarceration, this within-subjects longitudinal data allows the researcher to statistically control for pre-existing vulnerabilities in the lives of family members. The data elucidates the timing and trajectory of prisoners' and family members' contacts with justice and multiple other service systems, including separable estimates of contacts before, during, and after imprisonment.

In order to more fully understand the impact of incarceration on family members, the IOI has, with the support of a state-level data warehouse, created a multi-system administrative data set comprised of family member contacts with multiple service systems. The data warehouse is a repository for data collected from all state agencies and has the technical capacity and expertise to link large administrative datasets. Access to the data is gained via explicit permission from each agency whose data is housed within the data warehouse (a function that the data warehouse facilitates). Using a unique identifier, the data warehouse can then link information in individuals between service systems. De-identified data sets are then made available for research purposes. DeHart and Shapiro (2016) includes additional details of the data sets and the data linking process.

The overall IOI project examines several distinct research questions, and individual papers will be published on each (i.e., impacts on health and mental health, economic status, and children's academic performance and involvement with child welfare/juvenile justice). The range of questions that may be explored, however, is extraordinary. Data can be aggregated in many ways, including age group, race, gender, family structure, and crime type. Questions that can be asked include use of services, number of visits, type of services rendered, service outcomes, and service costs. Data can be examined for a single client through a variety of service systems (e.g., arrest records, emergency room diagnostic data, health care costs, school

readiness scores), connectivity of systems for particular groups of clients (e.g., examine youthful offender's involvement in social services and alternative schools), relationships between constructs in different systems (e.g., examine free clinic use among African American females who had once been in foster care), and geographic information for mapping of service access. Clearly, researcher-community partnerships that utilize such integrated data have potential to inform social work practice and policy with prisoners and their families. For instance, one might examine the collective healthcare needs of those prisoners' children who are in foster care, or whether grandmothers of female prisoners are likely to be involved in kinship care. The breadth of data may be used to examine processes by which child welfare and incarceration are related, as well as identify potential points of early intervention for children and families.

The present paper utilizes IOI data to provide a descriptive overview of the families represented in this dataset. Here we describe our sample, their representation across justice/service systems, challenges and limitations of such data, and implications for research, practice, and policy.

Methods

This study was reviewed and approved by a university human subjects institutional review board, the state department of corrections review board, the state data oversight board, and the National Institute of Justice. Descriptive statistics were conducted with SAS software.

Sample

Our sample includes any inmate who had been incarcerated in the prison system a single, southeastern state at any point during the time period of 2006-2008 (i.e. some prisoners entered and exited the system during this time, and others may have been imprisoned the entire time period), as well as any person who ever engaged in a non-professional visit to these inmates in

any of the correctional institutions in this state (including minimum, moderate, and maximum security facilities as well as a facility housing female prisoners). Thus, the sample includes persons identified as family and friends, but not those identified as lawyers, clergy, etc. Importantly, no information is available regarding the visits themselves (content, length, etc.). At first we did not include "friends" in our data, but then we discovered that the department of corrections uses this code to refer to dating/unmarried partners, partners who share a child with the inmate, and ex-partners, as well as for persons whose relationship is not specified. Given that marriage is not always the norm in the histories of incarcerated persons, we opted to be over inclusive in sampling "friends" so as not to miss a substantial population of persons who play a central role in the lives of inmates.

This sample includes 18,790 prisoners; 26% of which are female and the remainder are male. A majority (62%) are Black. A total of 72% of these prisoners report having children. A total of 82% of the female prisoners report having children while 69% of the male prisoners report having children. Most prisoners had some high school education. Table 1 provides more detailed descriptive data on the prisoner sample.

These 18,790 prisoners received 40,488 individual visitors. The most frequent relationship of visitors to inmates was 'friend' (28%), followed by mother (14%) and sister (11%); each of the other relationship categories (e.g. father, son, daughter, etc) represented 6% or less of the visitor sample. Table 2 provides more detailed descriptive data on visitor ages and categories of relationships between these visitors and the prisoners.

Table 3 provides data on the number of visitor-prisoner dyads in which the visitor had contact with specific service systems. The service system with the most representation of visitors was Medicaid (100%), followed by universal billing (hospital claims, 81%), and the department

of education (46%). Other systems such as mental health, substance abuse treatment, and child protective services represented less than 11% of visitors in their administrative data.

Discussion

These descriptive data on prisoners and their visitors from a single, southeastern state demonstrate that integrated administrative data is a rich data source with potential to inform research, practice, and policy for social work with prisoners and their families. Foremost, the sheer number of cases in our sample demonstrates the ability of integrated administrative data to support a range of statistical approaches that require large samples, such as propensity score analysis or models of moderation and mediation. Further, the composition of the visitor sample is another strength; a wide variety of relationship categories (e.g., sons, daughters, wives, husbands, aunts, uncles) and ages (0-65+) are represented. Finally, the variety of human service systems included in the project, such as child welfare (both child protective services and economic services), juvenile justice, health, mental health, and education, will support increased understanding of the individual and collective (societal) impact of incarceration on families.

Despite the significant strengths of this integrated administrative data, there are several limitations to the data and the conclusions that can be reached. As discussed, our sample included “friends” because this coding category captured a substantial portion of persons with significant family ties to the inmates (e.g., unmarried partners and those who share children). This underscores the fact that data used in linked sets depends upon coding processes used by agencies, where procedures are designed for administrative efficiency—not precision of research.

A second challenge involves teasing out "true" cases from others. For example, upon first examination of the juvenile justice data set, a total of 4,048 visitors were included. This means that of the total number of visitors (n=40,488), 4,048 appeared to have had contact with the juvenile justice system. However, closer investigation revealed that only 1,803 of these cases had an offense date on record. Since contact with the juvenile justice system requires that an offense occurred, cases with this field missing cannot be accurately counted as a "true case." For this specific example, inclusion of "non true" cases in the initial data set was likely an artifact of the data linking process. For example, when data files are merged, a row may be created for an individual who is present in one dataset but NOT present in another. The implications for researchers are that deep knowledge of how human service systems construct their data systems and how cases and variables are defined is necessary, and that linked or merged data sets should be carefully examined prior to use for analyses.

A third limitation involves the number of visitors that had contact with each service system. This varies widely, from a low of 1,803 with the juvenile justice system to a high of 32,931 being represented within the Universal Billing Claims (medical services) database. While it is helpful to know what percentage of visitors had contact with specific service systems, the limited overlap between our visitor sample with some service systems may restrict our ability to perform extensive analyses. This may be particularly problematic if researchers and their community partners are most interested in visitors with specific relationships (e.g., sons, daughters) during specific time frames (e.g., after incarceration). As an example, while the number of children of prisoners is relatively large (e.g., 2,252 sons and 2,493 daughters), the number of these sons and daughters who may have had contact with juvenile justice is likely to be much smaller. The number of sons and daughters who had come into contact with juvenile

justice after incarceration will be even smaller, limiting the types of analyses that can be used to increase understanding of impact.

A final limitation is that while the longitudinal nature of the data set allows for a within-subjects approach, causal conclusions cannot be definitively made. However, advanced statistical techniques (e.g., regression discontinuity, instrumental variables regression) may help support causal inference.

Implications for Research, Practice, & Policy

The IOI methodology offers a promising approach to examining complex social issues facing families in society. As a federally funded project, IOI will include archiving of the full data set, offering a potential tool for researchers to examine issues of great relevance to prisoners and their families. We hope that our work with the IOI data will create a foundation for future research as well as increase understanding about the needs of inmates' families. The data offers a means for understanding patterns of impact of incarceration within families and across systems over time. It is our hope that the IOI will create a resource for researchers, as well as a model that may help spur researcher-practitioner partnerships in other locales.

Implications for practice include enhancing our understanding of the impact of incarceration on family functioning and service utilization. For example, we may discover that the rate of mental health service utilization increases during the period of incarceration of a family member. If this is true, then initial intake evaluations into the mental health system could be modified to include information on family member contact with the prison system. This would aid clinically in creating a more comprehensive assessment of factors influencing the

functioning of the family member. Gathering this information system-wide could support service planning and development.

In terms of policy implications, increasing understanding of how family members of prisoners are impacted in terms of their health or mental health could influence state-level planning and collaboration regarding how and possibly where services are provided. Within the prison system, understanding the impact of incarceration on families in terms of service utilization could support state or national changes in how support for family members of prisoners is conceptualized and implemented. In closing, the data that communities have already been collecting through administrative records may afford an unparalleled opportunity to examine service issues impacting prisoners and their families.

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Table 1

Prisoner Characteristics

Characteristic	N=18,790 (%)
Gender	
Female	4,894 (26%)
Male	13,896 (74%)
Race	
Black	11,568 (62%)
White	6,912 (37%)
Other	310 (2%)
Number of Children	
0	5,265 (28%)
1	4,195 (22%)
2	3,858 (21%)
3	2,709 (14%)
4	1,435 (8%)
5+	1,328 (7%)
Education Level	
8^{th} or below	1,399 (7%)
9^{th} through 12^{th}	15,890 (85%)
13^{th} or above	1501 (8%)

Table 2

Visitor Characteristics

Characteristic	N = 40,488 (%)
Relationship to Inmate	
Mother	6,052 (14%)
Father	2,455 (6%)
Son	2,252 (5%)
Daughter	2,493 (6%)
Wife	656 (1%)
Husband	184 (<1%)
Sister	5,003 (11%)
Brother	2,457 (6%)
Aunt	2,043 (5%)
Uncle	695 (2%)
Friend	12,597 (28%)
Visitor Age	
0-17	5830 (14%)
18-24	7,194 (18%)
25-29	6,696 (17%)
30-44	6,642 (16%)
45-54	6,895 (17%)
55-64	4,355 (11%)
65+	2,874 (7%)

Table 3

Visitor-Prisoner Dyads across Service Systems

Service System	N = 40,488 (%)
Mental Health	4,297 (11%)
Juvenile Justice	1,803 (4%)
Education	18,786 (46%)
Foster Care	479 (1%)
Child Protective Services	2,072 (5%)
Substance Abuse Treatment	4,401 (11%)
Medicaid Claims	14,835 (37%)
Universal Billing Claims (medical)	32,931 (81%)

"THE PILL LINE IS LONGER THAN THE CHOW LINE:" IMPACT OF INCARCERATION ON PRISONERS & THEIR FAMILIES

PRE-PRINT DRAFT (TO BE PUBLISHED IN *THE PRISON JOURNAL*)

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"THE PILL LINE IS LONGER THAN THE CHOW LINE:"

IMPACT OF INCARCERATION ON PRISONERS & THEIR FAMILIES

Abstract

Incarceration removes individuals from their families and their communities, increasing potential for disrupted relationships, community fragmentation, and burden on service systems. This study identifies specific impacts of incarceration on prisoners and their families. We conducted focus groups with 38 male and 39 female inmates at correctional facilities, as well as interviews with 21 family members including parents, siblings, spouses, and adult children. Findings include prisoners' and families' perceptions of incarceration's impact on their communication, health, mental health, finances, and involvement with community supports such as friends, church groups, and human services. Implications for research, practice, and policy are discussed.

KEYWORDS: prisons; children; parents; siblings; effects of incarceration.

Introduction

The War on Drugs and Tough-on-Crime movements have contributed to mass incarceration via sentencing policies such as mandatory minimums for low-level drug offenders and "three strikes laws" for repeat offenders (FAMM, 2013; Schoener, 2015; Shah, 2005). In 2013, 2.24 million adults were incarcerated in the United States. During the same year, 10.2 million persons were incarcerated worldwide (Walmsley, 2013)--an all-time high that reflects the global increase in the criminalization of drug use (Stevenson, 2011). Incarceration removes individuals from their families and their communities, increasing potential for disrupted parent-child and familial relationships, community fragmentation, and increased burden on governmental systems such as social services, mental health, schools, and juvenile justice. Although strides are being made in the United States to address impacts of mass incarceration through efforts such as Children of Incarcerated Parents' Bill of Rights (San Francisco Children of Incarcerated Parents Partnership, 2003), the Obama Administration's support for children of incarcerated parents (e.g., "Champions of Change Event," Rutgers, 2014), and increased federal funding for initiatives affecting sentencing options and outcomes (e.g., reentry grants, housing assistance, ban-the-box employment initiatives; White House, 2015), the problem of parental and familial incarceration is still pervasive. Of those millions incarcerated, over 600,000 persons will be released from state and federal prisons each year (White House, 2015). Foster and Hagan (2009) indicate that well over half plan to return to their children and families upon leaving prison. Thus, it is imperative that researchers examine not only the types of impact that incarceration has on families (e.g., on poverty, education), but the scope, depth, and mechanisms of this impact (DeFina & Hannon, 2010; Foster & Hagan, 2009).

The current study addresses this critical gap in knowledge in order to identify specific impacts of incarceration on prisoners and their families. As part of a broader mixed-methods study involving triangulated data, we conducted focus groups with male and female inmates at correctional facilities in a Southeastern state of the United States, as well as interviews with family members including parents, siblings, spouses, and adult children. Here we present findings regarding prisoners' and families' perceptions of incarceration's impact on their communication, health, mental health, finances, and involvement with community supports such as friends, church groups, and human services. This research helps delineate the varied impacts of incarceration and the types of support needed for families during and after incarceration for the ultimate benefit of individuals, families, and communities.

Prisoners' Families

For the purposes of this study, we define family as children, partners, and extended family members of prisoners. Robertson (2007) notes that families of prisoners are often plagued by disadvantage even prior to incarceration, with higher unemployment, mental health problems, interpersonal conflict, maltreatment, and poverty. Such difficulties are more prevalent among families of female and minority inmates, who are overrepresented among the incarcerated. A major challenge to understanding the impact of incarceration is the limited official data on the families of prisoners. Perhaps for this reason, much of the existing research on impacts of incarceration focuses on children of prisoners, in that prisons typically collect at least some data on the minor children of inmates (e.g., number and ages of children).

Impact on Children of Prisoners

Mumola's (2000) report, one of the most widely cited studies on incarcerated parents and their children, indicates that about three-quarters of a million parents were incarcerated in 1999,

and that these persons had about 1.5 million children under the age of 18. On average, these parents served over 80 months in prison, often for violent or drug-related offenses. Over 90% of incarcerated parents were males, and nearly half were never married. Mumola's study also indicates that incarceration is likely to separate many children from their parents. Prior to the parent's incarceration, 44% of fathers and 64% of mothers lived with their children. For incarcerated males, the vast majority of children continued to live with the child's other parent following the father's incarceration. This was true for less than a third of incarcerated females, for whom grandparents were more often caring for children following the mother's incarceration. Rates of children living in foster care were higher among incarcerated mothers (10%) than among incarcerated fathers (2%). A majority of parents had monthly contact with their children by phone, mail, or personal visits. Lahm (2016) found that contact of parents with their children varied for male and female inmates, with paternal contact predicted primarily by sociodemographic variables (e.g., age, race, education, marital status, mental health) and maternal contact predicted by a mix of demographic, criminal history, and institutional experience variables (e.g., age, education, time served, violent offending, and disciplinaries).

Foster and Hagan (2009) have described the collateral damage of mass incarceration on children, noting various mechanisms by which parental incarceration may be associated with negative outcomes such as poor educational attainment. Examples include selection (e.g., poor outcomes derive from transmitted traits of those parents incarcerated, such as low self-control), stigma of parental criminalization, and the strain of economic deprivation and family disruption. These authors note that further research is needed regarding processes of such effects, range of consequences, and magnitude of these effects. Similarly, Arditti (2014) has described the difficulty of disentangling family changes due to incarceration versus those due to associated

contexts (e.g., family instability, economic disadvantage); Arditti notes that longitudinal data does little to elucidate the issues, given that quantitative data typically contains little information about family and developmental processes.

In an effort to make policy recommendations in Europe, Robertson (2007) conducted a review of research on impacts of incarceration on children. This work includes consideration of impacts in the time periods before, during, and after incarceration. Being mindful of these phases is important, as effects of parental incarceration may include events specific to these time frames such as the sequalea of children witnessing arrests, stresses of judicial processing, changes in guardianship and living conditions, separation from the parent, or limited contact with the parent under the strained conditions of visitation. Children's reactions may also change depending on stages of the parent's involvement in the criminal justice process; for instance, the trauma of separation may give way to uncertainty as the incarcerated parent prepares for reentry (Robertson, 2007). Throughout all stages, children's reactions might include guilt, sadness, anger, and loss. Robertson notes that normal grieving may be disallowed by those around the child given circumstances of the parent-child separation. Tensions among family members (e.g., estranged partners, resentful relatives) and "gatekeeping" to visitation may interfere with the child's contact with the incarcerated parent, as may difficulties in transportation, accompaniment, and scheduling of visits (Ramirez-Barrett et al., 2006; Robertson, 2007). When families are not forthcoming with children regarding the absent parent's situation, children may experience confusion and distrust, as well as imagining alternative scenarios that contribute to concern and disappointment (Miller, 2007). Contact and communication regarding the parent's incarceration and reentry are said to help children in adjusting (Ramirez-Barrett et al., 2006; Robertson, 2007).

