



The Opportunity

Gun violence is surging in the United States. In 2020, America's homicide rate rose by nearly 30%, the largest one-year increase in U.S. history. In Chicago, and cities across the country, this spike in gun violence has not waned. The neighborhoods most affected by gun violence—overwhelmingly communities of color—also bear the burden of society's main response to it: aggressive policing and long prison sentences. To address this public health crisis, we need solutions that reduce gun violence without exacerbating the harms of the criminal legal system.

One such response is providing people most at-risk of gun violence—those most likely to shoot or be shot—supports to help keep themselves and others safe. Recent evidence shows that cognitive-behavioral interventions, which help people cope with trauma and navigate difficult situations, can significantly reduce violence involvement, and the effects may be magnified when combined with a job.¹ But combining the two has never been rigorously tested with people at the highest risk of violence, or on the most deadly forms of violence: shootings and homicides.

The research we describe here—the initial results of a large-scale randomized trial of the Rapid Employment and Development Initiative (READI) Chicago — fills this important gap and shows that this combination of supports may lower involvement in shootings and homicides.

READI's Approach

READI starts by identifying men in five of Chicago's highest-violence neighborhoods who are—even compared to their neighbors—at the highest risk of gun violence involvement and engages them through relentless street outreach efforts. READI then offers these men two main sources of support:

1. An 18-month subsidized, supported job, including opportunities for increased responsibilities and wages. The job provides the chance to participate in the formal labor market as well as an incentive to engage in the second main program element: paid cognitive-behavioral programming.

2. Cognitive-behavioral programming, including group sessions that aim to help participants transition into this new job and identify alternative choices that still work within the context of their lives. In particular, the curriculum teaches men how to recognize patterns of thinking that can have fatal consequences, and how to build and strengthen skills to make different decisions.²

In addition to these two main components, READI also provides a secure place to spend time, which may further reduce violence by keeping participants away from dangerous encounters, and offers referrals to a range of legal, mental health, and substance use treatment services to ensure men can productively participate given the many barriers they face.

The Study

Researchers at the University of Chicago Crime Lab, the University of Chicago Inclusive Economy Lab, the University of Michigan, and Cornell University are conducting a randomized controlled trial (RCT) to determine READI's impact on participants' involvement in serious violence relative to the status quo, one of the largest and most rigorous studies to date of a community violence intervention (CVI) program in the United States.³

Almost 2,500 men in Chicago were identified as being at very high risk of gun violence involvement. Not all could be served, so a fair lottery was used to determine which were offered READI and which had access to all other available services. Since the only difference, on average, between the men with and without a READI offer *is* the READI offer, comparing the outcomes of men in both groups isolates the additional impact of READI.

Findings from READI Implementation

READI can both find the men in Chicago at highest risk of shooting or being shot and engage them in programming.

• READI successfully finds and recruits men at staggeringly high risk of gun violence involvement: Prior to being referred to READI, 35% of men in the study had previously been shot, and 98% had previously been arrested, with an average of 17 prior arrests. In the 20 months after being identified for the study, the men not offered READI were shot and killed 54 times more often than the average Chicagoan—a rate of over 11 shootings and homicides per 100 people—and 2.8 times more often than even other young men in the neighborhoods where READI operates.

 READI participants stay engaged: Despite facing considerable barriers to participating, 54% of men offered READI attended at least one day of programming. Conditional on attending at least one day of programming, READI participants also remained highly engaged, working 75% of the weeks available to them during in-person programming.

READI is Successful at Identifying Group at Strikingly High Risk of Being Shot



Initial Findings from READI Impact Evaluation

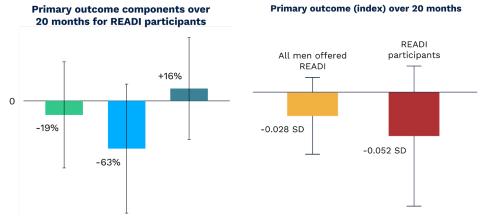
When weighing acts of violence by the costs they impose on society, READI reduces social harms from violence. Over the 20 months after men become eligible for the program, we estimate that each additional READI participant reduces harm to society by \$185,000, implying a benefit-cost ratio from violence reduction alone of at least 3:1. Using more inclusive estimates of violence costs, this benefit-cost ratio rises to 7:1 or higher.⁴

At the same time, READI did not decrease all forms of serious violence. READI participants are less likely to be involved in shootings and homicides, but they are not any less likely to be arrested for other less serious forms of violence, including armed robbery and non-shooting aggravated battery.

