Treatment Costs Among Adults With Serious Mental Illness:

Influences of Criminal Justice Involvement and Psychiatric Diagnoses

The Promises and Challenges of Administrative Data in Social Policy Research

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Scope of the problem of criminal justice involvement among persons with serious mental illness (SMI)

- **11 million adults** in the U.S. (5%) **with SMI**
- **25%** have a co-occurring **substance use disorder**
- Nearly **37% uninsured, 40% receive no treatment**

Kessler et al, 2005; SAMHSA, 2011

Scope of the problem of criminal justice involvement among persons with serious mental illness (SMI)

- Each year, approximately **2 million persons with SMI in U.S. jails**
  - Many continue to cycle repeatedly through the criminal justice system
- About **1 in 5** incarcerated individuals suffer from a **serious mental illness**
  - 15% of male inmates; 30% of female inmates
  - Once incarcerated, persons with SMI stay far longer
- Among those with SMI, at least **75% have co-occurring substance use disorders**
- Each year, hundreds of thousands of adults in the U.S. are **released from incarceration**

Steadman et al., 2009; Kessler et al, 2005; Abram KM & Teplin LA., 1991; Metreaux S, 2008; Ditton, U.S. Dep't of Justice, Bureau of Justice Statistics, Special Report: Mental Health and Treatment of Inmates and Probationers (1999)

Macro trends affecting criminal justice and mental health system capacity, utilization, and cost

- Number of state and county **psychiatric hospital beds declined 63%** between 1980 and 2000
- **Declining budgets** for behavioral healthcare in state systems
- Number of **persons incarcerated** in state correctional facilities **increased over 300%** during the same period
- **Jails/prisons** described as today's ***de facto* psychiatric institutions**

How much does CJ involvement of SMI population cost states?

- No comprehensive estimates of costs of criminal justice involvement among persons with SMI
- Connecticut is an ideal state in which to study costs of CJ involvement for SMI population
  - Progressive service systems with innovative programs for justice-involved persons with mental illness
  - Demographically diverse population
  - State jails and prisons under one central authority
  - Complementary administrative data with common identifiers allowing matching across information systems
    - Exact matches
    - Probabilistic matches

Study population: Dept of Mental Health clients with serious mental illness

- Records extracted for 25,133 adult clients of CT's Department of Mental Health and Addiction Services meeting criteria:
  - *chart diagnosis of schizophrenia spectrum disorder or bipolar disorder*
  - *served in the publicly-operated or funded system of care*
  - *2-year window of observation (SFYs 06-07)*

Cross-agency data matching and merging for 25,133 SMI individuals

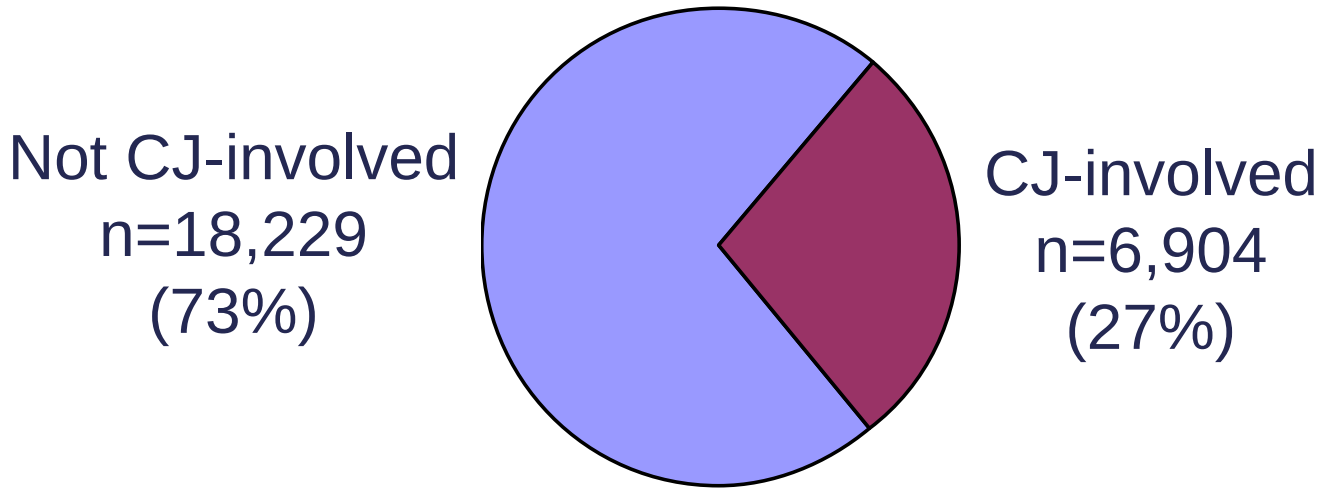
- Dept. of Mental Health and Addiction Services
  - Detailed administrative records of hospital and residential facility stays, outpatient treatment encounters, case management services, forensic services
- Dept. of Social Services
  - Medicaid claims and payment amounts
- Dept. of Public Safety
  - arrests, detailed statutory charges, dispositions
- Dept. of Correction
  - incarceration days, parole days, and halfway-house days
- Court Supported Services Division (Judicial)
  - probation episodes, civil commitment, jail diversion program