Parental incarceration may also have a negative impact on children's mental health. Developmental effects may vary by age and might include disrupted attachment, traumatic stress, lowered self-concept, emotional and behavioral reactance, and delinquency (Gabel & Johnston, 1997). In a study of youth with incarcerated mothers, Kampfner (1995) found that three-quarters of children suffered from symptoms of traumatic stress. Murray and Farrington (2005), noting a strong association between parental incarceration and children's delinquency, argue that parental imprisonment "confers specific risk on children." These researchers found that sons of incarcerated parents were about five times more likely to be incarcerated relative to boys separated from their parents for other reasons. Springer (2000) also found children's justice involvement to be exponentially increased with parental incarceration. Aaron and Dalliare (2010) found parental incarceration to predict family victimization and delinquency of children over and above demographic or other risk experiences. Their analyses indicate that sibling delinquency may play a significant role in mediating the parental incarceration-delinquency association for youth. Tasca, Rodriguez, and Zatz (2011) discuss potential impacts of changes in guardianship, including inadequate emotional ties with multiple caretakers, less consistent supervision, residential/school instability, altered extracurricular activities and friendships, and financial strain on the family. If the child feels stigmatized by extended family or in the school, neighborhood, or community, he or she may withdraw from relationships with other caregivers, family, or friends to avoid further abandonment. Academic and behavioral problems may drive youth toward social groups they perceive as least likely to judge them—antisocial cliques—which, in turn, may lead to deviant behavior (Dishion, McCord & Poulin, 1999; Miller, 2007; Shapiro et al., 2010).

In contrast to what is known about the impact of incarceration on children's social, emotional and behavioral functioning, studies examining impact of parental incarceration on children's physical health are noticeably absent in the literature. Given emerging research on lifelong health impact of childhood adversities (Felitti & Anda, 2009), examining health effects of incarceration is an area in which this study can make a substantial contribution.

Impact on Other Family Members

Parents and siblings of prisoners may also experience adverse effects of incarceration. In a study of 233 male prisoners (88% African Americans) interviewed before and after release from prison, La Vigne and associates (2005) found that relationships in the family of origin (e.g., mothers, grandmothers) may be more resilient to separation of imprisonment than relationships with romantic partners and children. Using longitudinal data from a community cohort (N = 615) that included 138 mothers of incarcerated sons, Green and associates (2006) found financial difficulties and greater burden of grandparenting to mediate a relationship between incarceration of an adult son and the mother's psychological distress. The authors note that adult children typically are central to their parents' support systems in African American families, and that imprisonment of these children may introduce a variety of stressors such as self-blame for the child's criminality, added household costs due to the child's debts and grandchildren's expenses, and neglect of the mother's own healthcare needs in lieu of caring for grandchildren. These financial and personal impacts were further documented by Naser and Visher (2006), who interviewed 247 family members of recently released male prisoners. The majority of the respondents were African American females—often mothers, sisters, and intimate partners of former inmates. Family members provided support including financial assistance, a place to live, child care, and help finding employment and housing. This often led to hardship and stress, and

family also struggled with supporting the ex-prisoner in staying drug-free and coping with relapse. Such supportive family members serve as a crucial link in reentry of inmates. That is, these persons are sources of stability and support. These family members often maintain caregiving for inmates' children as well as creating a family context into which the inmate may enter upon release from prison.

A number of researchers have proposed that incarceration of a family member may result in increased engagement of families with social services, including economic services (e.g., TANF) and child welfare (e.g., fostercare). Economic impacts of incarceration may be felt immediately by family members. Research indicates that most incarcerated parents were employed in the month before their arrest, and these individuals—typically fathers—were frequently the primary source of income for families. Many mothers and some fathers also relied on public assistance to support their families, and such assistance may be terminated upon entry into prison (Mumola, 2000; Travis, McBride, & Solomon, 2005). Thus, alternate caregivers of children may require economic assistance to take on childrearing costs. Expenses arising from visits (travel costs and lost time at work), collect calls at elevated rates, and retaining legal representation may also be incurred (Western & Wildeman, 2009).

The Current Study

Although research on the impact of incarceration is growing--particularly using quantitative archival or administrative data (e.g., Aaron & Dallaire, 2010; Cho, 2011; Tasca et al., 2011)--there have been few qualitative studies examining impact of incarceration on families. Sharp and Marcus-Mendoza (2013) collected some qualitative data in the form of open-ended prompts on survey measures administered to 144 incarcerated women. Those findings indicate that incarceration may be associated with increased family instability, child substance abuse and

depression, and financial hardship for family caregivers. However, the study focused on maternal incarceration, and responses to open-ended prompts were brief. Ramirez-Barrett and associates (2006) conducted in-depth qualitative interviews utilizing broad open-ended prompts, but the sample was very small and from one specific urban neighborhood.

In order to provide empirical evidence about the breadth and dynamics of impacts that incarceration may have for families and to expand the literature in this area, we utilize a larger sample with representation of both women and men, and our inquiries extend to a range of types of family impacts, not limited to those associated with parenting. We gathered these insights from the inmates themselves as well as from their family members, inquiring about changes in their family communication, health and mental health, finances, and community supports. Such data is especially needed to identify service needs and mutable risks, as many social and emotional constructs are not well represented within quantitative and/or administrative data but may play an important role in engaging family members with service systems.

Methods

This research is part of a broader, mixed-methods examination of the impact of incarceration on families that involved linked administrative data, family interviews, and inmate focus groups in a Southeastern state. The research is protected by a federal privacy certificate, and the study was reviewed and approved by human participants review boards at both the university and the state department of corrections.

Sampling Site

The state department of corrections houses over 20,000 inmates at nearly 30 institutions. These offenders are predominantly male (93%) and African American (65%). For the present study, we sampled inmates from three institutions. The three sampling facilities included: 1) one

correctional institution for adult males, including those sentenced under the Youthful Offenders Act, with intensive services focused on needs of inmates 17-25 years old (capacity = 547); 2) one maximum security prison for general population females and special-needs females (capacity = 245); and 3) one maximum security prison for general population males, special-needs males, and males in sex offender treatment (capacity = 1002). Inmates were recruited through flyers posted at each correctional facility, with flyers advertising "a study on impact of incarceration on families." Inmates participated in focus groups on-site at each prison. Family member interviewees were recruited via flyers posted in the visiting rooms of these same institutions, as well as through flyers provided to inmates during the inmate focus groups so that they could inform family members of the opportunity. Family members could opt to participate in a group or individual interview, either in person at a location of their choosing or via phone. Family member interviewees received $20 to compensate for their time participating. The sampling goal was to interview approximately 100 individuals in order to achieve “strategic coverage” of phenomena under exploration (Johnson, 1990; Werner & Bernard, 1994) and garner a sample that is generous relative to qualitative standards (Lee & Fielding, 1996). See the Participants section below for specific details of the study sample.

Measures

Many of the focus group and interview prompts were adapted from portions of the Family Interview Questionnaire developed by Ramirez-Barrett et al. (2006) for their small study on previously incarcerated fathers (which included 10 fathers and 6 family members, as well as 18 community members). The prompts were the same for both inmates and family members, asking them to describe impact of incarceration in areas including changes in household responsibilities (e.g., new caregiving duties), family communication/conflict, relationships with friends/family,

employment/finances (e.g., bills piling up), health and mental health (e.g., ailments, substance use), changes children's behavior or emotions (e.g., acting out, moodiness, academic changes), and help-seeking or coping for personal or family problems (e.g., support from family, government benefits, spirituality). Specific prompts included:

- What changes were there in the household?
- How did your family's communication change? Did your family change the way they dealt with conflict?
- How did your relationships with family members change? With friends? Neighbors? Others?
- How did your family's financial situation change? What were the impacts of costs associated with incarceration?
- What changes were there in physical health of family members? Mental health? What changes were there changes in alcohol and drug use by family members?
- What changes were there in children's behavior? What changes were there in children's emotions? What changes were there in children's academics?
- What changes were there in your family's use of government or community services? What changes were there in support from family, friends, churches, or others?

Focus group participants and interviewees completed demographic questions assessing age, race/ethnicity, education, employment, household income, living arrangements, relationship to inmate, inmate's most serious offense, and inmate's sentence length.

Transcription

Audiotaping is prohibited in the state department of corrections system. Accordingly, we have extensive experience using shorthand-style field notes in correctional research, with a team

of researchers trained through practice sessions to achieve a benchmark of quality in notetaking and transcription of field notes (as indicated by limited counts of errors and omissions). This technique is used by numerous major corporations, government agencies, and respected educational institutions (e.g., MIT, NASA, U.S. Navy), and speedwritten notes are personally transcribed by notetakers immediately following each interview (Levin, 2001). For each focus group, one research team member facilitated the group while two other team members took notes, allowing us to assure accuracy through comparison across sets of notes. The procedure was identical for in-person family interviews. The remainder (i.e., family phone interviews) were audiotaped, with tapes destroyed immediately following transcription.

Analyses

All sets of notes and transcripts were coded and analyzed using MaxQDA software (VERBI GmbH Berlin, Germany). First-cycle coding was performed by the first author using provisional codes derived from interview prompts, with additional open coding to further break down the data and provide analytic leads for exploration (Saldana, 2009). The third author then reviewed all transcripts to review application of codes, identify relevant passages that may have been missed, and tag discrepancies for discussion and refinement of codes. Second-cycle axial coding was then performed by the first author to differentiate and organize codes with particular attention to facilitators and barriers, and selective coding was used to identify the most salient codes as these related to impact of incarceration on families (Saldana, 2009). Given that there were two notetakers and thereby two sets of notes for each inmate focus group or family group interview, this allowed another check on reliability of coding, in that we were able to examine overall composition of codes within each document across the two sets. Throughout all aspects of this process, debriefing between both analysts was used to address discrepancies, clarify

concepts, and refine codes based on consensus (Hill, Knox, Thompson, Williams, Hess, & Ladany, 2005; Sandelowski & Barroso, 2003).

Findings

Here we describe demographic characteristics of inmate and family participants, as well as analytic findings addressing impact of incarceration on inmates and their families. The latter are organized into themes of family communication, mental health, physical health, finances, and supports from the community.

Participants

Inmates participated in 8 focus groups from the 3 facilities, for a total sample of 77 prisoners. This included two groups of youthful offenders (ns = 9, 10), two groups of other adult males (ns = 7, 12), and four groups of adult females (ns = 12, 11, 12, 4), for a total of 38 males and 39 females. Inmate participants ranged in age from 17 to 66, with the mean age being 34. They identified as African American (47%), White (44%), Latino/a (4%), and other (5%). About one-third had some high school education, another third completed a GED, and the final third had some college education. Inmate participants included those who were single (46%), partnered (21%), divorced (15%), married (13%), and widowed (5%). Prior to incarceration, nearly half (44%) were employed full time, with others being unemployed (38%), employed part time (7%), on disability (7%), or having temporary employment (4%). Household income prior to incarceration was most often less than $10,000 (26%), followed respectively by $10,000 to $25,000 (21%), over $50,000 (19%), $25,001 to $35,000 (17%), and $35,001 to $50,000 (17%). Prior to incarceration, 12% had been the only adult in the household, with 39% living in two-adult households, and the remainder (49%) living in households with three or more adults. A majority (69%) lived in households with one or more minor children. The most serious offense

for inmates included violent crimes (55%; e.g., assault, strong-arm robbery, murder), followed by property crimes (17%; e.g., burglary, forgery, shoplifting), drug offenses (10%; e.g., trafficking, manufacturing, distributing in a school zone), other offenses (7%; e.g., contributing to delinquency of a minor, leaving the scene of an accident with death resulting); 12% of inmate participants left this item blank. Sentences ranged from six months to life.

Twenty-one family members were interviewed, mostly individually and mostly via telephone; there were three small group interviews of 2-3 individuals. Although some of these family members were informed about the study by and related to inmates who participated in our focus groups, many family member participants had heard about the study via flyers or other word-of-mouth and were related to inmates other than those in our focus group sample. In relation to an inmate who was currently incarcerated, our sample included 5 mothers, 1 father, 2 wives, 1 husband, 5 sisters, 6 daughters, and 1 son. Family members ranged in age from 21 to 78, with a mean age of 54. They identified as White (62%) and African American (38%). Nineteen percent had some high school education, 10% completed a GED, and the remaining 71% had some college education. Family participants included those that were married (67%), single (14%), divorced (10%), partnered (5%), and widowed (5%). Nearly half (48%) were employed full time, with others being unemployed (43%), employed part time (5%), or on disability (5%). Household income was equally split among those who made between $10,000 and $25,000 (29%), $25,001 to $35,000 (29%), over $50,000 (29%), with two individuals earning less than $10,000 (10%) and one person earning $35,001 to $50,000. Nearly half (48%) lived with one other adult, 33% were the only adult in the household, and the remainder (19%) were living in households with three or more adults. The majority (81%) had no minor children in the household. Most (67%) were family members of an inmate that had committed a violent crime,

followed by property crimes (10%), and drug offenses (5%). 19% of family participants left this item blank. Sentences for the inmates to whom these family members were connected ranged from 10 years to life.

Family Communication

One of the most frequently addressed themes regarding ways in which inmates' families were impacted by incarceration involved family communication. This included subthemes of *holding back information, conflict with the inmate, dissolution of relationships, decreased quantity of communication, emotional and physical distance*, and *improved communication*, roughly in that order of frequency.

The first subtheme was evident in all focus groups and nearly every interview--both inmates and family members withheld certain information in their conversations as they tried to protect one another from stressors.

- *They ask you how are you doing, what you been doing. You can't tell them you're just sitting in bed all day. (Male inmate)*
- *You have to hold back and put up a façade to be strong for one another. I can't talk to my brothers and sisters because they get worried. They hear something and will start calling around stressing. (Female inmate)*
- *You gotta read between the lines. My uncle was dead for a year, they didn't tell me. You're not really part of the family anymore. They don't wanna tell you anything--they say "I didn't want you to worry". (Female inmate)*

A mother said that in the two years her son had been incarcerated, she never asked what his charges were because, "It just hurted me so bad."

The subtheme of conflict with the inmate was mentioned in every focus group and in most interviews. Both family members and inmates spoke extensively about trying to avoid conflict during prison phone calls.

- *And if y'all disagree or have a conflict, they can hang up on you and did not answer when you call back. You can't get back in touch with them to make stuff right. (Male inmate)*
- *Sometimes the arguments did get heated. I tried to remember that he is back there by himself so try to calm myself down and not be so hard all the time. (Sister of inmate)*

Prisoners also described the conflict and resentment they felt from family members.

- *For people that are locked up a long time, your family remembers the "old you"…We really are completely strangers. I tell them I'm not like that anymore, but my dad…They remind you of your past mistakes. (Female inmate)*
- *You grow apart from your family because you don't know them and they don't know you….I was very abused and very submissive before. Now I'm outspoken. My family is not used to that. I don't know if I'll be someone they even like when I get out. (Female inmate)*

Family members also discussed negativity directed at the inmate, particularly in relation to such "gatekeeping" of children from the incarcerated parent.

- *My child's mother won't let me see my daughter. She says I shouldn't have got locked up, "I don't want my daughter having no penitentiary relationship." (Male inmate)*
- *[Family members] threaten, "You're gonna end up like your mama or your daddy." That has to have negative impact on the children. (Sister of inmate)*
- *It makes it hard for the inmate, hard knowing their child is being kept from them, because they're already going through so much….How it's handled will make a big difference on society and that child. (Mother of inmate)*

Another prominent subtheme of communication involved complete dissolution of relationships, mentioned in many focus groups and interviews.

- *My wife said, "SCDC got the man that I want, why should I stay?" (Male inmate)*
- *Just complete disruption in the family. I mean her father…absolutely rejected [Inmate] when she was arrested. He didn't even let people know he had a daughter….And Brother was embarrassed. I mean everybody at school knew that his sister was arrested and in prison. (Mother of inmate)*

Even when relationships were maintained, inmates and family typically described a decrease in quantity of communication. Again, this subtheme was described in many focus groups and interviews.

- *Out of sight, out of mind—but I'm not saying they don't care. (Male inmate)*
- *Feels like if they don't come, they don't love you, but they keep doing what they have to do. (Male inmate)*
- *You went to church, you went to the beach, why can't you find time to see me? You want to demand something from them. (Female inmate)*
- *You can't just waste hours on a conversation or send a text smiley face. You have to pack meaning in. (Male inmate)*

Prisoners and family members also described the pain associated with emotional and physical distance of communication. This subtheme was predominantly mentioned in focus groups, but was also discussed in some family interviews.

- *I end up parenting over speaker phone. I can't discipline 'em. I'm just a voice over the phone. (Male inmate)*

- *I haven't seen her in four years…. I have to look at a picture when I talk to her….I mean I don't have no way down there…[It's] A hundred miles. (Husband of inmate)*
- *You're allowed to give an initial hug when you first get there [to visit], and you're allowed to hug them when you leave. But you're not allowed to touch them in between.…I mean that, to me, is just awful….How can you expect somebody to be in prison for twenty years with absolutely no human contact? (Mother of inmate)*

Although it was not mentioned as often, some inmates and some family members felt that the quality of their communication was improved, either being more open or more caring.