As a consequence, READI participation has no significant impact on the main outcome of the study: an average of all three measured forms of serious violence. Prior to READI's launch, the researchers committed to evaluate the program by an index of three measures: (1) shooting and homicide arrests; (2) shooting and homicide victimizations; and (3) other serious violent-crime arrests. 5 Given that READI did not decrease the latter, there is no discernible effect on the average of all three.

Nonetheless, the program resulted in large proportional reductions in the most severe and socially costly forms of violence. READI participants had 63% fewer arrests and 19% fewer victimizations for shootings and homicides—huge reductions by any measure. After accounting for the fact that we are testing three components of the index, we can be 85% confident that the reduction in shooting and homicide arrests is due to READI—less than the 95% confidence convention traditionally used for social science, but enough to merit attention given the severity of shootings and homicides.





READI was most effective for participants referred by community outreach organizations. Participants could enter READI by referral from outreach partners, correctional institutions, or a data-driven algorithm. Those referred by READI's community partners show large reductions in both arrests (79%) and victimizations (47%) for shootings and homicides. We can be 95% confident that these reductions are due to READI, even after accounting for testing multiple components of the index.

A combination of cognitive-behavioral programming and employment remains the best evidenced approach to reduce involvement in shootings and homicides for men at highest risk of violence. Given how little we know about alternative responses to gun violence—and the very high costs this violence imposes on our most vulnerable communities—this study's results provide a clear rationale to continue rigorously studying READI's core model.

Endnotes

- 1 Becoming A Man; One Summer Chicago Plus; Sustainable Transformation of Youth in Liberia (STYL); Redcross et al. (2016)
- 2 The READI program model has evolved over time. While virtually all men in the study sample were offered the 18-month version of READI described above, on July 1, 2020, Heartland Alliance implemented changes to the program model, most notably shortening the program length to 12 months and frontloading the cognitive behavioral programming prior to job placements.
- **3** For more information on the study design, please refer to the additional research details in this brief; a more detailed discussion of the pre-specified research plan can also be found at: https://osf.io/ap8fj/. Note that the study's primary outcome, analysis of its associated components and social costs, and adjustments for multiple testing are all pre-specified analyses. These results are not final, since we continue to receive additional data and conduct additional analyses.
- 4 These initial benefit-cost ratio estimates are likely very conservative, as they do not account for offending or victimization among study men that does not come to the attention of the police (given the low clearance rate and victimization underreporting), nor for the range of other benefits from the program such as the work performed by READI participants or the additional investment in under-served communities. We plan to incorporate these updates in future analyses and anticipate these changes will alter these initial benefit-cost estimates.
- 5 Please refer to the additional details at the end of this brief for further discussion about the definition of the primary outcome and the study's design.





Study Design

RESEARCH DESIGN

READI identified 2,456 eligible men using three different pathways: (1) a predictive algorithm based on administrative data to identify those most likely to be involved in gun violence; (2) referrals from community outreach organizations with on-the-ground expertise; and (3) referrals of individuals re-entering society from jail or prison who might be at a particularly sensitive transition period. Because READI did not have sufficient funding to serve everyone who might have benefited from the program, a fair lottery was used to determine which eligible men were offered READI and which, instead, had access to all other available services besides READI.

Due to the lottery, the only difference, on average, between the men with and without a READI offer is the READI offer. Even if something unexpected occurs that affects men in both groups—a pandemic, changes in policing, or a citywide violence spike—the study can still isolate the additional impact of READI by comparing the outcomes of men in both groups.¹