Service unit cost information

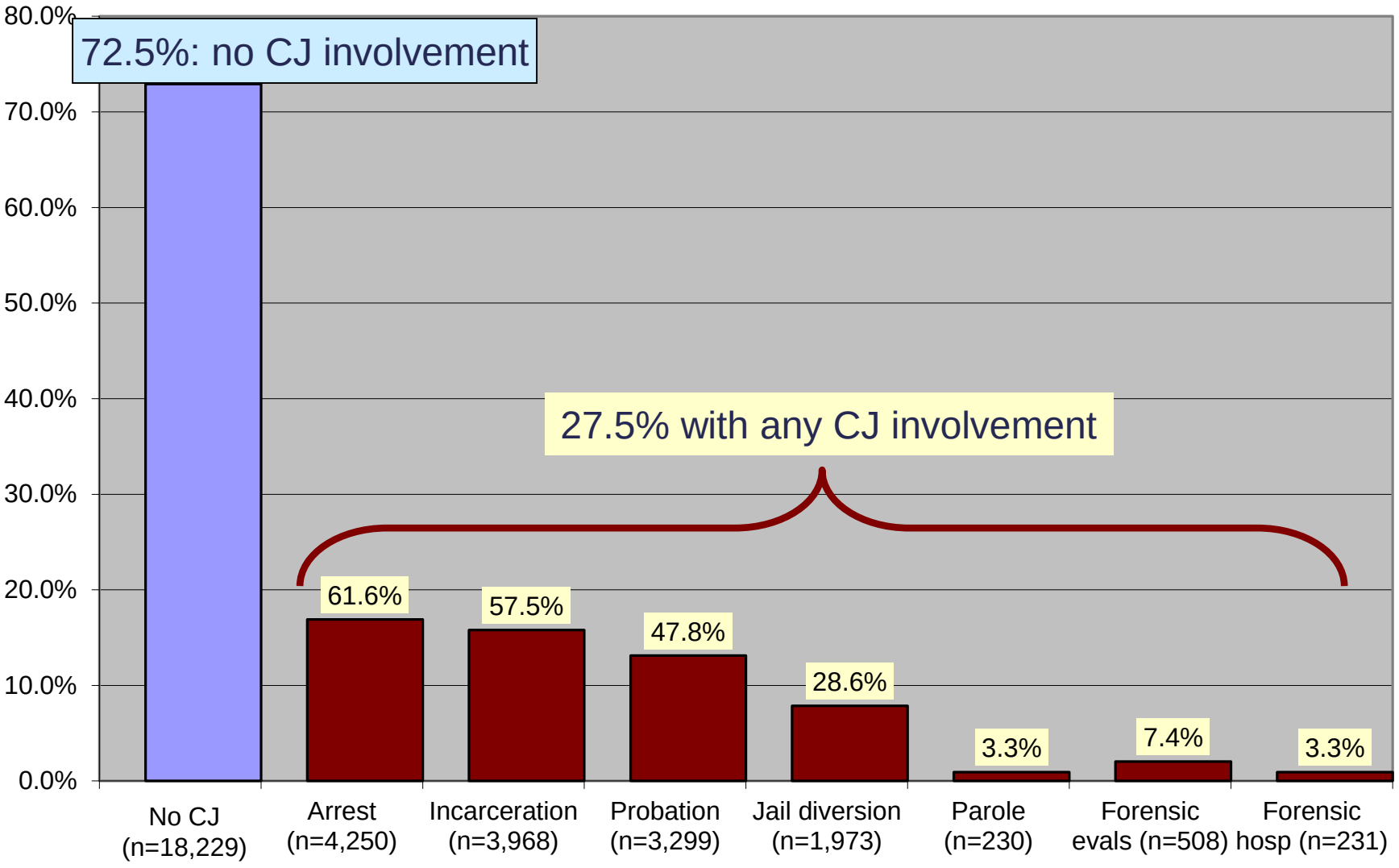
- Medicaid paid claims provide direct cost information for health services covered under Medicaid
- Agency service costs provided or estimated from budget information supplied to project team
- Some costs (e.g., arrest) were estimated using national estimates from relevant studies in the literature

Connecticut CJ Cost Study: Proportion of SMI sample with any criminal justice system involvement in 2 years

Total sample N=25,133



Connecticut CJ Cost Study:
Proportion with any involvement by category, entire sample (N=25,133)



Connecticut CJ Cost Study: Summary costs by category and sample

	CJ involved (n = 6,904)		Not CJ involved (n = 18,229)	
Service Category	Total cost for category	Cost per person involved	Total cost for category	Cost per person involved
Treatment subtotal	$200,117,342	$28,986	$379,481,642	$20,817
Criminal justice subtotal	$122,779,540	$17,784	$0	$0
Total across categories	**$322,896,882**	**$46,770**	**$379,481,642**	**$20,817**

Swanson et al. Costs of Criminal Justice Involvement Among Persons With Serious Mental Illness in Connecticut. Psychiatric Services , March, 2013

Research questions

- Wide range of involvement in public treatment and criminal justice systems and associated costs given individuals' treatment needs, service utilization, and risk of offending vary significantly

  (1) To what extent does CJ involvement influence community behavioral health treatment utilization and costs?

  (2) How do individuals' clinical characteristics interact with CJ involvement to influence costs?

- Provide early insights about extent to which behavioral health treatment costs in this population are driven by system characteristics, justice involvement, and individual illness trajectories

Utilization & cost measures

CJ involvement measures:

- *Convicted arrests*
- *Incarcerations*
- *Probation, parole*
- *Jail diversion program*
- *Forensic evaluations*
- *Forensic hospitalizations (competency restoration & NGRI)*

Treatment measures*:*

- *Inpatient psychiatric hospitalizations*
- *Outpatient MH & SA treatment services*
- *Emergency department visits*
- *Psychotropic medications*

Analytic methods

- OLS regression models to estimate net effect of CJ involvement and, separately, combined effects of justice involvement and clinical diagnoses on behavioral health treatment costs

- Specification tests to determine the best model fit

- Two sets of risk factor combinations:
  - CJ involvement status and substance use disorder diagnosis
  - CJ involvement status and major psychiatric diagnosis (schizophrenia or bipolar disorder)

- All models controlled for age, sex, race-ethnicity, and time out of the community during incarceration

Sample characteristics of adults in CT with SMI, by CJ status &primary psychiatric diagnosis

	CJ-involved							Not-CJ-involved						
	Schizophrenia (n=2,581; 37.38%)		Bipolar (n=4,323; 62.62%)			*Total (n=6,904)*		Schizophrenia (n=9,746; 53.46%)		Bipolar (n=8,483; 46.54%)			*Total (n=18,229)*	
	N	(%)	N	(%)		*N*	*(%)*	N	(%)	N	(%)		*N*	*(%)*	
Age (mean, SD	37.1	(10.68)	34.9	(10.35)	***	*35.7*	*(10.52)*	45.7	(13.29)	41.0	(13.94)	***	*43.5*	*(13.80)*	***
Sex					***							***			***
Male	1,981	76.75%	2,496	57.74%		4,477	*64.85%*	5,444	55.86%	3,003	35.40%		*8,447*	*46.34%*	
Female	600	23.25%	1,827	42.26%		2,427	*35.15%*	4,302	44.14%	5,480	64.60%		*9,782*	*53.66%*	
Race															
White	1,019	39.5%	2,907	67.2%	***	*3,926*	*56.87%*	5,822	59.7%	5,707	67.28%	***	*11,529*	*63.25%*	***
African Ame	956	37.0%	600	13.9%	***	*1,556*	*22.54%*	1,708	17.5%	690	8.13%	***	*2,398*	*13.15%*	***
Hispanic	515	20.0%	648	15.0%	***	*1,163*	*16.85%*	1,484	15.2%	1,224	14.43%	NS	*2,708*	*14.86%*	***
Other	91	3.5%	168	3.9%	NS	*259*	*3.75%*	732	7.5%	862	10.16%	***	*1,594*	*8.74%*	***
SUD Diagnosis	1,689	65.4%	2,823	65.3%	NS	*4,512*	*65.35%*	2,527	25.9%	2,656	31.3%	***	*5,183*	*28.4%*	***

Chi-squre test for differences in proportions, t-test for differences in means:

* Significant at 5% level; ** significant at 1% level; *** significant at 0.1%

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CJ group more likely to have bipolar disorder than no CJ group

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CJ group was younger than no CJ group

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Men made up majority of CJ group; women were majority of the no CJ group