- *You learn about who really cares about you. (Male inmate)*
- *Communication is more open because I was keeping stuff from them before. (Female inmate)*

Family Mental Health

Another very common theme discussed by prisoners and their families concerned family mental health. Subthemes in this area included *family stress, loneliness and isolation, escalation of substance abuse, mental health disorders*, and *children's mental health*. One of the most common mental health subthemes was stress—felt by both prisoners and their families. This subtheme was frequently mentioned throughout focus groups and interviews.

- *My mom is stressed out….She hears my voice and cries. (Female inmate)*

The subtheme of loneliness or isolation was often mentioned. Some prisoners described feeling "totally cut off from outside world."

- *Loneliness is not a word you can use to describe what we're going through in here. (Female inmate)*

Similarly, family members often expressed loneliness when loved ones who had previously lived with them were incarcerated.

- *Just the loneliness of him not being here….It's a void. I mean it's a space there that I know that he's supposed to be here, and he's not here. (Mother of inmate)*

The stress and loneliness—felt by both prisoners and family—was frequently perceived as a link to substance abuse by family members, as well as to mental disorders.

- *People use you as an excuse. They get together and start thinking of you so they start drinking, getting high and then they blame you. (Male inmate)*
- *My mom can't stay sober long enough to visit me….My dad has panic attacks and keeps going to the hospital for those….everything is the end of the world to them because they didn't do anything to stop me when I was doing stuff. (Female inmate)*
- *I've been hospitalized several times because of mental illness. My depression--I've attempted suicide and you know, all that stuff. And my brother, he's bipolar. And I mean, we just seemed so normal and happy before all this happened, and then now we can't function without drugs. (Daughter of inmate)*

There was also substantial discussion in both focus groups and interviews regarding anxiety and crying among children, as well as externalizing behaviors including promiscuity and delinquency. This subtheme was mentioned in all focus groups as well as in many family interviews.

- *My son would sleep in doghouses trying to run away. At 16 he left. He has been incarcerated several times. He is not the kind, gentle, little boy I left. He is now a very angry man. Incarceration is devastating for our children. (Female inmate)*
- *That's a storm brewing within them. That could turn into hate or resentment. (Male inmate)*
- *My 6-year-old brother has been being bad at school; my brother looks up to me and wants to be locked up too. (Male inmate)*

Family Physical Health

Family physical health issues were prominent in both prisoner focus groups and family interviews. Subthemes relating to physical health included *stress-related conditions, aging and disability, abuse or neglect of family members,* and *changes to physical activity or medical care.* Many inmates and family members described how stress was viewed as precipitating physical health problems for family members.

- *My son has bleeding ulcers, and they say it's probably because he worries about me all the time. (Female inmate)*
- *My blood pressure went up to one-fifty-four the two weeks before his parole and I know that was stress, because I've never in my life had high blood pressure. (Mother of inmate)*

Sometimes the prisoner had been a caregiver for a family member, so the separation was perceived to be associated with a rapid decline in health for aging family members or those with pre-existing health problems.

- *My grandma, I used to be the one that said, "Grandma take your meds, take your meds." Some days that I haven't been there, and she has had to go to the hospital. She was relying on me. (Male inmate)*

Inmates were also concerned about abuse and neglect of family members in their absence, with some inmates indicating "*I was the lifeline to stop neglect and abuse."*

- *I witnessed my mom and dad incarcerated my whole life. They used drugs, had gambling problems. Certain things don't change. Now they're trying to get your kids. (Male inmate)*

Prisoners felt their own health was affected not only by stress and violence inside the prison, but by changes to their diet, physical activity, and medical care.

- *I see guys come in here that are in good shape, but they've implemented that controlled movement. You'll get diabetes in here eating the food, nothing but starch. (Male inmate)* Another chimed in: *The pill line is longer than the chow line…*

Again, parents and family members echoed their concerns on a range of issues from diet and hygiene to physical safety.

- *I went to see him one time, he had a busted lip when I got there. I didn't know that was going to be that way. My husband went there one time, and when he came back he said he had a black eye. [My son] doesn't tell the truth about how these things happen because it doesn't matter anymore to him. Can you imagine being a human being and it doesn't matter anymore because you've been beaten up so much that it doesn't matter? (Mother of inmate)*

Family Finances

Family finances was one of the most common themes, extensively discussed both in focus groups and interviews. Subthemes relating to finances included *loss of income from the inmate, having a new financial head of household, loss of material goods or housing,* and *additional costs of incarceration.*

Family finances were affected when the prisoner's income was lost (over half of the inmates were employed prior to their incarceration), and a new head-of-household took over. This was mentioned in all focus groups and many family interviews.

- *I will eat bread, I can eat rice. If he's okay, I'm okay. But I get no assistance because I am working, going to school. I have made the Dean's list every year, I don't know how, by the grace of God. (Wife of inmate)*
- *My mom worked Monday through Friday and maybe on Saturdays. Now she works every day, 12 hours. (Male inmate)*

- *People pay your bills and all, that takes away from what they can do. It puts a lot of weight on other people's shoulders. (Male inmate)*

Some families had to move or sell their belongings to keep up with expenses.

- *I drove 16 hours from Michigan to see my husband.…I slept in my car for 3 ½ weeks until I could save up enough money to get an apartment when I moved here. Sometimes I didn't feel like coming but I know he needed support. (Wife of inmate)*
- *My grandma sold land and cattle for my legal fees. (Female inmate)*
- *I became a bill. If I need something, we have to tap into savings.…You don't think of car taxes, but one parent paying $700 for tax--assets become a burden, and you have to sell things. (Male inmate)*

Prisoners also described how costs of being incarcerated added up.

- *Legal fees, phone, visits. They send you money. My dad keeps a stack of the money orders he sends me. He calls it his retirement fund. (Female inmate)*

Family members also frequently expressed dismay over the impact of travel, phone, and canteen costs on finances.

- *And sometimes I have to borrow money to get him something to eat…I hate to sit there [at visitation] when everybody else is eating. So I buy stuff each Saturday and Sunday, but I don't let him know that it's a bind because he would worry. (Mother of inmate)*
- *Every six months or every three or four months, they have a package that you can buy them for like their personals and extra food, and I try and get her that, but that's extra, too. (Husband of inmate)*
- *It changes your perspective. I am only 34 years old, and I have a heightened responsibility, and I can't be doing foolish things. I don't go to the clubs, I don't drink, I don't smoke. I*

can't. I think, "Oh I need to get my sleep, because I gotta visit in the morning." Or, "He needs money for the canteen this week." My whole life is based around what he needs. (Wife of inmate)

Supports from the Community

Prisoners and their families discussed few sources of support from the community, most often describing loss of supports rather than existing support. Subthemes relating to community supports included *support from friends, support from churches,* and *government benefits.*

Aside from their family members, prisoners described limited supports from the community, noting "Friends leave you when you get in here." They indicated that their families typically did not receive other supports, either, beyond extended family helping with the bills and the yard.

- *My mom can't get [government assistance]. She has too many jobs. (Male inmate)*

Only a few inmates described ongoing support from friends and churches.

- *I came from a small town, and the whole town—the sheriff and everything—gave me support. The lawyers, the bankers, everyone—because we were from there. (Female inmate)*

Family members were more vocal regarding supports from their church and communities.

- *I have a good support group with my church. I mean as far as my preacher's wife and another member, they actually send mail to them and help with their boxes. My daughter and another girl's. But we… They help a lot in that sense. And with the talking and being there if I need to talk and stuff like that." (Mother of inmate)*

However, most family members also discussed loss of friends and community supports.

- *Once people find out that I have a brother in prison and about his crime, people don't want to be associated with me. Like they think I am going to do the same thing. And I don't condone what my brother did but I will not turn my back on him. (Sister of inmate)*

Sometimes this isolation from friends was self-imposed.

- *We don't have friends. We don't associate with anybody outside of our daughter and her husband.…We just stopped doing all that, and our house used to be a place where everybody came by after work and had coffee and cake, and we were grilling out every weekend and having people over.…We just quit.…We found out that people are just nosy. They want to ask you a lot of things and it's not that they care, they're just nosy. (Mother of inmate)*
- *When just the trial and arrest thing started our neighbors became very hostile towards us. And that was one of the reasons we had to start over and get away from people who knew everything about us. (Daughter of inmate)*

Family members sometimes discussed inability of others—family and community—to understand their situation.

- *They just don't understand what that really means.…Every choice I do has effects on him. If I do not go to work that means that he doesn't get to eat, or a visit. Prison makes your circle a lot smaller. (Wife of inmate)*
- *I know a lot of people can't understand why we were relieved over the fact that she'd gone to jail, but they just hadn't been down the road we've been down, or they'd understand it. (Father of inmate)*

Perhaps for this reason, a number of family members described cultivation of support networks among persons that they met while visiting their loved ones in prison. This included

not only providing emotional support to one another based on shared experience, but also providing material support and reaching out to inmates who did not have family on the outside.

- *Just knowing we are going through the same thing is support enough. (Mother of inmate)*
- *I keep an extra sweater in my car for ladies, because I know if I see a lady in a cap sleeve she will get turned away. So I tell her to wear my sweater so she can get in. I've done that a lot. (Sister of inmate)*
- *And I would buy him clothes, and his roommate don't have a mama and a daddy, and I would buy him clothes. So whatever I done for [my son], I did it for [his roommate]. (Mother of inmate)*

Discussion

The current study is one of the first to examine impact of incarceration over a range of familial relationships (e.g., parents, siblings, children) from the perspective of both prisoners and family members. Specifically, we examined impact of incarceration in areas including family communication, mental health, physical health, finances, and community supports. One of the key ways families were impacted by incarceration involved communication. This included not only decreases in quantity of communication and experiences of family conflict, but also prisoners and family members holding back information in their conversations to protect one another from distress. A second major area of impact involved mental health, particularly increased stress felt by both family members and prisoners. Often, this stress was perceived as a contributor to other mental health problems such as substance abuse and depression, as well as to physical health problems such as high blood pressure. The mental health of children in the household, including children of inmates as well as inmates' younger siblings, was also a significant concern. Incarceration also had a notable impact on family finances, including loss of

income from the inmate as well as requiring a new financial head of household. Prison expenditures, including food, clothing, phone calls, and medical expenses presented financial strain for prisoners and their family members. Beyond all of these stressors, prisoners and their families perceived little support from friends and communities, although churches were described as providing some emotional, instrumental, and material support for families.

These focus groups and interviews make it evident that the impact of incarceration extends well beyond the prisoner to affect families and communities in a range of ways. Addressing the specific domains of impact noted will require coordination of services and supports from numerous public and private entities. For instance, impacts on family communication and mental health are important to professionals working in mental health treatment, substance abuse treatment, forensic mental health, school-based services, child welfare, and juvenile justice. Health effects described by prisoners and their families also have relevance to those working in a broader behavioral health context as well as in emergency rooms and primary care settings. Families also described a deficiency of instrumental support; however, faith communities (churches) were noted as a source of some assistance with finances, home maintenance, and child care. Government and community-based agencies might also be engaged to assist elderly or vulnerable family members in addressing needs of daily living. As prisons integrate new technologies (e.g., video visitation) and prison vendors undergo greater scrutiny, some of the stressors around phone calls, visits, and inmate expenses may be reduced.

What is clear from this research is that incarceration is not simply a criminal justice or correctional issue. The impacts of incarceration are spread across communities in areas including health, mental health, education, and family services. In describing such impacts on both the inmate and their family members, Arditti (2014) notes the “unsettling parallel between

non-incarcerated visiting family members and the inmate" (p.127). To effectively address impacts across all of these areas, we must break down service silos to develop networked interventions. Doing so requires that agencies begin to collect data in systematic ways that allow us to uncover impacts of incarceration on families throughout various service systems, identify gaps and duplication in services, and explore coordinated approaches to ameliorating incarceration's impact. Families, after all, are the context to which prisoners will return upon reentry, and planned approaches can help assure that offender paths out of prisons include supports to address complex family struggles.

The General Assembly of Pennsylvania (2011) released an excellent report of practice and policy recommendations, many of which are supported by findings of this study. Specifically in the area of corrections, the report notes programming needs including video visitation options, scheduling prisoner phone calls based on availability of children and custodial caregivers, encouraging schools to provide information such as report cards to incarcerated parents, establishing family-friendly visitation areas, and incorporating family group conferencing as part of re-entry planning. Many practice and policy options, such as providing subsidized transportation or lodging for visitors and establishing visitation systems that reduce waits and turnaways, have been supported by other research using different methodologies (e.g., Hoffmann et al., 2010). The General Assembly report also provides detailed recommendations on reducing impacts throughout judicial processing including arrests, in courts, probation and parole, in coordinating with community and government agencies, and in data collection and sharing across agencies.

Beyond strategies addressing incarceration's impact, serious consideration must be given to justice reform, including alternatives to incarceration such as education, counseling, and

medication-assisted treatment. Again, the General Assembly report (2011) provides suggestions regarding legal measures that may reduce the number of parents sentenced to prison (e.g., drug law reform, diversion programs). Attenuating incarceration's impact has potential to reduce recidivism as well as engage multiple generations of family members with wraparound services, enhancing community safety, security, and quality of life in the U.S.

Limitations

The current study is limited in a number of ways. First, our qualitative prompts focused on several domains of impact. It is possible that other domains of impact may exist that were not addressed in the current study. Second, our samples of inmates and family members were recruited through three correctional facilities in a single Southeastern state; thus, findings may not generalize to other types of facilities or other jurisdictions. Third, it is likely that our sample of family-member participants is not representative of all family members of inmates, and particularly not of those families who do not visit correctional facilities. Further, our family members were predominantly female as well as mostly family members of serious offenders serving long prison sentences. Again, this may limit generalizability of our findings. Finally, because we sought to identify impacts on a range of family members rather than just upon children of inmates, our exploration of impacts on children was necessarily more cursory than would be ideal to explore impacts on children. Specifically, to thoroughly examine impacts of incarceration on children, researchers might wish to include interviews with minor children themselves as well as with persons who frequently interact with these children (e.g., caregivers, teachers). These limitations, when viewed in the context of our findings, suggest a number of areas open to future explorations.

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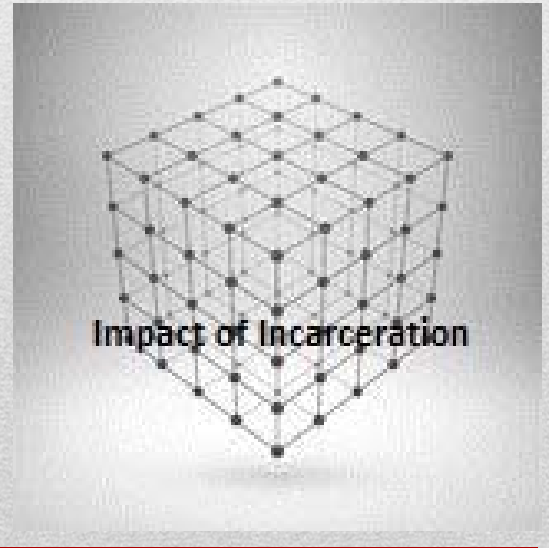
The Pill Line is Longer than the Chow Line

Impacts of Incarceration on Prisoners & Their Families

Dana DeHart, Cheri Shapiro, Mary Ann Priester, & Stephanie Clone

University of South Carolina



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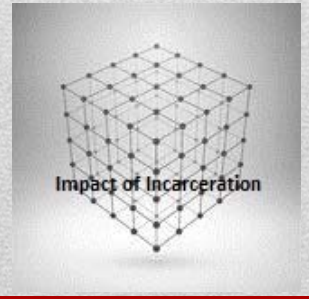
- War on Drugs, Tough-on-Crime> mass incarceration
- Offenders spending more time in prison
- 2.24m adults incarcerated in US in 2013
- 10.2m incarcerated worldwide--all-time high
- Removes persons from families & communities
- Impact spreads throughout society

Mass Incarceration



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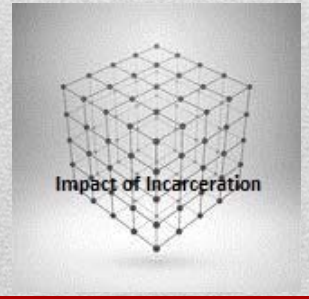
- Social: Stigma, w/drawal, family tension, “gatekeeping”
- Child mental health: Disrupted attachment, traumatic stress, lowered self-concept, reactance, delinquency
- Caregivers’ financial burden, psych distress

Research on Impact



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- Families w/multiple probs (confounds)
- Impact includes sequelea- witnessing arrests, court, guardianship, school mobility, etc.
- Lack research on physical health (e.g., as ACEs)
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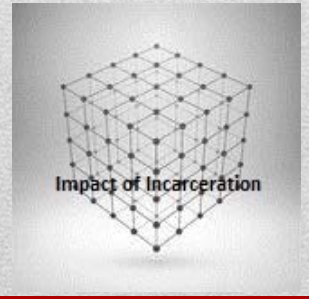
Limitations of Past Research