ANALYSIS PLAN

Before knowing READI's results, the research team specified how we would evaluate success. We did this partly to provide assurances that success couldn't be redefined based on results—at least not without those changes being transparent. First, in addition to specifying the time period over which we will measure outcomes (20 months, and later 40 months) and the study sample (all men entered into the fair lottery for a READI offer), we also designated a primary outcome for the study: an index combining arrests and victimizations for serious violence, weighing each component equally.² Second, to better understand READI's impact, we committed to estimating its effects on the index's components individually, and to use statistical techniques that account for the number of outcomes tested when doing so to reduce the risk of false positives. Our initial calculations suggested that we would lack sufficient statistical power to detect effects on shooting and homicide arrests separately from arrests for other serious violent crimes. However, READI's success in identifying men at very high risk for gun violence meant that we could divide the index into three components

rather than two, to better understand READI's effects on potentially lethal violence: (1) shooting and homicide arrests; (2) shooting and homicide victimizations; and (3) other serious violent-crime arrests.³ This finer division is a small deviation from our pre-analysis plan, and when estimating effects on the index components we adjust our testing to account for the one additional outcome being tested.⁴ Finally, the team committed to measuring READI's impact separately for the three different pathways into the program, as well as its impact on the overall social harm from violence and crime, recognizing that not all such acts impose equal costs.⁵

Initial Estimates of READI's Impacts at 20 Months After Offer.

The first milestone to evaluate READI comes 20 months after eligible men were either offered READI or not. This roughly corresponds to the time it takes READI participants to be found and complete the program. The research team also plans to evaluate READI at 40 months, once all 2,456 men in the study have reached that milestone.

Because READI does not appear to affect all types of violent behavior in the same way in this initial analysis, the results require some care in explanation and interpretation.

 When weighing the most serious violence more heavily, READI reduces social harms from violence.

Building on prior studies, we assign each serious violent-crime arrest and victimization a dollar value representing its estimated cost to society.⁶ We then estimate READI's impact on the total social cost of violence captured in the data.

The results suggest that, on average, READI reduces the harm to society from violence by \$185,000 per participant over 20 months, using the lowest (most conservative) estimates of these costs. In total, this amounts to approximately \$122 million in serious violence avoided due to READI. And the data allow us to be over 95% confident that this reduction is due to READI, exceeding the 95% threshold conventionally used in social science.⁷

Compared to the estimated 20-month cost of finding and engaging one additional READI participant (about \$60,000),8 the program effect implies a benefit-cost ratio of more than 3:1 from violence reduction alone. Using more inclusive estimates of violence costs, the benefit-cost ratio rises to 7:1 or higher.9

 Despite this finding, there is no discernible impact on the study's primary and prespecified outcome: the combined index of shooting and homicide victimizations, shooting and homicide arrests, and arrests

for other serious violence, weighing each component equally.

Based on the combined index of serious violence involvement, which treats the three measures of violence equally rather than weighing them by their estimated costs to society, READI participants saw a small reduction in serious violence. Due to statistical uncertainty, however, we can only be 77% confident that this reduction is due to READI, short of the conventional 95% confidence threshold.¹⁰

 The reason for this pattern of results is that our two measures of the most socially costly forms of violence—shooting and homicide arrests and victimizations—show large declines, while the third measure—arrests for less serious violence—does not move in the same way.

Relative to their peers, READI participants had 63% fewer arrests and 19% fewer victimizations for shootings and homicides—huge reductions by any measure. After applying statistical techniques to account for the number of outcomes tested, we can be 85% confident that the reduction in shooting and homicide arrests is due to READI, though still less than the conventional 95% confidence threshold used in social science. Our confidence in READI affecting shooting and homicide victimizations is much lower. Therefore, while the size of the reduction in shooting and homicide arrests in particular is promising, we must treat these estimates with some caution.

On the third component of the index, READI participants had 16% more arrests than their peers for serious violent offenses other than shootings and homicides. However, our confidence in this increase being due to READI is very low.¹³

 READI shows particular promise when we estimate separate effects by referral pathway, as pre-specified: men referred by community outreach organizations saw shooting and homicide arrests fall by 79% and victimizations fall by 47% relative to their peers.