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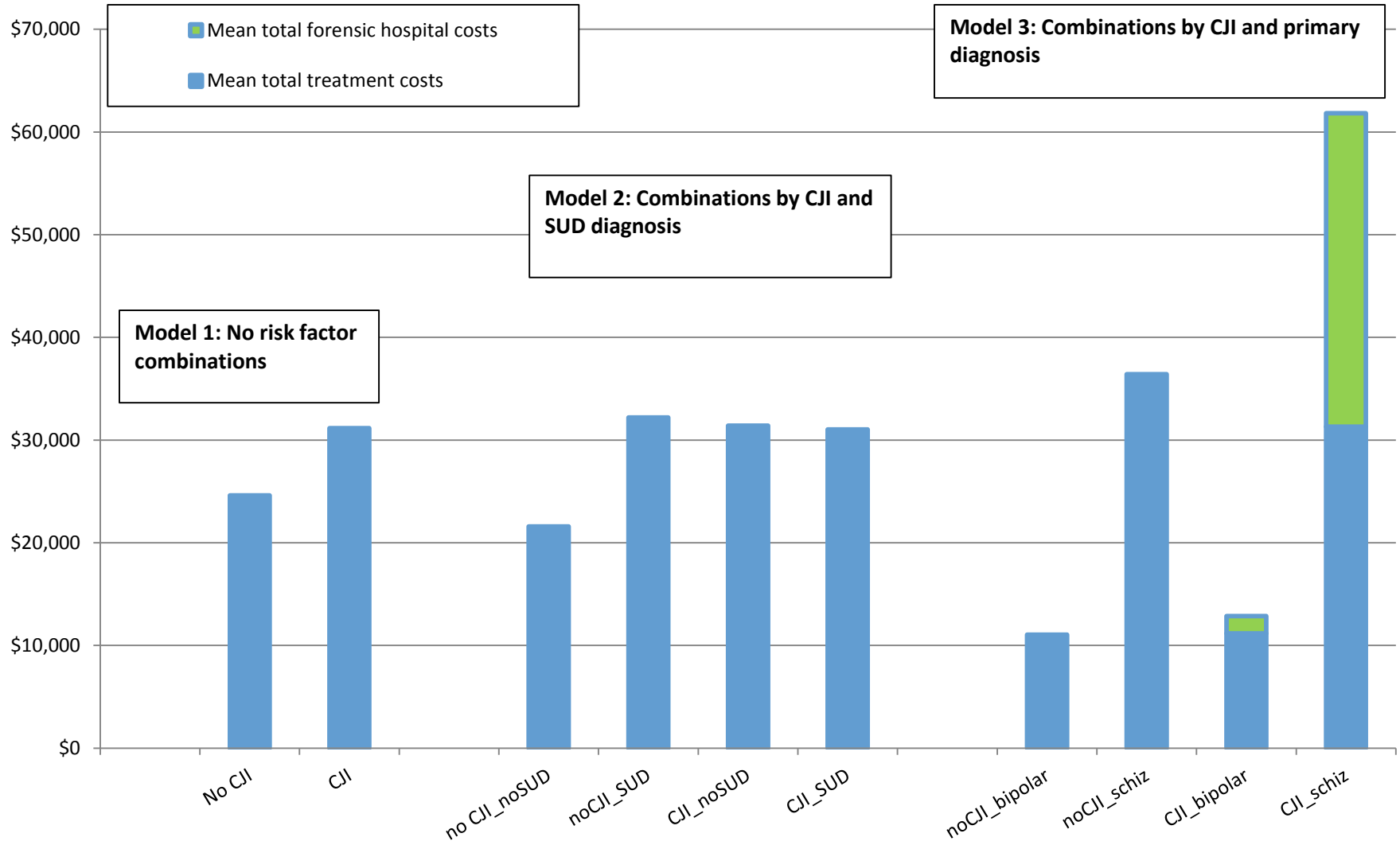
CJ group far more likely to have SUD than no CJ group

Predicted mean treatment costs by combined risk factors – CJ involvement and psychiatric diagnosis



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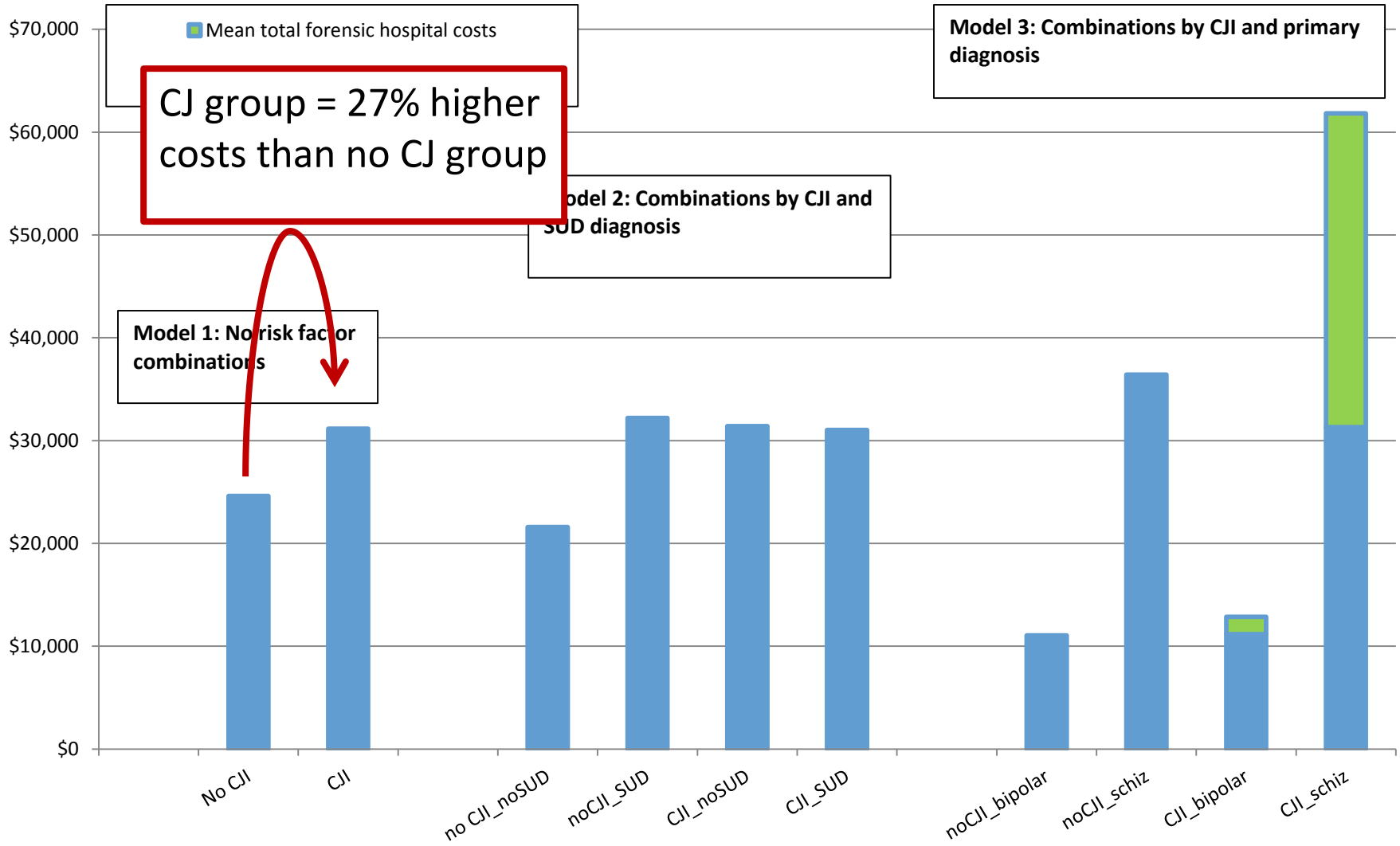