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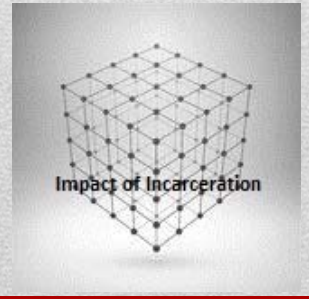
- Innovative strats needed to understand the true scope
- Concurrent triangulation strategy
  - Archival administrative data
  - Family interviews
  - Inmate focus groups

- Test a few specific quantitative hypotheses
- Grounded-theory analyses of qualitative data
- Iterative exploratory analyses to illuminate

Mixed-Methods Study



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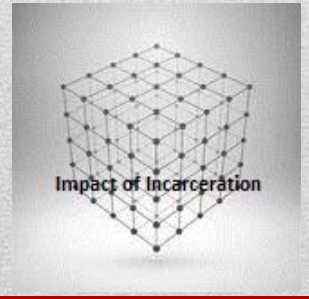
- Enhance understanding nature & extent families' involvement in systems
- Understand dynamics of impact on families, esp. those associated with mutable risks
- Understand overlaps/gaps in systemic involvement, implic for coordinated response
- Promote institutional focus on data collection

Goals



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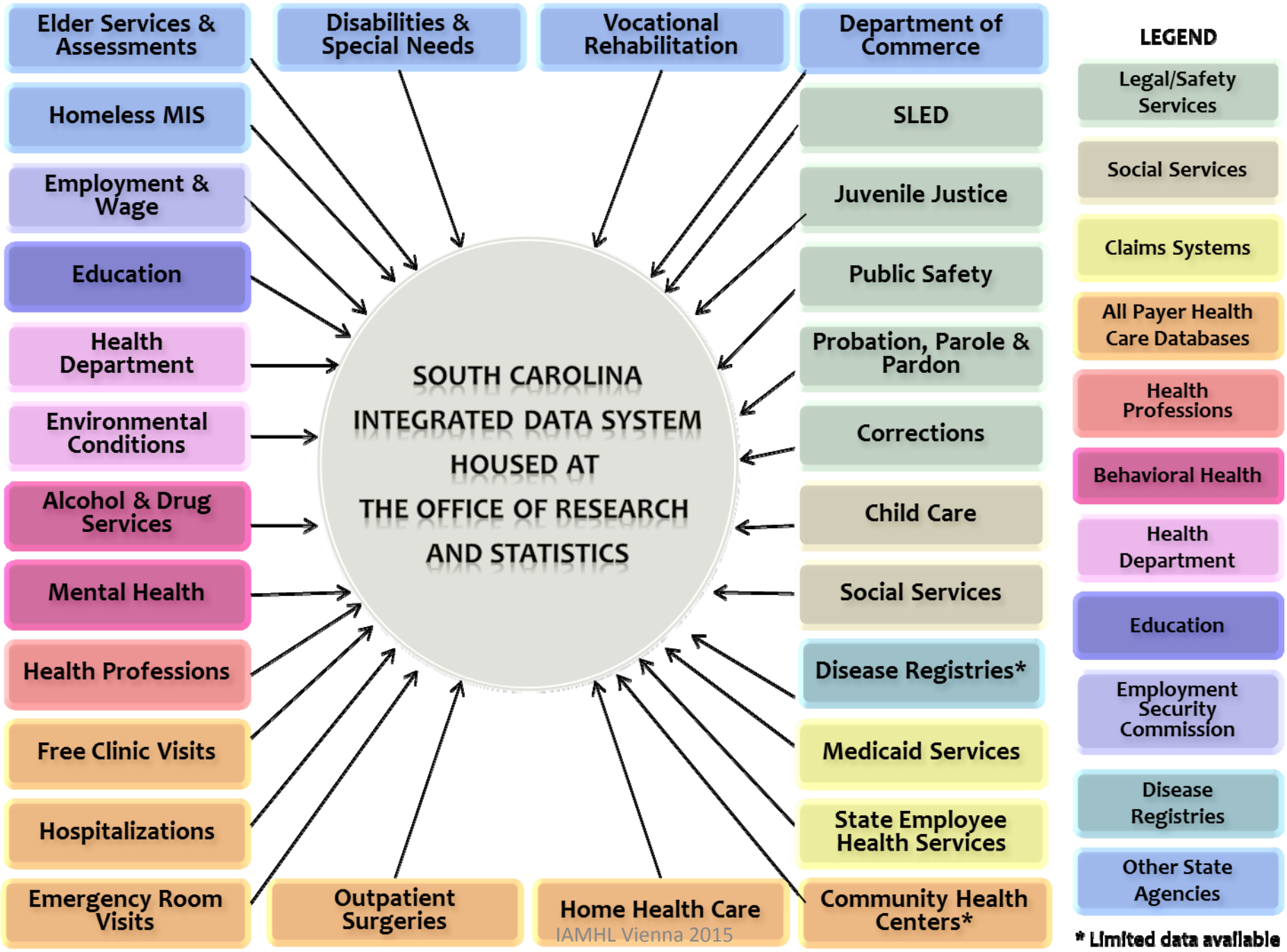

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- 20,000 focal inmates & their 10,000 visitors
- Time period before, during, & after incarceration
- Integrated data "cube"
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  - Department of Mental Health
  - Department of Alcohol & Other Drug Abuse
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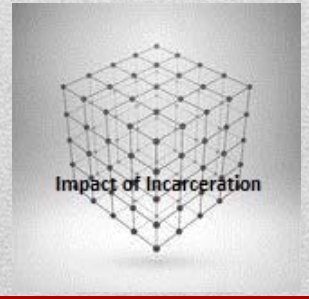
- "How-to guide" to assist other jurisdictions

Integrated Administrative Data



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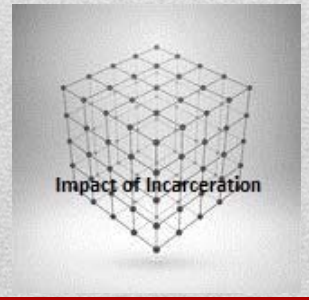
- Must be age 16 or older
- Recruitment flyers in visitation areas
- Announcement to inmate focus groups
- $20 incentives per family member
- Phone or in-person
- Individual or small-group interviews
- 27 adult family members

Interviews with Family Members



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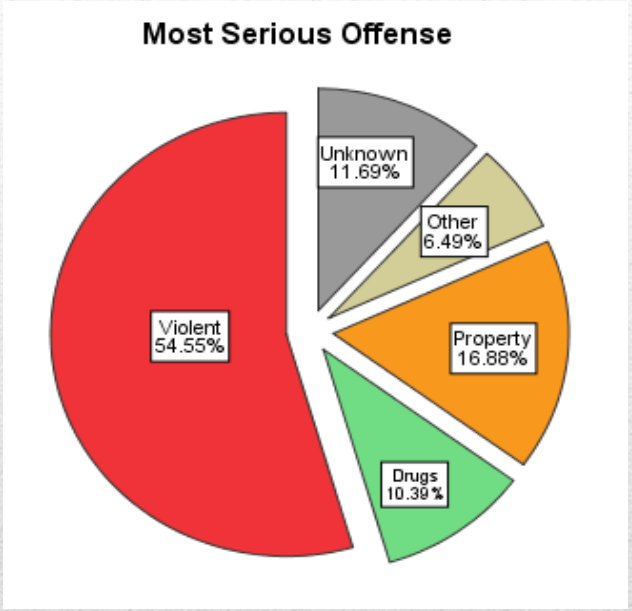
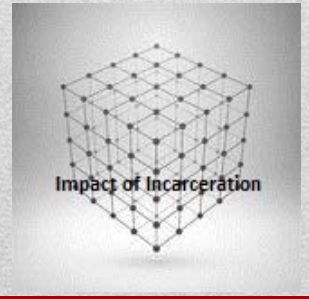
- This presentation focuses on this component
- 8 groups, 77 prisoners from 3 facilities
- 38 males, 39 females
- Ages 17-66



Focus Groups with Prisoners



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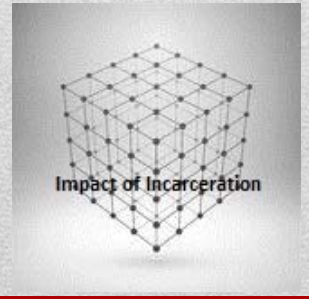
- Changes to household composition
- Changes in communication/relationships
- Changes in finances
- Changes in physical & mental health (adults, kids)
- Use of government assistance
- Informal supports (e.g., friends, churches)
- Anticipated challenges around re-entry
- Positive changes
- Strengths and supports

Prompts



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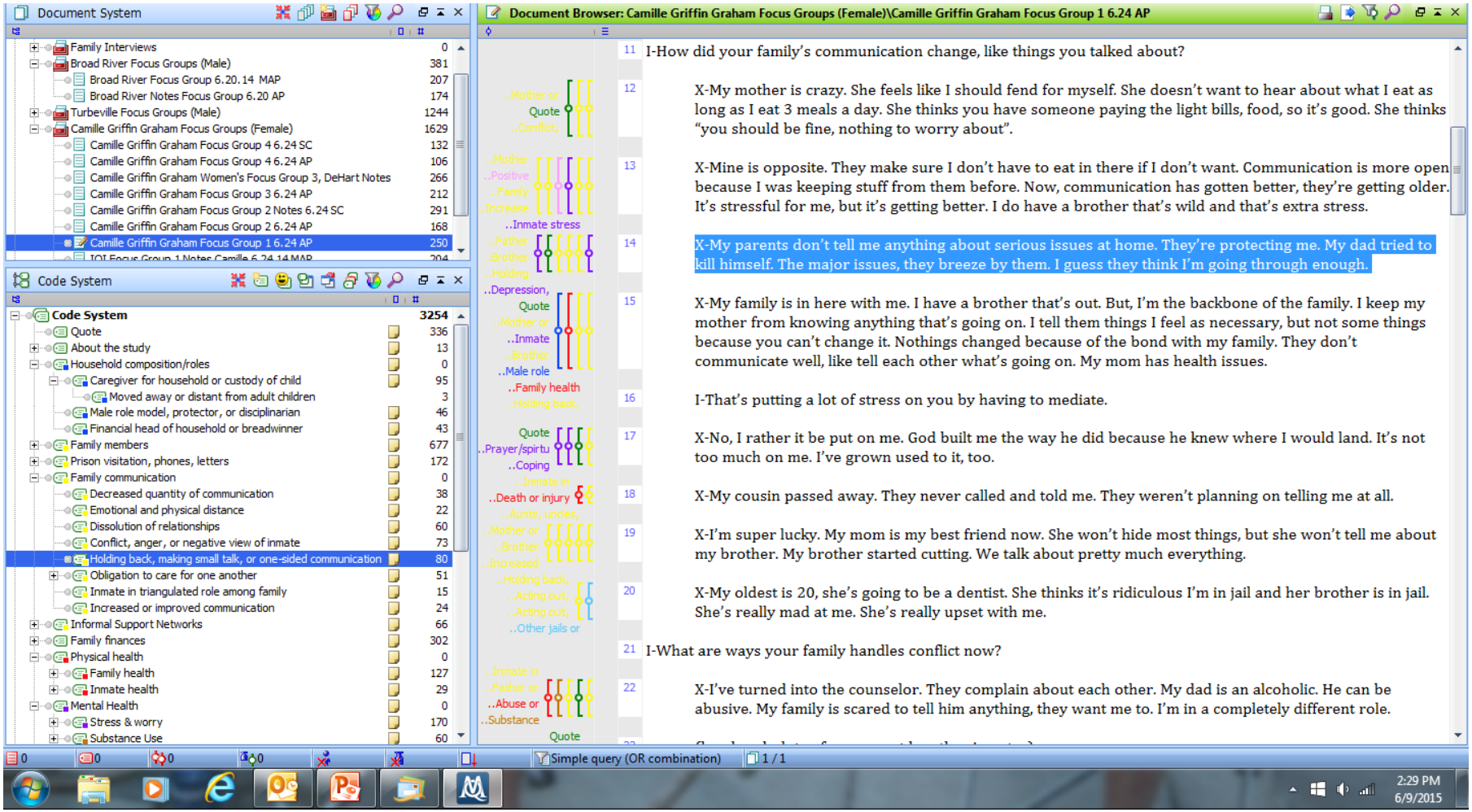
MaxQDA Analysis



- **First cycle:** Provisional codes based on prompts, with open coding to break down data & provide leads for exploration
- **Second cycle:** Axial coding to differentiate & organize, selective coding to ID salient codes w/implications for practice & policy

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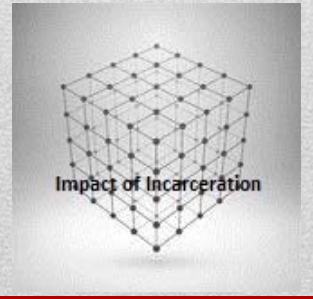
- Decreased quantity of communication
- Improved communication (fewer)
- Emotional & physical distance
- Dissolution of relationships
- Conflict, anger, or negative view of inmate
- Holding back & directionality of communication

Family Communication



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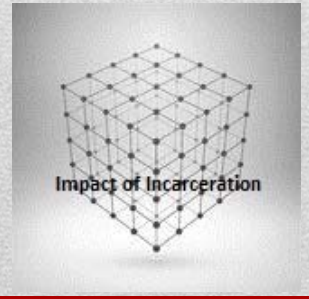
- Stress (e.g., stigma, worry about other)
- Loneliness & isolation
- Escalation of family substance use
- Mental disorders (e.g., depression, anxiety)
- Child mental health (e.g., acting out, grief)

Family Mental Health



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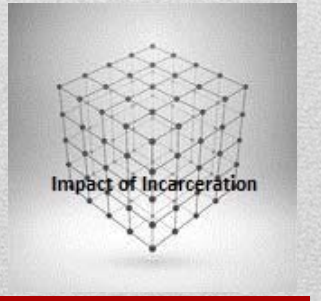
- Stress-related conditions (e.g., heart attacks)
- Aging and disability without a caregiver
- Abuse/neglect of family in absence of inmate
- Poor diet, activity, & medical care (inmate)

Family Physical Health



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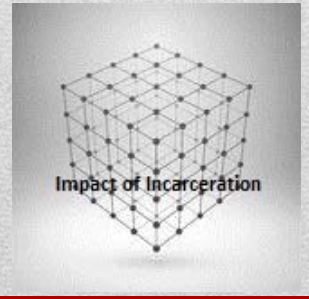
- Loss of income from inmate
- New financial head of household
- Loss of material goods or housing
- Additional costs of incarceration

  (e.g., phone, travel, canteen, medical)

Family Finances



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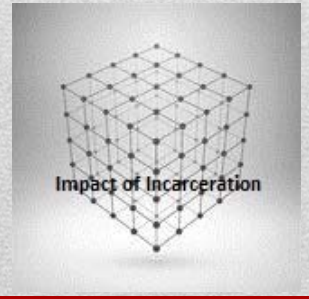
- Loss of friends
- Loss of faith
- Few families receive gov't benefits
- Some ongoing friend/church support

Supports from Community



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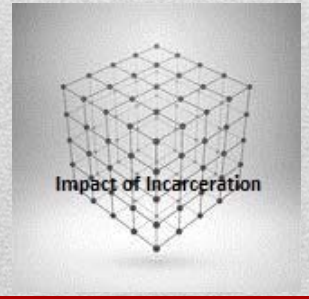
- Impact spread across communities (schools, justice, mental health, econ services, child welfare)
- Must break down service silos, develop networked interventions
- Urge agencies to collect family data to better understand impact
- Incarceration reform > move toward education, counseling, medication-assisted tx

Implications



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QUESTIONS?