We can be 95% confident that the estimates among the community referral pathway are due to READI.¹⁴ Results in the other two pathways are less conclusive, with much larger uncertainty surrounding the estimated effects. Hence, we can say with confidence that READI was more effective in one of the three main pathways.¹⁵

These results suggest that some variation on the current READI model could provide more precise and reliable reductions in gun violence. We are in the process of investigating why community outreach

referrals experienced more consistent improvements. One possibility is that men identified through this pathway benefited from their pre-existing relationships with outreach workers, or that outreach workers referred men more responsive to READI programming

Interpreting Initial Results

Policymakers need to weigh the clear evidence of READI reducing costs to society from serious violence against the fact that for several of the study's main findings, including on the primary outcome, we are less than 95% confident that the differences we measure are due to READI. There has long been a push within social science to recognize that such traditional thresholds are arbitrary, and that policymakers might be better served by considering the range of estimates consistent with a study's data. 16 We note, under this view, that the study's data are consistent with READI reducing arrests for shootings and homicides with 85% confidence. The data are also consistent with READI reducing victimizations and arrests for shootings and homicides with 95% confidence for men referred by community organizations.

Importantly, we are not aware of alternative interventions for people facing similarly high risk of gun violence with comparable benefit-cost ratios and rigorous evidence. Given the enormous cost that gun violence imposes on the most vulnerable in our society, and the lack of rigorous evidence on alternative approaches capable of reducing it, we believe that READI's core model—recruiting the highestrisk men and providing them cognitive-behavioral programming alongside supported employment—continues to be a cornerstone of community violence reduction.

While the analysis is ongoing, we look forward to regularly updating key stakeholders with the findings through 2024, when we will be able to report on additional 20-month analyses as well as 40-month outcomes for men in the READI Chicago study.

For more information about the READI study, please contact Biz Rasich at erasich@uchicago.edu.

Endnotes

- 1 Note that the study isolates the additional impact of READI beyond the status quo. The availability of other services for the men in the study increased over the study period, and to the extent that men not offered READI benefited from these services, the additional impact of READI may be diminished.
- **2** Based on matching men in the study to their records from the Chicago Police Department.
- **3** Other serious violent-crime arrests include those for sexual assault, robbery, and non-shooting aggravated assault and battery.
- **4** Constructing the primary outcome as an index with three components rather than two has virtually no effect on estimates of READI's impact on the primary outcome.
- **5** The pre-analysis plan, which includes additional pre-specified analyses, can be found at: https://osf.io/ap8fi/.
- 6 Cohen and Piquero (2009)
- **7** The p-value for this estimate is 0.03. The outcomes weighted by social cost is statistically significant for two reasons: because the reduction in homicides is so large, and because as a single combined, weighted measure it is not adjusted for multiple comparisons. But it too is a secondary outcome and so should also be taken with some caution.
- **8** Note that this estimated cost reflects a longer duration (20 months rather than 12, to align with the study's outcome window); includes the additional costs to find and engage men who ultimately do not become participants; and includes start-up costs from the period before services were first delivered.
- **9** As described earlier, these initial benefit-cost ratio estimates are likely very conservative, since they do not yet account for offending or victimization among study men that does not come to the attention of the police (given the low clearance rate and victimization underreporting), nor for the range of other benefits from the program such as the work performed by READI participants or the additional investment in underserved communities. We plan to incorporate these updates in future analyses and anticipate these changes will alter these initial benefit-cost estimates.
- **10** READI participants saw a reduction in the combined index of serious violence of 0.0519 standard deviations (p = 0.229).
- 11 These represent reductions in shooting and homicide arrests among participants of 2.1 per 100 relative to a control complier mean of 3.3 per 100, and reductions in shooting and homicide victimizations among participants of 2.3 per 100 relative to a control complier mean of 12.1 per 100. P-values for each estimate that strongly control for the family-wise error rate (FWER) using the free step-down resampling method of Westfall and Young are 0.147 (arrests) and 0.605 (victimizations).
- **12** Such adjustments are standard practice used to reduce the risk of false positives when testing more than one hypothesis, or the components of a primary index, as we do in the READI evaluation.
- **13** This represents an increase in other serious violent-crime arrests among participants of 0.9 per 100 relative to a control complier mean of 5.2 per 100, with a p-value strongly controlling for the FWER of 0.635.
- **14** These represent reductions among participants referred by community organizations in shooting and homicide arrests of 3.4 per 100 relative to a control complier mean of 4.3 per 100, and in shooting and homicide victimizations of 6.4 per 100 relative to a control complier mean of 13.6 per 100. P-values for each estimate that strongly control for the FWER are 0.021 (arrests) and 0.044 (victimizations).
- **15** We also find that pathway results are significantly different from each other (p = 0.079), strengthening our confidence that pathway matters.
- 16 McCloskey and Ziliak (2008); Manski (2019); Imbens (2021)