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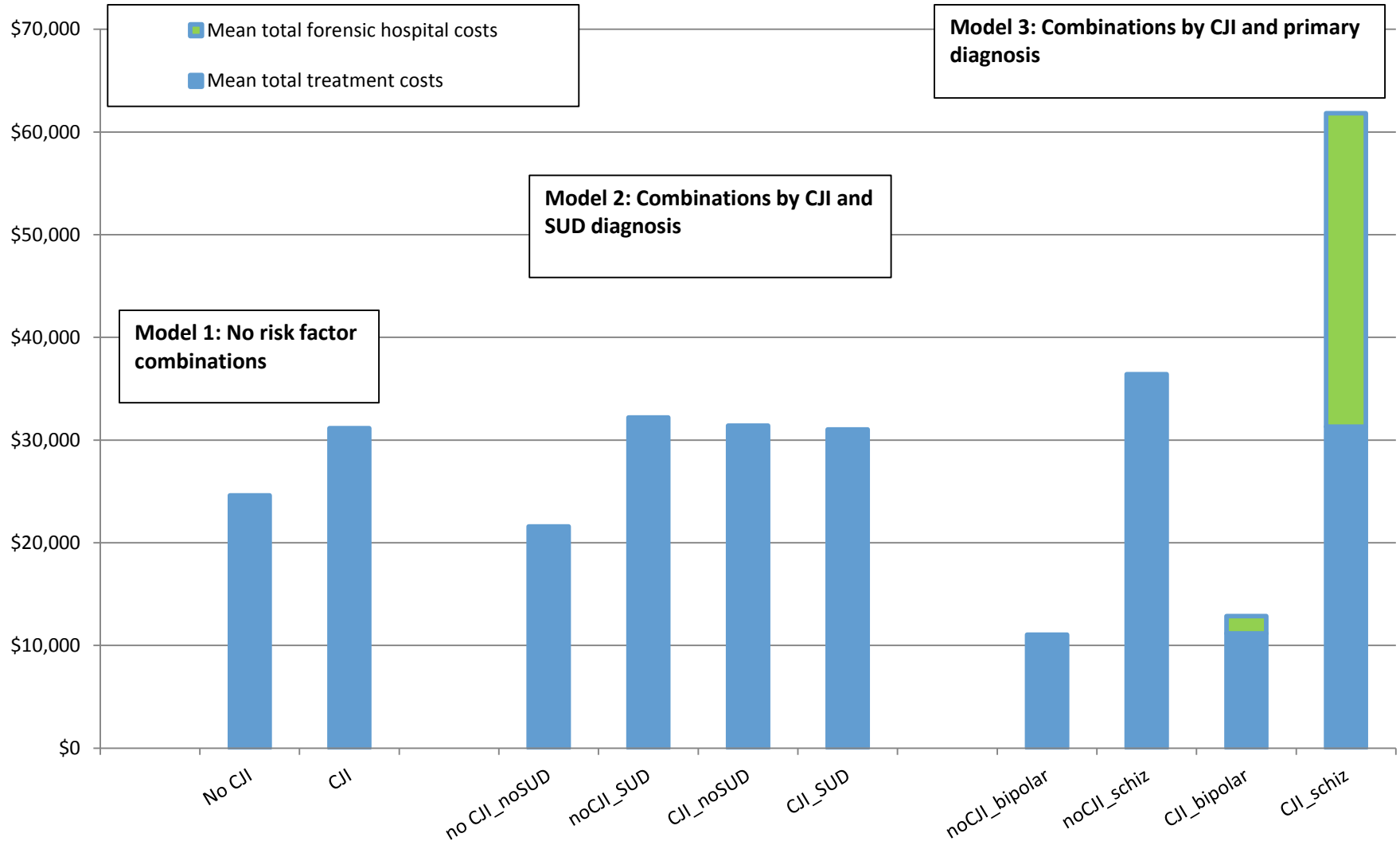

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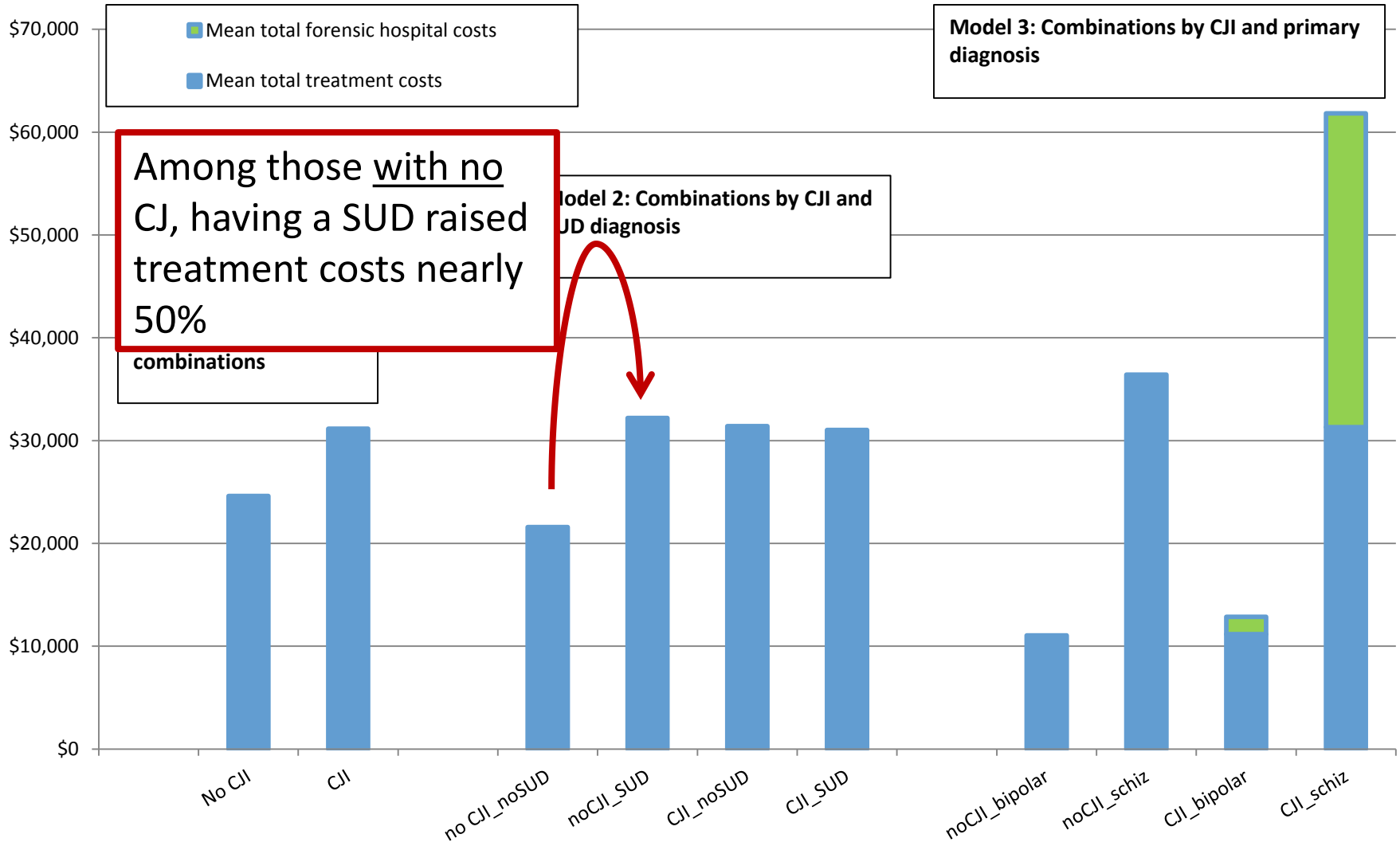