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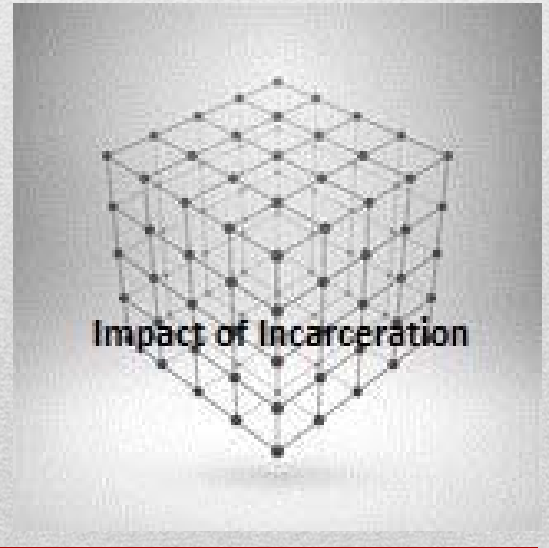

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A Mixed-Methods Study

Dana DeHart, Cheri Shapiro, & Stephanie Clone

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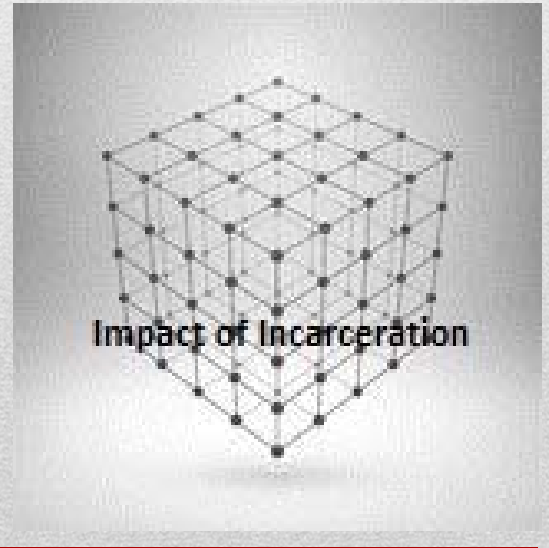

ASC DC 2015

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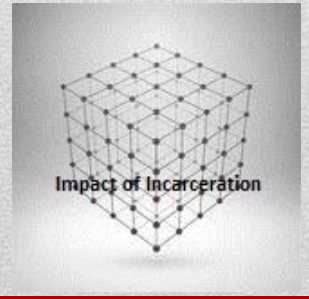

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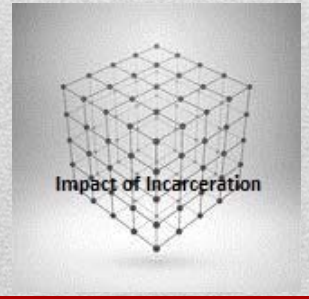

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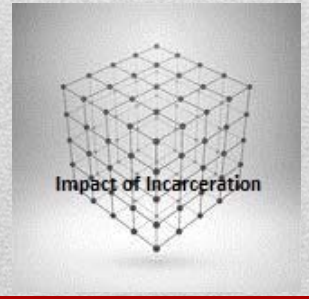

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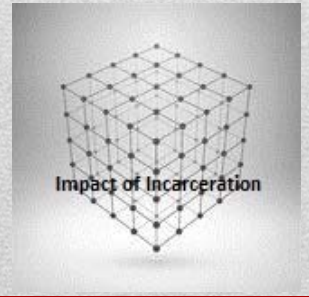

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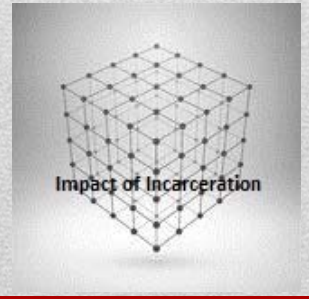

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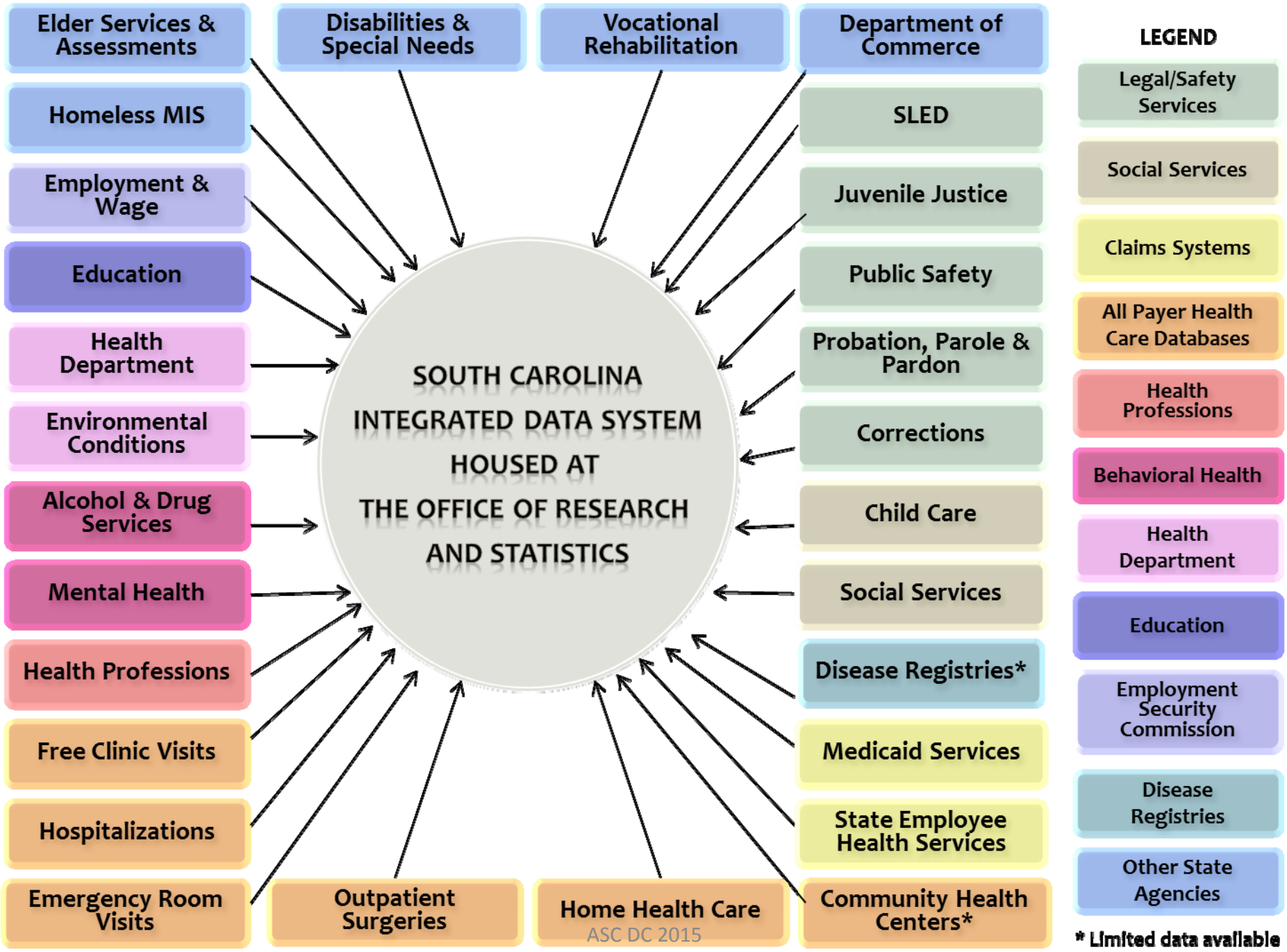

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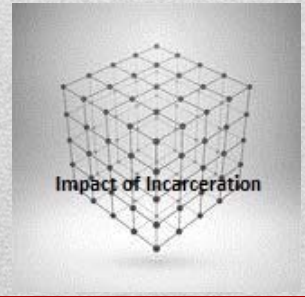

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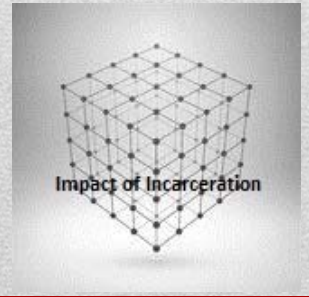
- 21 adult family members
  - 5 sisters
  - 6 daughters, 1 son
  - 5 mothers, 1 father
  - 2 wives, 1 husband
- Ages 21-78

Interviews with Family Members



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- Range of offenses
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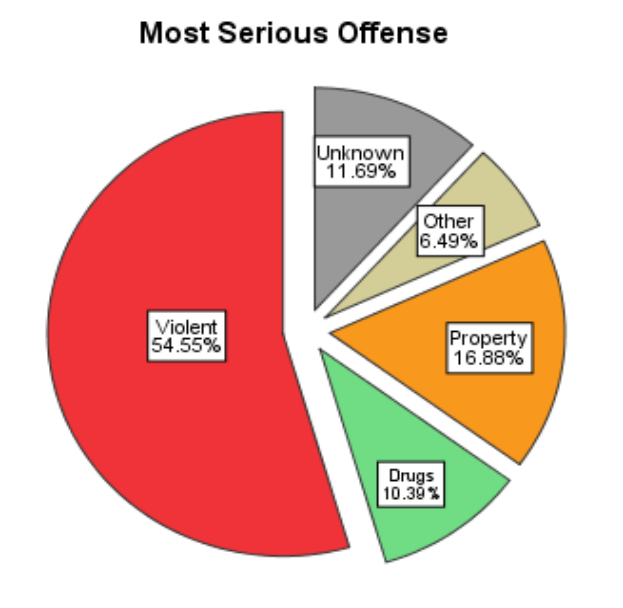
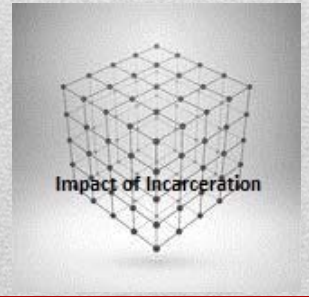


Focus Groups with Prisoners



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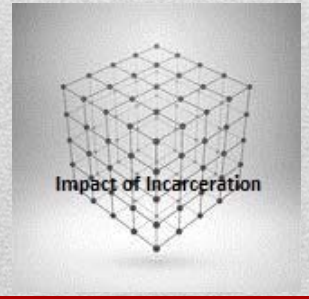
- Changes in finances
- Changes in physical & mental health (adults, kids)
- Use of government assistance
- Informal supports (e.g., friends, churches)
- Anticipated challenges around re-entry
- Positive changes
- Strengths and supports

Prompts



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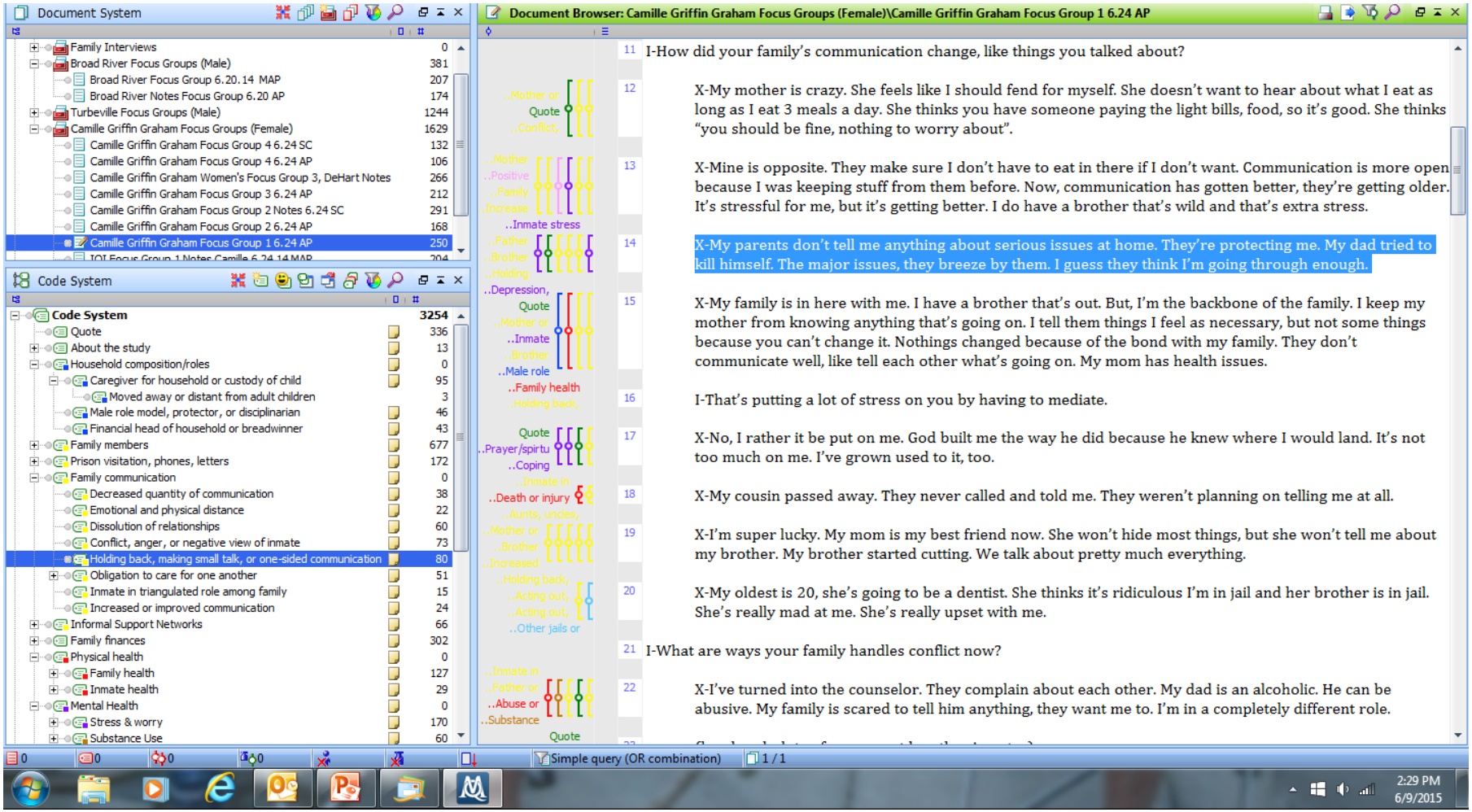
MaxQDA Analysis



- **First cycle:** Provisional codes based on prompts, with open coding to break down data & provide leads for exploration
- **Second cycle:** Axial coding to differentiate & organize, selective coding to ID salient codes w/implications for practice & policy

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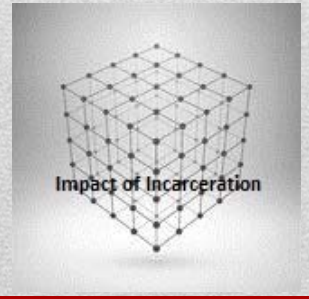
- Holding back & directionality of communication
- Conflict, anger, or negative view of inmate
- Dissolution of relationships
- Decreased quantity of communication
- Emotional & physical distance
- Improved communication

Family Communication



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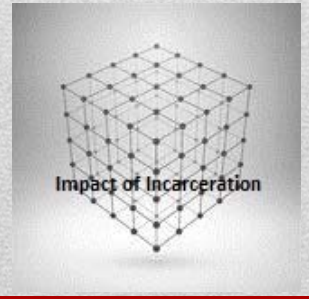
- Stress (e.g., stigma, worry about other)
- Loneliness & isolation
- Escalation of family substance use
- Mental disorders (e.g., depression, anxiety)
- Child mental health (e.g., acting out, grief)

Family Mental Health



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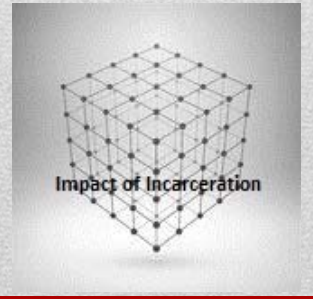
- Stress-related conditions (e.g., heart attacks)
- Aging and disability without a caregiver
- Abuse/neglect of family in absence of inmate
- Poor diet, activity, & medical care (inmate)

Family Physical Health



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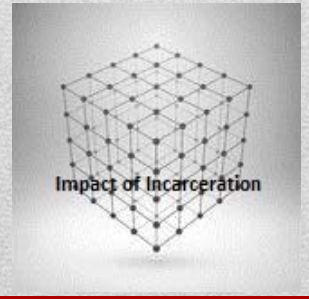
- Loss of income from inmate
- New financial head of household
- Loss of material goods or housing
- Additional costs of incarceration

  (e.g., phone, travel, canteen, medical)

Family Finances



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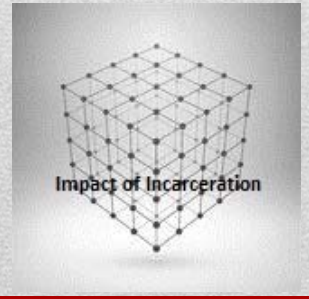
- Loss of friends
- Loss of faith
- Few families receive gov't benefits
- Some ongoing friend/church support

Supports from Community



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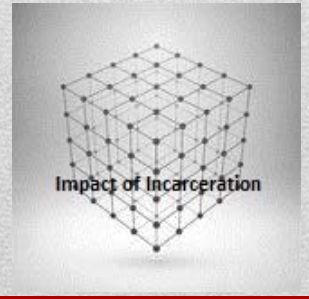
- Impact spread across communities (schools, justice, mental health, econ services, child welfare)
- Must break down service silos, develop networked interventions
- Urge agencies to collect family data to better understand impact
- Incarceration reform > move toward education, counseling, medication-assisted tx

Implications



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QUESTIONS?

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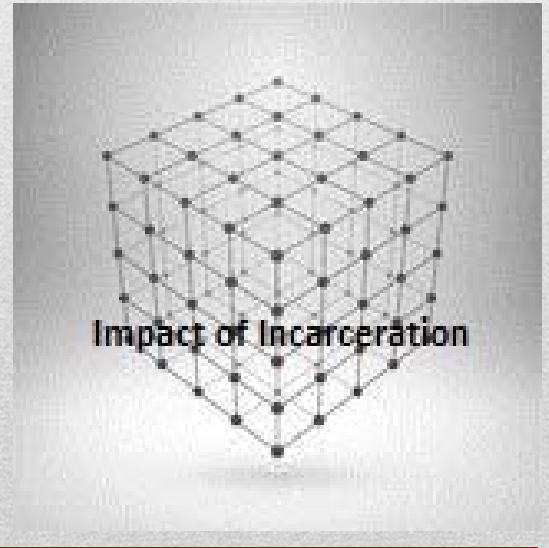

ASC DC 2015

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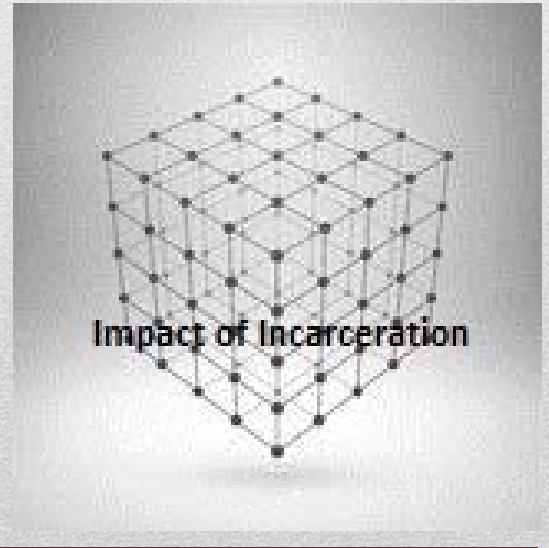
Impact of Incarceration on Families

Using SC's Integrated Data

Dana DeHart, Cheri Shapiro, &

Kathleen Hayes

University of South Carolina



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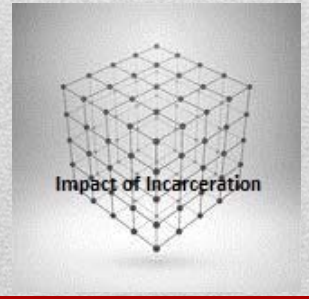
- War on Drugs, Tough-on-Crime> mass incarceration
- Offenders spending more time in prison
- 2.24m adults incarcerated in US in 2013
- 10.2m incarcerated worldwide--all-time high
- Removes persons from families & communities
- Impact spreads throughout society

Mass Incarceration



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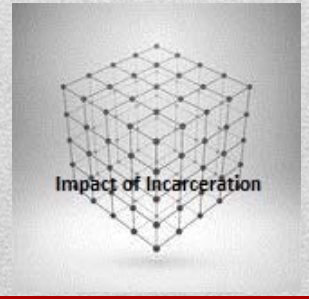
- Limited official data on families of prisoners
- Families w/multiple probs (confounds)
- Impact includes sequelea- witnessing arrests, court, guardianship, school mobility, etc.
- Lack research on physical health (e.g., as ACEs)
- Lack of research on gendered impact
- Few longitudinal, multi-system studies

Limitations of Past Research



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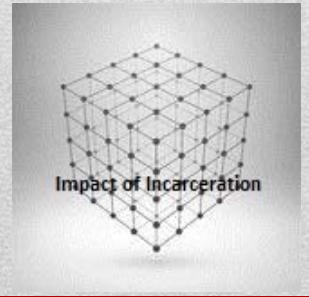
- Innovative strats needed to understand the true scope
- Concurrent triangulation strategy
  - Archival administrative data
  - Family interviews
  - Inmate focus groups

- Test a few specific quantitative hypotheses
- Grounded-theory analyses of qualitative data
- Iterative exploratory analyses to illuminate

Mixed-Methods Study



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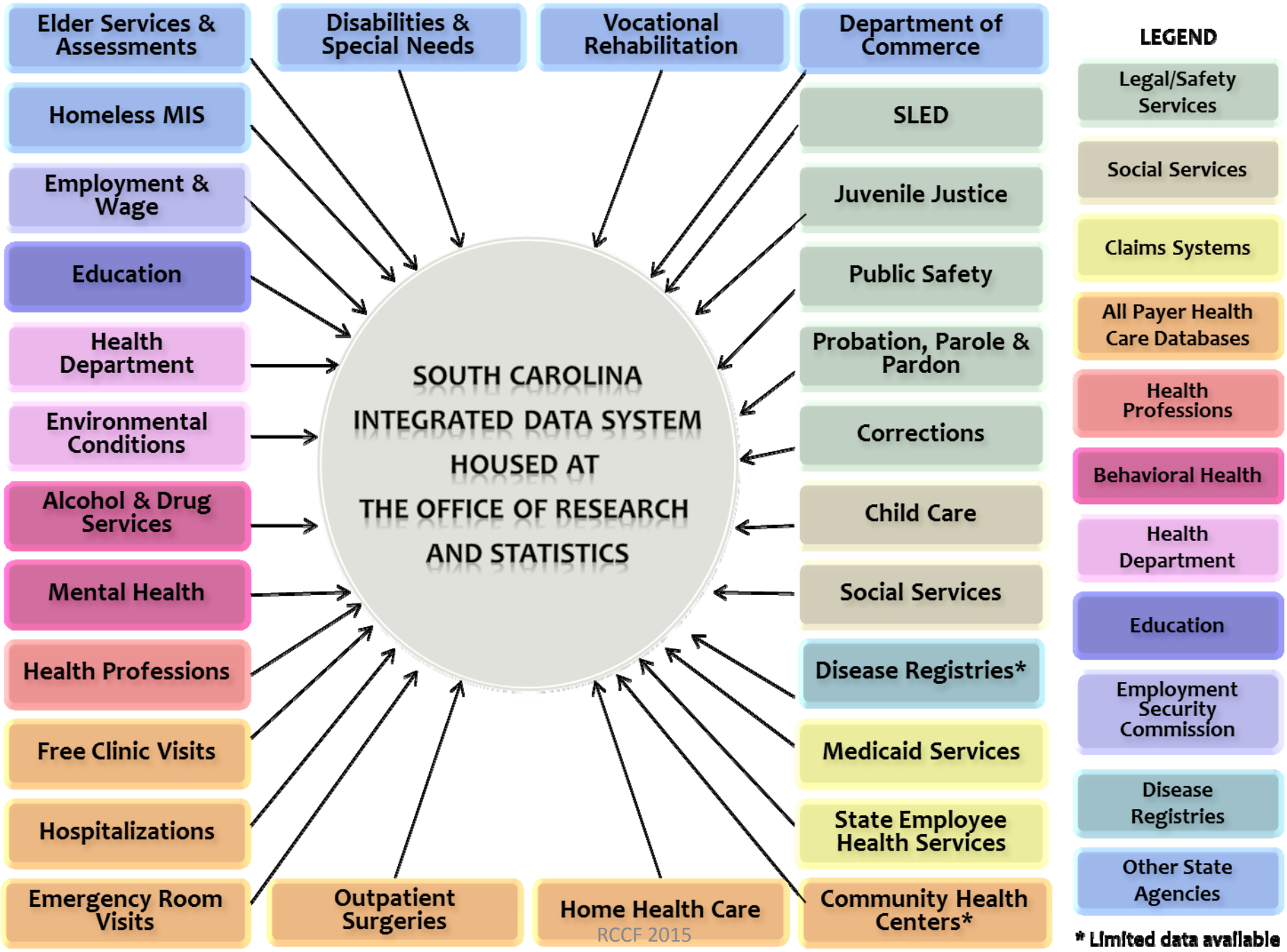

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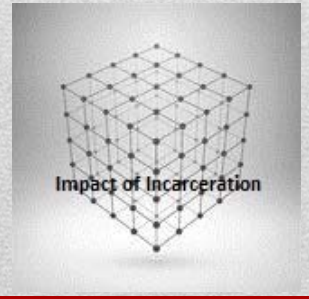
- 20,000 focal inmates & their 50,000 visitors
- Time period before, during, & after incarceration
- Integrated data "cube"
  - Department of Corrections
  - Department of Juvenile Justice
  - Department of Mental Health
  - Department of Alcohol & Other Drug Abuse
  - Department of Social Services (CPS, TANF, FC)
  - Health & Human Services (Medicaid, UB)
  - Department of Education
- "How-to guide" to assist other jurisdictions

Integrated Administrative Data



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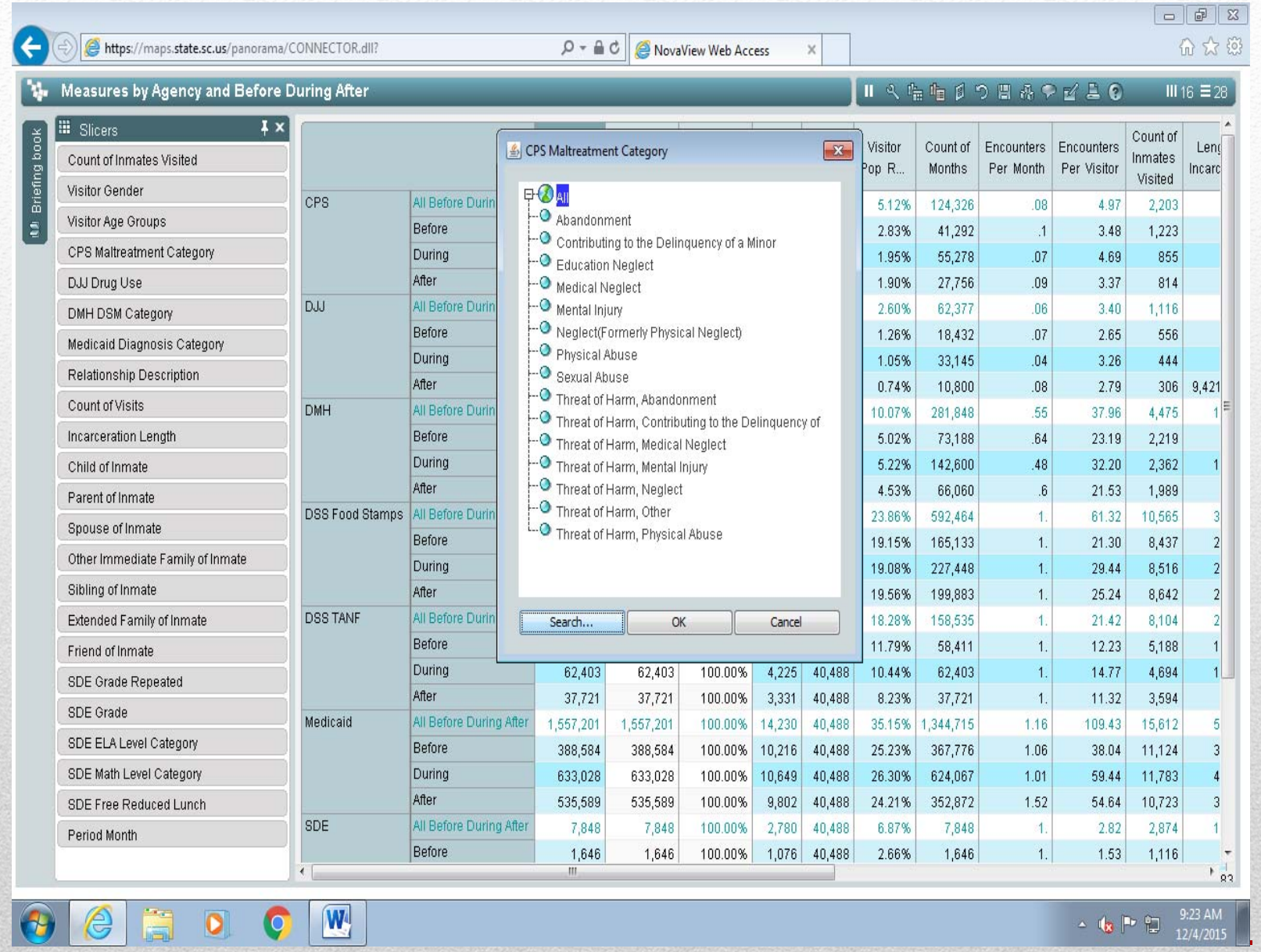

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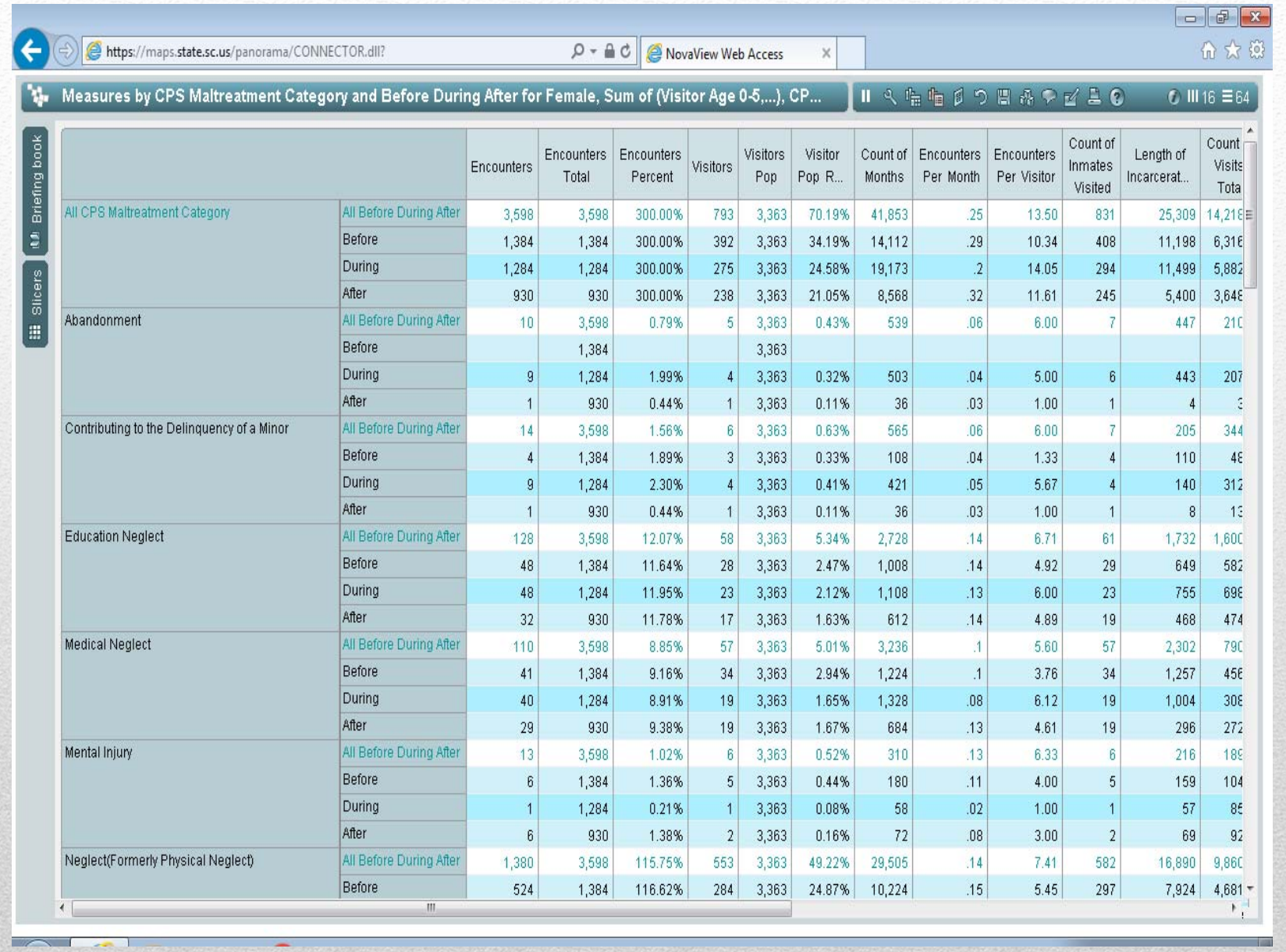

		Encounters	Encounters Total	Encounters Percent	Visitors	Visitors Pop	Visitor Pop R...	Count of Months	Encounters Per Month	Encounters Per Visitor	Count of Inmates Visited	Length of Incarcerat...	Count Visits Tota
All CPS Maltreatment Category	All Before During After	3,598	3,598	300.00%	793	3,363	70.19%	41,853	.25	13.50	831	25,309	14,218
	Before	1,384	1,384	300.00%	392	3,363	34.19%	14,112	.29	10.34	408	11,198	6,316
	During	1,284	1,284	300.00%	275	3,363	24.58%	19,173	.2	14.05	294	11,499	5,882
	After	930	930	300.00%	238	3,363	21.05%	8,568	.32	11.61	245	5,400	3,648
Abandonment	All Before During After	10	3,598	0.79%	5	3,363	0.43%	539	.06	6.00	7	447	210
	Before		1,384			3,363							
	During	9	1,284	1.99%	4	3,363	0.32%	503	.04	5.00	6	443	207
	After	1	930	0.44%	1	3,363	0.11%	36	.03	1.00	1	4	3
Contributing to the Delinquency of a Minor	All Before During After	14	3,598	1.56%	6	3,363	0.63%	565	.06	6.00	7	205	344
	Before	4	1,384	1.89%	3	3,363	0.33%	108	.04	1.33	4	110	48
	During	9	1,284	2.30%	4	3,363	0.41%	421	.05	5.67	4	140	312
	After	1	930	0.44%	1	3,363	0.11%	36	.03	1.00	1	8	13
Education Neglect	All Before During After	128	3,598	12.07%	58	3,363	5.34%	2,728	.14	6.71	61	1,732	1,600
	Before	48	1,384	11.64%	28	3,363	2.47%	1,008	.14	4.92	29	649	582
	During	48	1,284	11.95%	23	3,363	2.12%	1,108	.13	6.00	23	755	698
	After	32	930	11.78%	17	3,363	1.63%	612	.14	4.89	19	468	474
Medical Neglect	All Before During After	110	3,598	8.85%	57	3,363	5.01%	3,236	.1	5.60	57	2,302	790
	Before	41	1,384	9.16%	34	3,363	2.94%	1,224	.1	3.76	34	1,257	456
	During	40	1,284	8.91%	19	3,363	1.65%	1,328	.08	6.12	19	1,004	308
	After	29	930	9.38%	19	3,363	1.67%	684	.13	4.61	19	296	272
Mental Injury	All Before During After	13	3,598	1.02%	6	3,363	0.52%	310	.13	6.33	6	216	189
	Before	6	1,384	1.36%	5	3,363	0.44%	180	.11	4.00	5	159	104
	During	1	1,284	0.21%	1	3,363	0.08%	58	.02	1.00	1	57	85
	After	6	930	1.38%	2	3,363	0.16%	72	.08	3.00	2	69	92
Neglect(Formerly Physical Neglect)	All Before During After	1,380	3,598	115.75%	553	3,363	49.22%	29,505	.14	7.41	582	16,890	9,860
	Before	524	1,384	116.62%	284	3,363	24.87%	10,224	.15	5.45	297	7,924	4,681

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https://maps.state.sc.us/panorama/CONNECTOR.dll?