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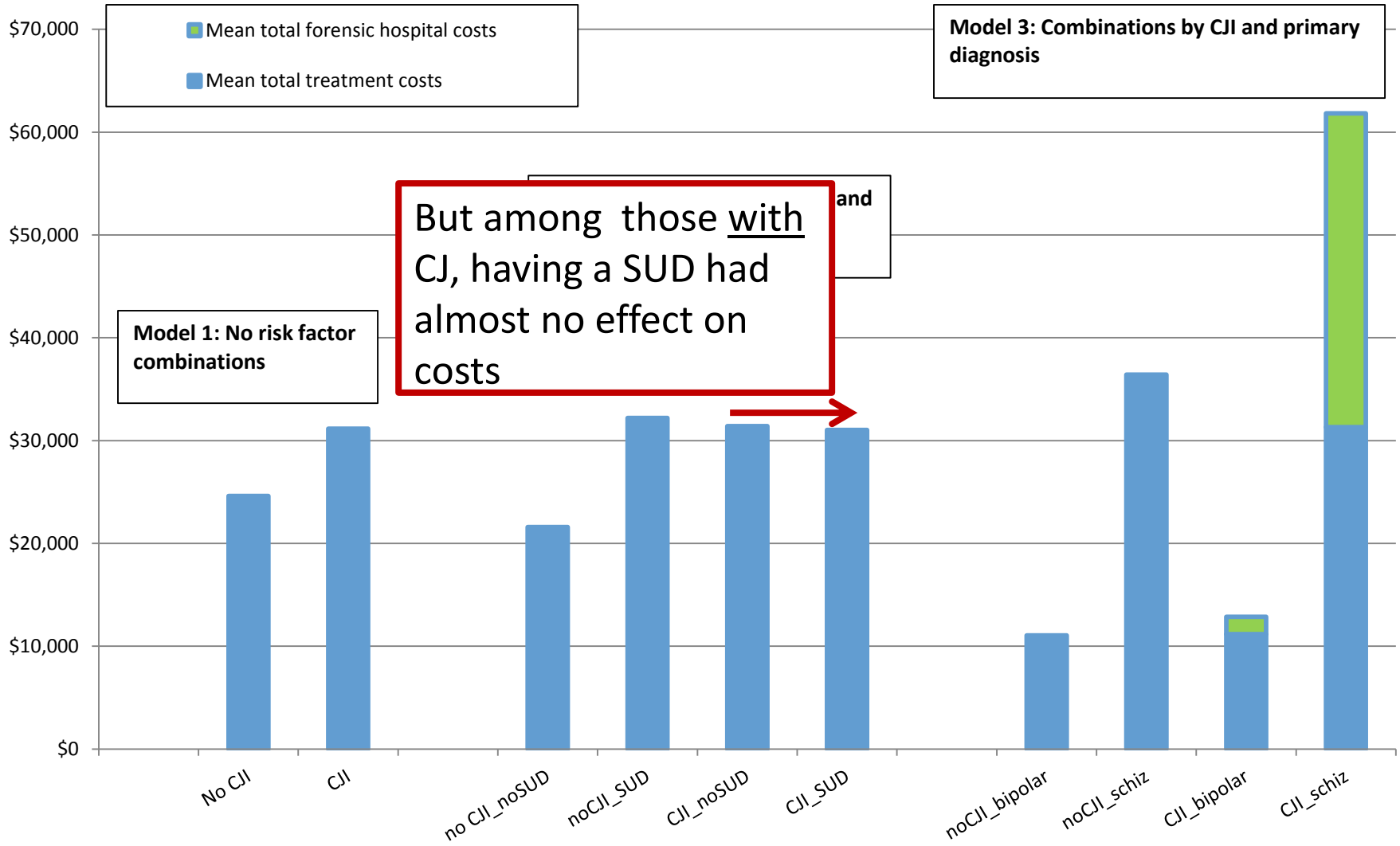