NovaView Web Access

Measures by CPS Maltreatment Category and Before During After for Female, Sum of (Visitor Age 0-5,...), CPS,...

Briefing book

Slicers

		Encounters	Encounters Total	Encounters Percent	Visitors	Visitors Pop	Visitor Pop R...	Count of Months	Encounters Per Month	Encounters Per Visitor	Count of Inmates Visited	Length of Incarcerat...	Count of Visits Total	DMH Cost	Avg D Cos
All CPS Maltreatment Category	All Before During After	3,598	3,598	300.00%	793	3,363	70.19%	41,853	.25	13.50	831	25,309	14,218	$0.00	$0.00
	Before	1,384	1,384	300.00%	392	3,363	34.19%	14,112	.29	10.34	408	11,198	6,316	$0.00	$0.00
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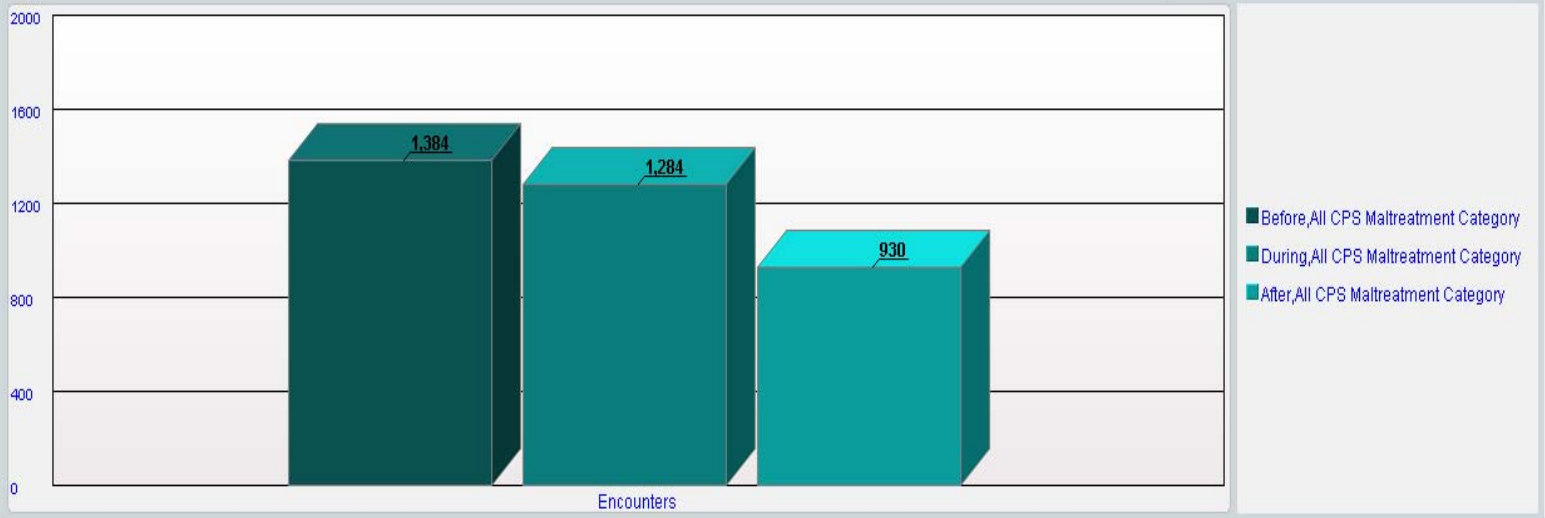

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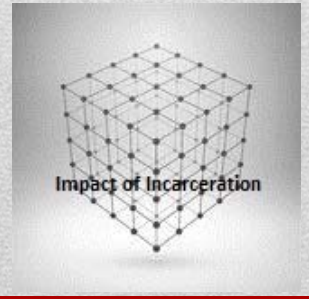

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QUESTIONS?

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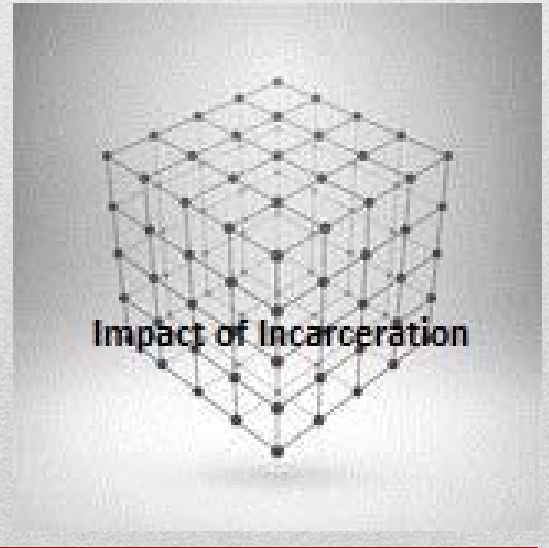

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UNIVERSITY OF
SOUTH CAROLINA
College of Social Work

USING INTEGRATED ADMINISTRATIVE DATA FOR CRIMINAL JUSTICE RESEARCH

College of Social Work
University of South Carolina

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INTRODUCTION

Criminal offenders and victims of crime often experience backgrounds of adversity and may come into contact with multiple justice and social service agencies. Using integrated administrative data (IAD) from such agencies can help researchers move beyond traditional service silos to address complex social issues that cross systemic boundaries. In this brief, we provide a basic overview of some benefits and challenges of using IAD, as well as suggested steps for integrating administrative data. More detailed information can be found in the full scholarly article "Integrated Administrative Data & Criminal Justice Research" published in the *American Journal of Criminal Justice* (DeHart & Shapiro, 2016).

Using integrated administrative data (IAD) from such agencies can help researchers move beyond traditional service silos to address complex social issues that cross systemic boundaries.

WHAT IS INTEGRATED ADMINISTRATIVE DATA?

Government and community-based agencies collect a variety of information on people who come into contact with their organizations. The **administrative data** collected is used to keep track of outcomes for persons served, to assess the effectiveness of agency programs, and to make sure the agency is providing appropriate services for the client population.[1] The process of integrating administrative data requires collecting and merging records of client-level data from more than one agency. For example, an individual currently in jail has jail records, but may also have mental health and/or substance use treatment records that could be combined into an integrated file. This type of integration is sometimes used by researchers working with individual agencies to link data specific to a research question (e.g., "how do justice interventions relate to mental health outcomes?"). However, in some locales there may be "linkage centers" that specialize in integrating multisystem administrative data for a variety of research and evaluation purposes.[2]

The process of integrating administrative data requires collecting and merging records of client-level data from more than one agency.

HOW TO USE INTEGRATED ADMINISTRATIVE DATA

IAD can be used on multiple levels to improve the services provided to at-risk populations who are engaged with more than one agency. On the **individual client and programmatic-level**, IAD can be used to determine which agencies have come into contact with the client and what services were provided.

On a **research and policy-level**, IAD can be used to explore the specific issues that affect system-involved populations. Often, individuals and families have problems that can more appropriately be addressed based on research that incorporates data from multiple systems.[1]

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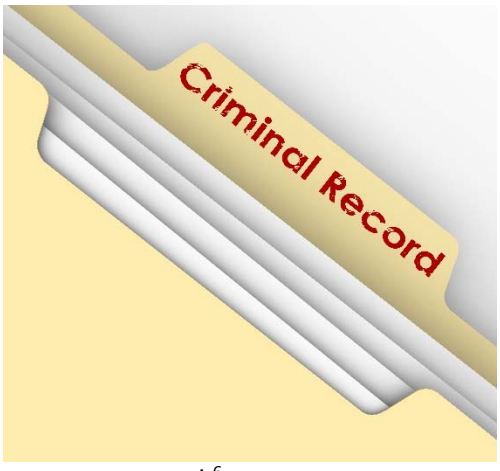
BENEFITS/CHALLENGES OF USING INTEGRATED ADMINISTRATIVE DATA

BENEFITS

- Practitioners utilizing IAD will have a better gauge of the scope of services needed to provide comprehensive care to their clients.
- Information from IAD can provide practitioners with a general summary of the type of client being served, which can be used to eliminate programming redundancies, assess referral processes, and determine barriers to services.[1,3]
- Agencies can use IAD to evaluate programming across service sectors and eliminate unnecessary programming costs.
- Agencies and researchers utilizing IAD can overcome "service silos" that make it difficult to fully understand issues that cross service boundaries.
- IAD can provide researchers access to large populations to study as well as comprehensive data on persons who have been involved with more than one agency.[2,5,6,7]
- The process of integrating administrative data can provide a platform for agency personnel, researchers, and policy-makers to work together to examine criminal justice issues and understand the systemic impact of policy changes on specific populations.[1,4]

CHALLENGES



- Agency administrative data is used to gather day-to-day information on programming that is not specific to research goals and may not fully capture all the information needed by researchers.[8,9]
- Administrative data may be incomplete.[6]
- Different agencies use different coding standards and terminology for their data, which creates challenges when trying to integrate all the data into a single analytic platform.[6]
- Once administrative data is integrated, data sets may be large and complex, creating a barrier to data interpretation by agency personnel.[6]
- Integrating administrative data may be a time-consuming process.[10]
- Agencies may be reluctant to share data with researchers because of perceptions of additional workload burden and concerns over data security.[11]

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Key Recommendations for Researchers Utilizing Integrated Administrative Data

1. Securing Buy-in from Stakeholders for Data Integration

Recommendation	Practical Application
Identify stakeholders who would be interested in and/or benefit from the research project	A researcher might identify legislators who have worked on a similar issue to the research topic, community/government agencies that provide services to the selected research population, community leaders who have expressed interest in the issue, individuals utilizing those services, etc.
Create trust and establish buy-in with stakeholders	Researchers can attend any inter-agency meetings that are open to the public to gauge interests of participating individuals or agencies and establish buy-in by providing information and/or resources to interested stakeholders (e.g., evidence-based research presentations or brief trainings on the selected topic).
Meet with key stakeholders and agency leaders to discuss mutual goals for the project	Researchers can meet with stakeholders at their office and provide lunch/snacks. In addition, researchers can distribute short, bulleted hand-outs that explain the project, agency benefits, and agency needs that can be met through use of IAD.
Obtain a formal commitment to collaborate from agency leaders and establish a project advisory board	A project advisory board can help agency leaders feel more secure in sharing data by giving them a place to voice their input on IAD and research process during the planning, implementation, and dissemination stages.

2. Logistics of Administrative Data Linkage & Access

Recommendation	Practical Application
Evaluate current agency data sharing procedures and preparedness for using IAD	Researchers can work with the project advisory board and agency leaders in this process, which may include distributing questionnaires/surveys on agency readiness for data collection and sharing (e.g., the *Data Research and Infrastructure Assessment Checklist*, developed by Duran et al., 2005).
Utilize data flow modeling to create a strategic plan for data transfer and archive	Process mapping can be used for data flow modeling, and File Transfer Protocols (FTPs) can be used for data transfer. When archiving data, researchers should consider if archiving should be automated or manual, full or partial, and frequency of archiving.[1]
Develop one application for accessing data that can be used for all agencies, including agency-specific appendices when needed	The application should include information on the principle investigators, project description (i.e., title and funding sources), project design (i.e., objectives, hypotheses, sampling frame, and participant recruitment/consent), project benefits or risks, and data storage.

3. Research Design with IAD

Recommendation	Practical Application
Review data from all sources and examine possibilities and limitations for each data set	When reviewing the data, look for comparable codes across data sets (e.g., age ranges vs. exact age), determine how the data is defined by each agency, and note missing data.[3] It will benefit researchers to assemble

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	reference catalogues that include: variable definitions, value codes, and original data entry rules.[3]
Check-in with agency leaders to confirm the study design (i.e., study variables and sample) captures agency needs as well as research needs	For the agencies involved, the study design should capture information that can aid in improving programming and services and help develop better policies.[1] For researchers, the study design should include key constructs, covariates, instrumental variables, etc.[1]
Select only a few key variables to include when integrating data files	Researchers and agencies can easily become overwhelmed with the amount of information that can be derived from IAD. The more variables that are included in the study, the more complex the study becomes. When using IAD, especially for the first time, having a well-defined sample and a few key variables will help keep the study manageable.
Review consent procedures for human- subjects research and decide with the advisory board which procedures to use	There are no current standardized procedures for consent with IAD; it depends on the project. Institutional Review Boards may exempt certain projects from having to obtain individual consent.[12] It is important that the project advisory board review the needs of the project and establish policies and procedures that address consent and data confidentiality.

4. IAD Management

Recommendation	Practical Application
Develop a protocol that all project members use for naming files and describing the sampling frame related to the study	The following format is a good example for naming files: *"file recipient's name, project name, agency name, date, initials of person who collected the data."*
Before integrating the selected files, review the data to make sure it includes specific concepts and variables needed for analyses	For example, a recent project on incarcerated individuals requested prison data on "families," which did not include dating partners, cohabitating couples, etc., as this was coded as "friends" by the prison system. This caused a delay in the project when the team had to go back and re-apply for the additional data (DeHart & Shapiro, 2016).
Conduct advisory board meetings, agency debriefings, and strategic planning meetings throughout the project	At these meetings, present findings from the research, ask agency leaders and stakeholders for their input on interpreting the research, and collaborate on how the research can be used to improve practices and policies. In addition, discuss with agency leaders how the data will be archived and how it can be used by future research projects.

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CONCLUSION

IAD is a promising resource for criminal justice agencies and researchers to examine the unique challenges facing at-risk populations. This data allows for a broader view of the systems serving these populations and how these systems can be improved. There are barriers to utilizing IAD; however, the benefits often outweigh those challenges. Researcher-practitioner partnerships to utilize IAD for analysis on criminal justice issues can help improve practice and policy, with positive impacts for justice-involved persons, their families, and their communities.

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The full Webinar may be accessed and played at: **https://breeze.sc.edu/p2rylwfc5kc/**

The following slides are from the Webinar.