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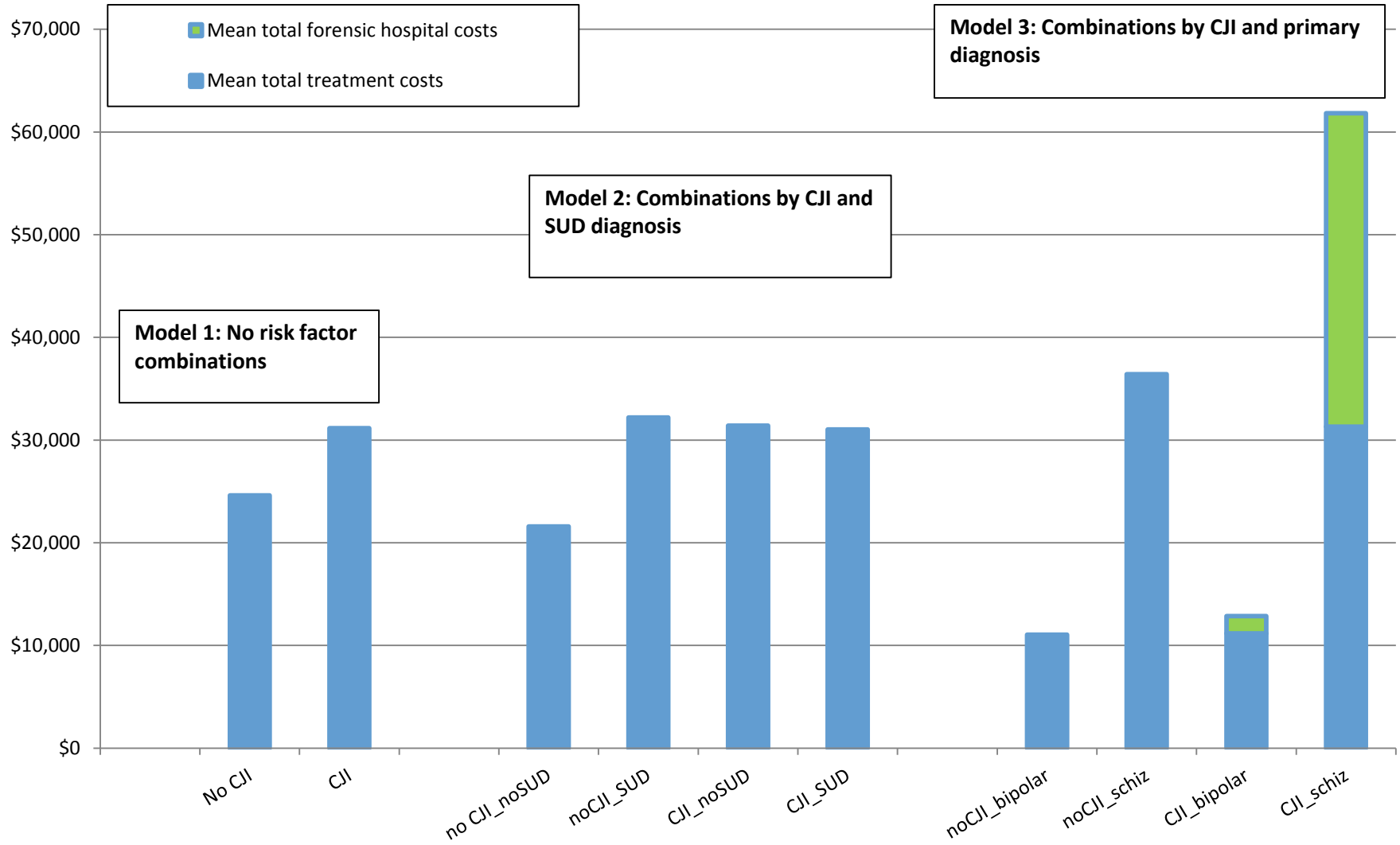

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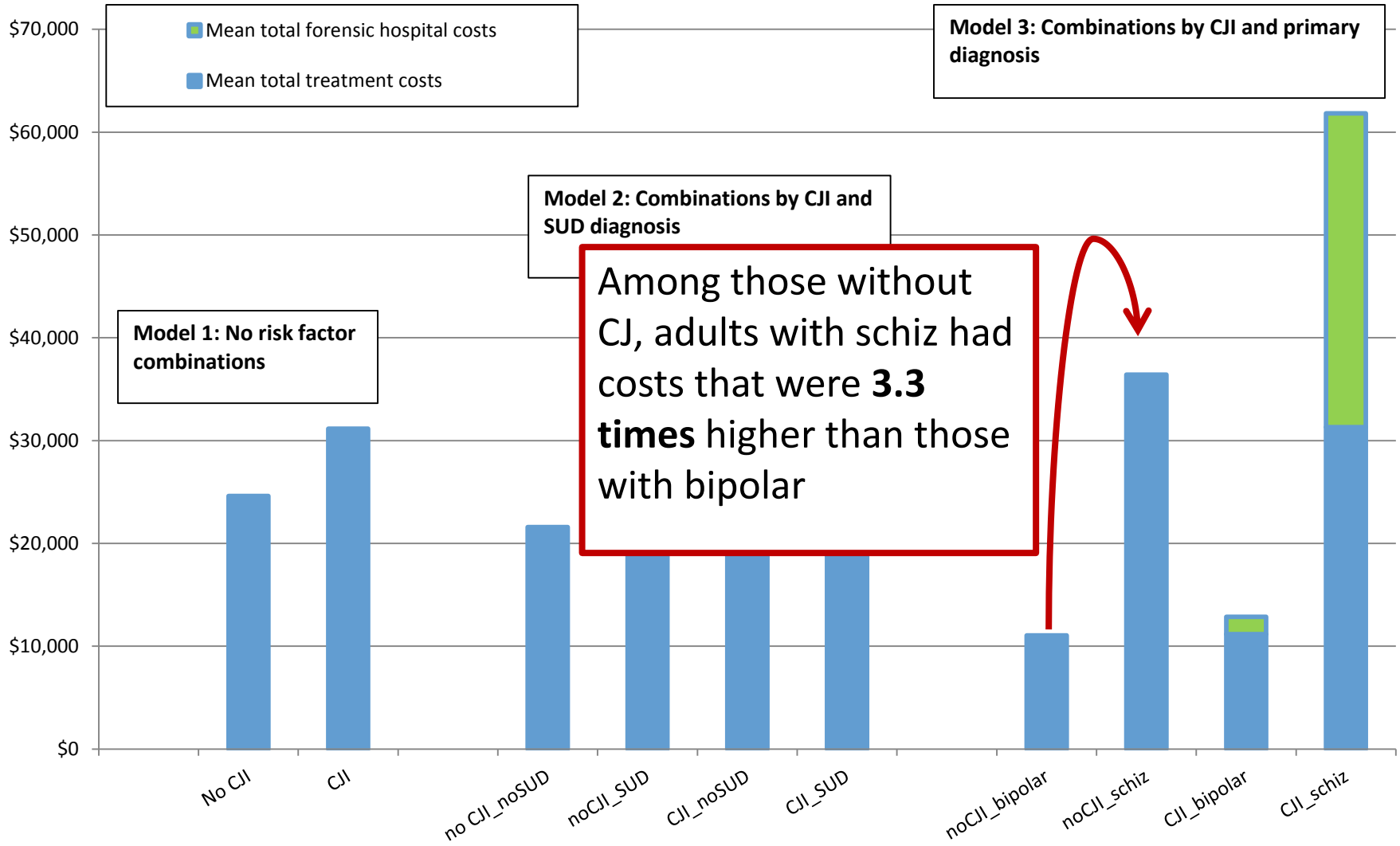

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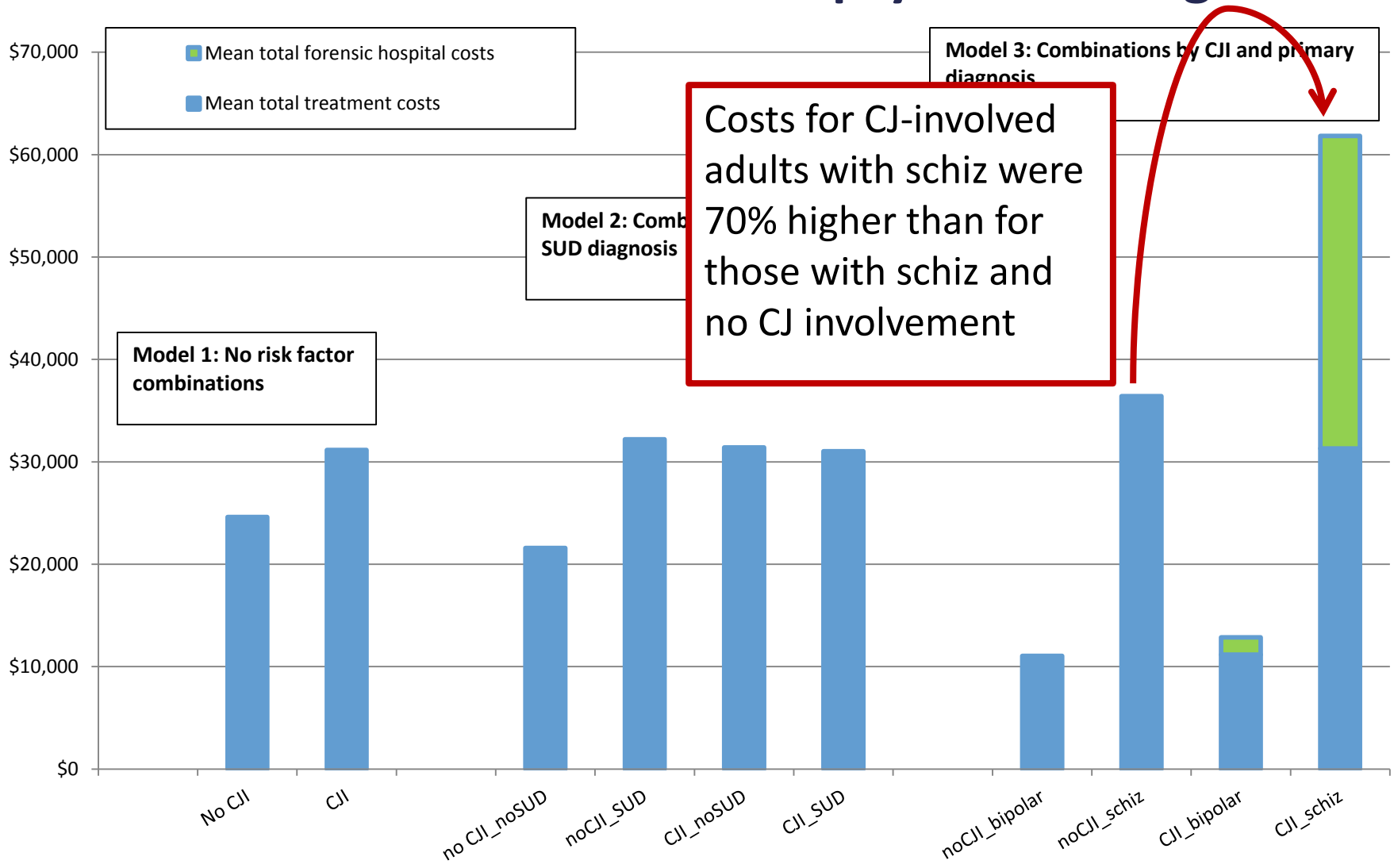

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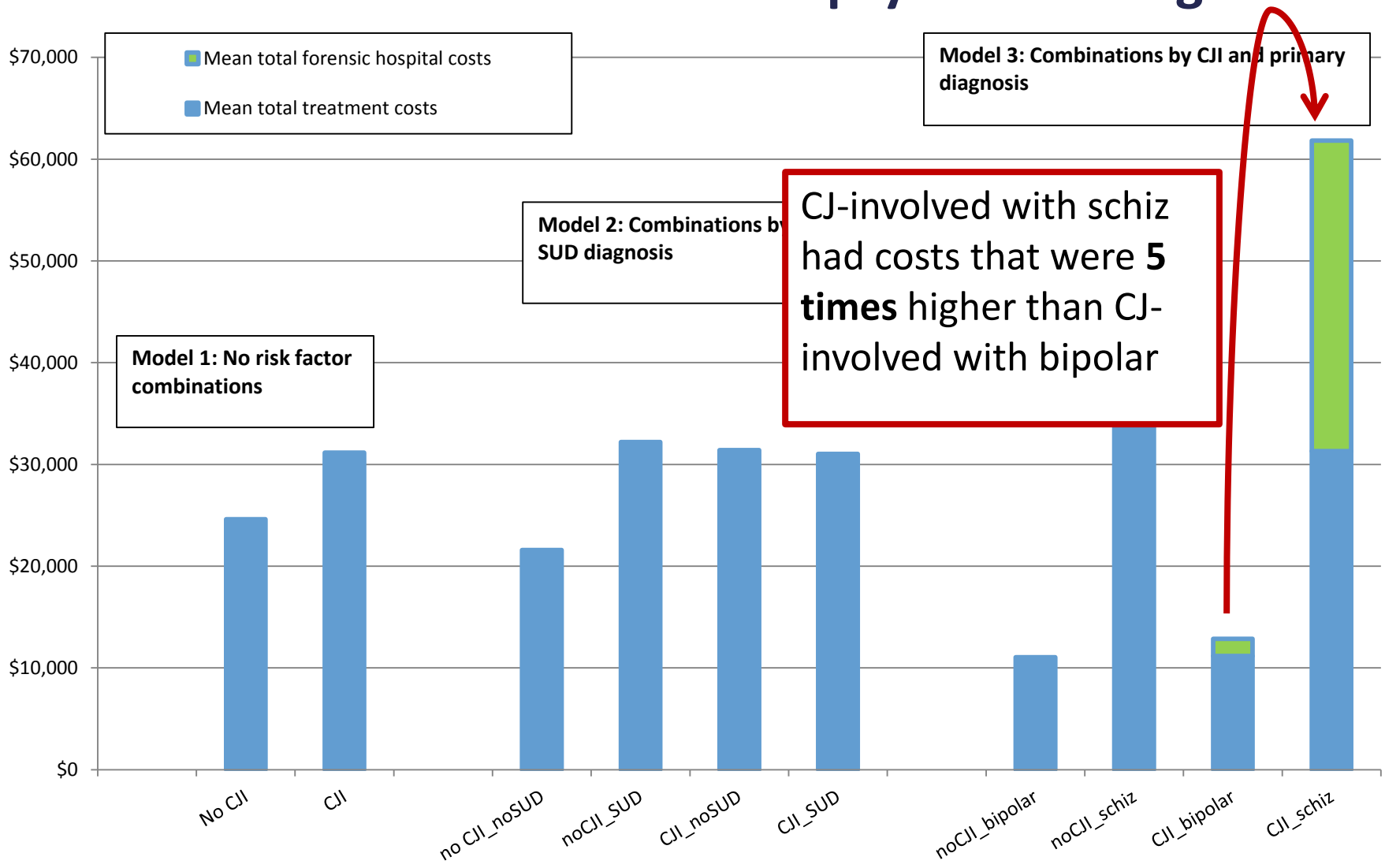