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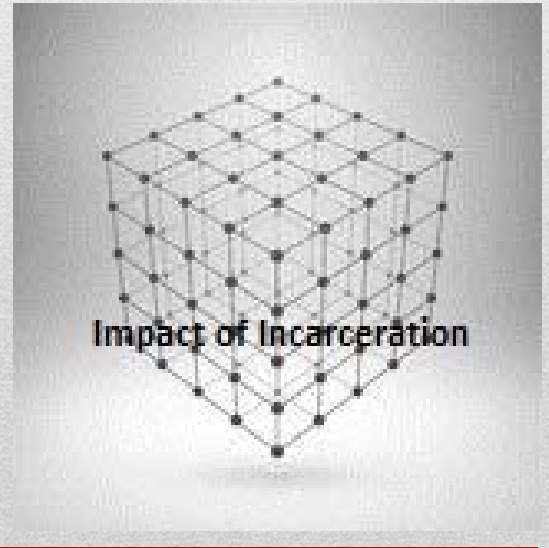
Using Integrated Data for Criminal Justice Research

The Impact of Incarceration (IOI) Project

Dana DeHart, Cheri Shapiro, & Aliza Petiwala

University of South Carolina,

College of Social Work



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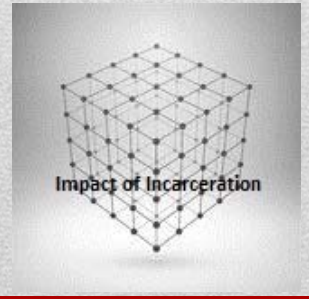
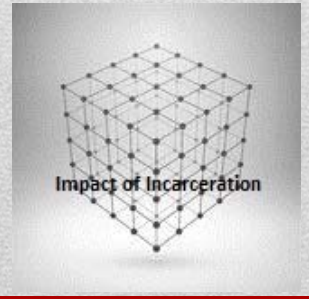


- Offenders w/ backgrounds of adversity
- Often contact multiple agencies
- IAD can transcend service silos & address complex issues across systemic boundaries
- Benefits, challenges, case example, & recs

Overview



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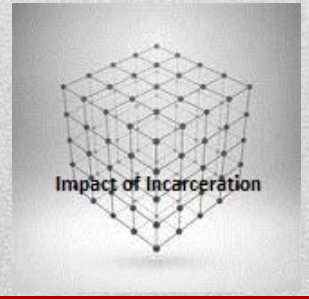
Collected by gov't or community agencies for

- Record-keeping
- Case management
- Monitoring & evaluation
- Accountability of programs

IAD—merge from dif sources to single platform

What is IAD?



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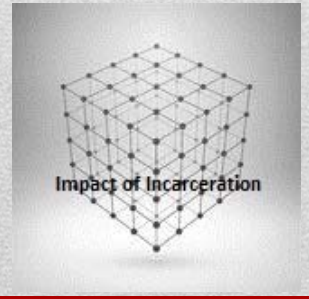
- Cost savings for program & policy research
- Culture of research w/agencies
- ID duplication & gaps across agencies
- Client needs, risks, & outcomes x agencies
- Triangulation of data sources
- Population-wide longitudinal data
- Innovative research designs (e.g., propensity scores, instrumental variables regression)

Benefits



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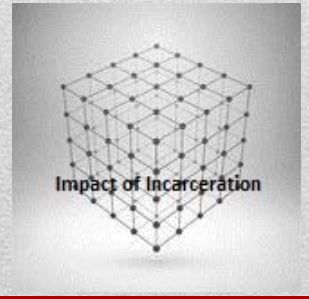
- For day-to-day operations vs. research
- May lack key variables
- Only events that come to ‘official’ attention
- Codes & definitions vary across agencies
- Lengthy process for permissions
- Requires cleaning & complex interpretation

Challenges



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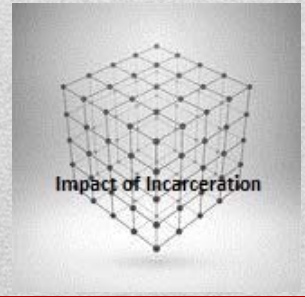
- 18,790 inmates & 40,488 of their visitors
- Time period before, during, & after incarceration
- Integrated data "cube"
  - Department of Corrections
  - Department of Juvenile Justice
  - Department of Mental Health
  - Department of Alcohol & Other Drug Abuse
  - Department of Social Services (CPS, TANF, FC)
  - Health & Human Services (Medicaid, UB)
  - Department of Education

Impact of Incarceration



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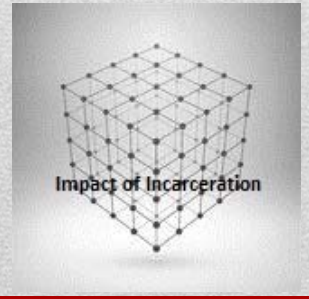
1. How does offender incarceration impact family members' physical and mental health?
2. How does offender incarceration impact their children's involvement with the child welfare and juvenile justice systems?
3. How does offender incarceration impact the economic status of family members?
4. How does offender incarceration impact the academic performance of children?

Research Questions



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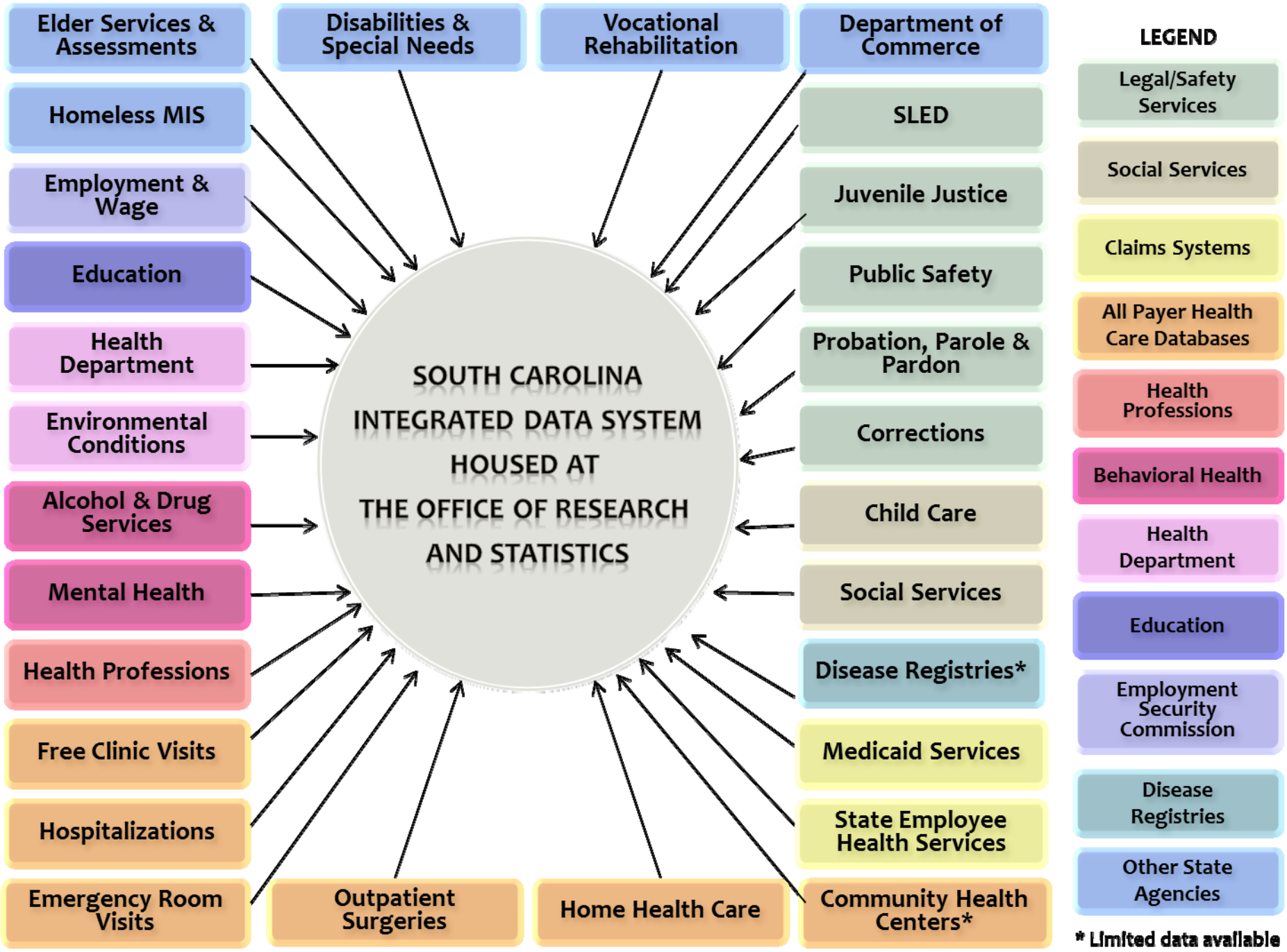

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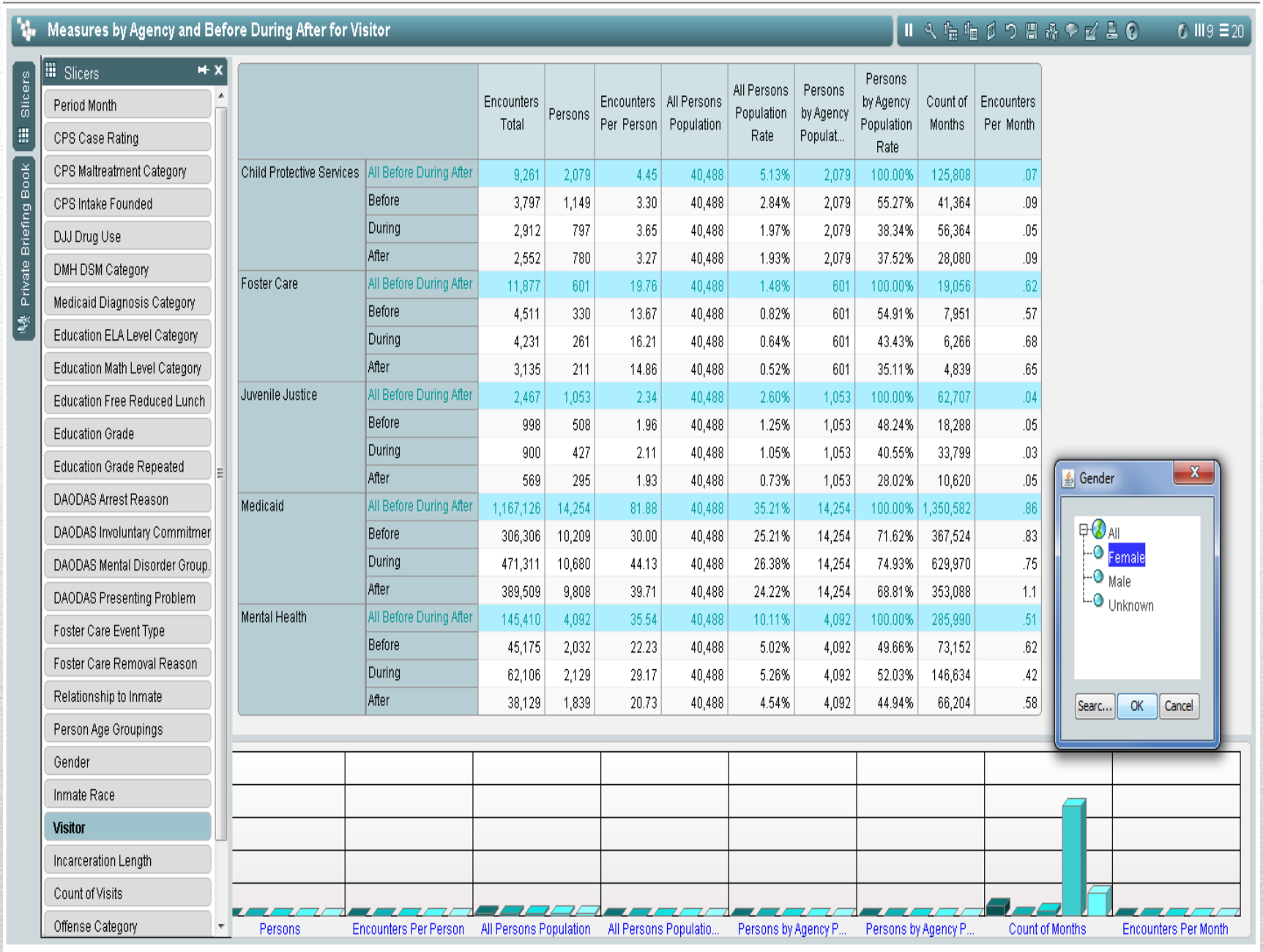

		Encounters Total	Persons	Encounters Per Person	All Persons Population	All Persons Population Rate	Persons by Agency Populat...	Persons by Agency Population Rate	Count of Months	Encounters Per Month
Child Protective Services	All Before During After	9,261	2,079	4.45	40,488	5.13%	2,079	100.00%	125,808	.07
	Before	3,797	1,149	3.30	40,488	2.84%	2,079	55.27%	41,364	.09
	During	2,912	797	3.65	40,488	1.97%	2,079	38.34%	56,364	.05
	After	2,552	780	3.27	40,488	1.93%	2,079	37.52%	28,080	.09
Foster Care	All Before During After	11,877	601	19.76	40,488	1.48%	601	100.00%	19,056	.62
	Before	4,511	330	13.67	40,488	0.82%	601	54.91%	7,951	.57
	During	4,231	261	16.21	40,488	0.64%	601	43.43%	6,266	.68
	After	3,135	211	14.86	40,488	0.52%	601	35.11%	4,839	.65
Juvenile Justice	All Before During After	2,467	1,053	2.34	40,488	2.60%	1,053	100.00%	62,707	.04
	Before	998	508	1.96	40,488	1.25%	1,053	48.24%	18,288	.05
	During	900	427	2.11	40,488	1.05%	1,053	40.55%	33,799	.03
	After	569	295	1.93	40,488	0.73%	1,053	28.02%	10,620	.05
Medicaid	All Before During After	1,167,126	14,254	81.88	40,488	35.21%	14,254	100.00%	1,350,582	.86
	Before	306,306	10,209	30.00	40,488	25.21%	14,254	71.62%	367,524	.83
	During	471,311	10,680	44.13	40,488	26.38%	14,254	74.93%	629,970	.75
	After	389,509	9,808	39.71	40,488	24.22%	14,254	68.81%	353,088	1.1
Mental Health	All Before During After	145,410	4,092	35.54	40,488	10.11%	4,092	100.00%	285,990	.51
	Before	45,175	2,032	22.23	40,488	5.02%	4,092	49.66%	73,152	.62
	During	62,106	2,129	29.17	40,488	5.26%	4,092	52.03%	146,634	.42
	After	38,129	1,839	20.73	40,488	4.54%	4,092	44.94%	66,204	.58

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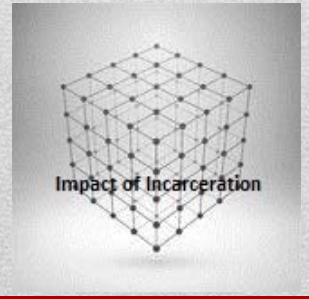
- Identify stakeholders
- Create trust & build rapport
- Discuss mutual goals
- Obtain commitment from leadership

Recs: Stakeholder Buy-In



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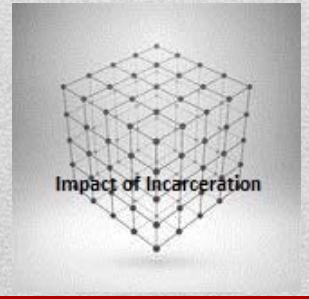
- Evaluate agency preparedness
- Use data flow modeling to plan
- Develop a data application form

Recs: Linkage & Access



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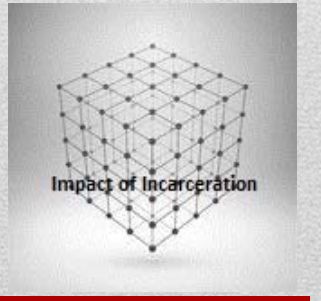
- Review data potential & limitations
- Confirm that the study addresses agency needs
- Focus on key variables & analyses
- Establish IRB procedures

Recs: Research Design



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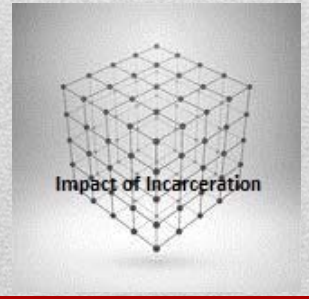
- Establish sampling frame & file-naming conventions
- Reviewing data for completeness & suitability
- Keeping partners in the loop through briefings & presentations

Recs: Data Management



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Resources

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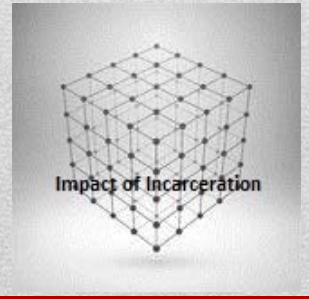

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Further Info

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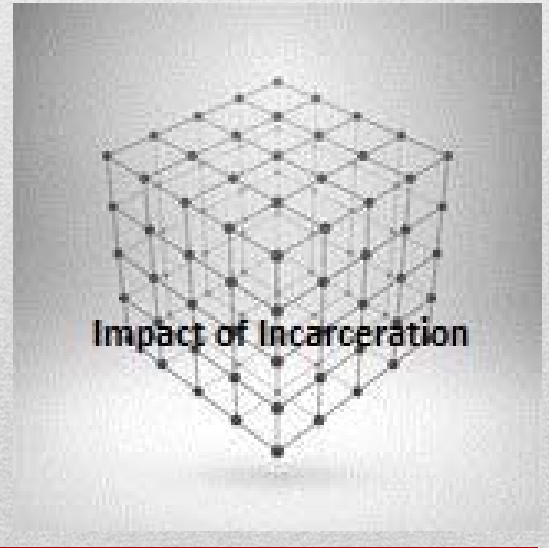

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