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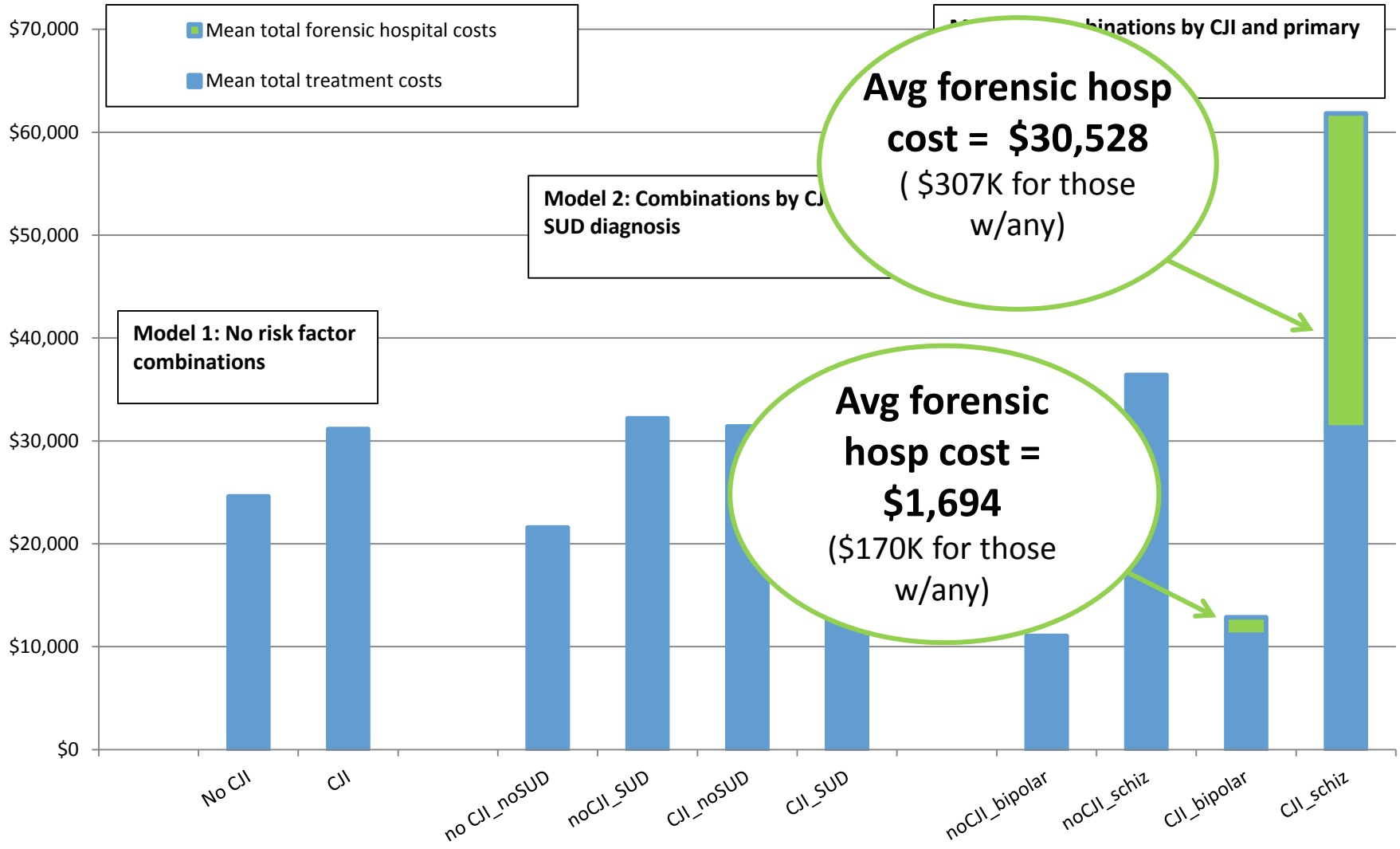

Treatment costs: strong influence of schizophrenia among the CJ-involved

- CJ-involved adults with schizophrenia had disproportionate use of forensic hospitalizations, most commonly for incompetency to stand trial but also for NGRI, or other forensic evaluations performed for an offender's trial

- Individuals with schizophrenia and other psychotic disorders have more risk factors for forensic hospitalizations than those with mood disorders
  - higher risk of incompetency findings
  - less likely to be restored to competency once found incompetent
  - undergo longer related forensic hospitalizations

- Highly consistent with the forensic hospitalization experience we found among the adults in our study

Policy relevance

- Mental illness life-course story: Differences in costs between those with and w/o justice involvement partly a story of mental illness, generally higher degrees of disability and use of high-cost care among persons with schizophrenia

- Systems story: Distributions of treatment costs also represent patterns of individuals' movement through the public treatment and CJ systems and how those systems yield different access to needed care

- Competency evaluations described as a "back door" into psychiatric hospitals

- More focus needed on how the public treatment and justice systems can coordinate to reduce risk and costs for justice-involved adults with schizophrenia
  - possible alternatives to high-cost, often lengthy forensic hospitalizations (e.g., outpatient programs for competency restoration), prevention efforts upstream

Analyzing these administrative data: The challenges

- Clinical diagnoses from admin data aren't as reliable as comprehensive clinical assessments
- Applied a static, global diagnosis – time-varying would have been beyond scope of project time and resources
  - Not a major limitation knowing these disorders are chronic and life-long; would be more limiting if studying mild-mod MH disorders that may be limited to a few episodes
- Medication *utilization* data ≠ medication *adherence* data
- Medicaid claims don't capture Medicare cost sharing
- Duplication of services when represented in both Medicaid and DMHAS – requires painstaking de-duplication to avoid double-counting
- DMHAS and Medicaid costs aren't apples-to-apples comparison

Analyzing these administrative data: Opportunities and successes

- Able to collect and merge data from a wide range of CJ-related agencies and understand how that CJ involvement influenced public behavioral health clients' service use and costs
  - Would be infeasible to carry out primary collection for this comprehensive a set of data, for 25K+ individuals

- Administrative data avoid reporting, recall bias of service use and CJ events by participants

- CT's unified CJ system allows tracking through jails *and* prisons

- Allowed us to connect various system- and individual-level characteristics to identify an important influence on treatment costs that can inform policy making

Thank you