		Estimates				p-values				
Outcome	CM	ITT	CCM	ТОТ	Observed ITT	Observed TOT	FWER ¹	FDR-q ²		
Primary Index of Serious Violence ³										
	0	-0.0280 (0.0235)	0.0255	-0.0519 (0.0431)	0.233	0.229				
Primary Outcome Components ⁴										
Victimizations: Shootings & Homicides	0.1144	-0.0121 (0.0135)	0.1208	-0.0225 (0.0248)	0.370	0.365	0.605	0.555		
Arrests: Shootings & Homicides	0.0260	-0.0113 (0.0058)	0.0331	-0.0210 (0.0107)	0.052*	0.050**	0.147	0.155		
Arrests: Other Serious Violence	0.0487	0.0046 (0.0095)	0.0520	0.0085 (0.0174)	0.628	0.624	0.635	0.628		

N = 2,456. Standard errors are robust. p<.01 ***; p<.05 **; p<.1 *. Covariates include pathway and neighborhood fixed effects, month of randomization fixed effects, age at randomization, and pre-randomization characteristics for prior arrest, victimization, and incarceration. All baseline covariate categories are mutually exclusive.

¹ FWER p-values control for the familywise error rate using the Westfall and Young (1993) method for step-down resampling. P-values adjusted for multiple hypothesis testing rely on a family of outcomes that includes each of the three estimates for the Primary Outcome Components.

² FDR-q values control for the false discovery rate using the Benjamini and Hochberg (1995) method. The family of outcomes used to compute the FDR-q values is the same as that used in the FWER procedure.

³ The Primary Index of Serious Violence is constructed by equally weighting three components which measure the observed violence experienced by men in the study: shooting and homicide victimizations, shooting and homicide arrests, and other arrests for serious violence. For each component, the number of events observed for each individual is re-scaled with reference to the distribution of violence experienced by the control group. Specifically, for each component, every observation is de-meaned by subtracting the control group mean from the number of events observed for each individual; this difference is then divided by the control group standard deviation to produce a control-group-standardized measure of each component. Finally, the index is constructed for each individual by taking the average of the three standardized components.

⁴ Arrests: Other Serious Violence include all arrests for Part I violent crimes that do not involve a shooting or homicide. Specifically, these include arrests for criminal sexual assault, robbery, and aggravated assault and battery.

Pathway			Estimates				p-values			
	Outcome	CM	ITT	CCM	ТОТ	Observed ITT	Observed TOT	FWER ¹	FDR-q ²	
Primary Index of Serious Viole	ence ³									
Community Pathway		0.0051	-0.0932 (0.0393)	0.0528	-0.1220 (0.0512)	0.018**	0.017**	0.053*	0.054*	
Reentry Pathway		0.0077	-0.0386 (0.0603)	0.0116	-0.0648 (0.0997)	0.522	0.516	0.768	0.522	
Risk Assessment Pathway		-0.0058	0.0218 (0.0333)	-0.0103	0.0597 (0.0906)	0.513	0.510	0.768	0.522	
Primary Outcome Components	s ⁴									
Community Pathway $(N = 878)$										
	Victimizations: Shootings & Homicides	0.1187	-0.0492 (0.0217)	0.1358	-0.0644 (0.0282)	0.024**	0.023**	0.044**	0.035**	
	Arrests: Shootings & Homicides	0.0320	-0.0260 (0.0098)	0.0429	-0.0340 (0.0128)	0.008***	0.008***	0.021**	0.025**	
	Arrests: Other Serious Violence	0.0411	0.0050 (0.0158)	0.0470	0.0065 (0.0204)	0.753	0.749	0.758	0.753	
Reentry Pathway $(N = 1,232)$										
· , ,	Victimizations: Shootings & Homicides	0.1236	-0.0089 (0.0379)	0.1250	-0.0150 (0.0626)	0.814	0.811	0.967	0.978	
	Arrests: Shootings & Homicides	0.0281	0.0005 (0.0181)	0.0293	0.0007 (0.0300)	0.978	0.981	0.979	0.978	
	Arrests: Other Serious Violence	0.0449	-0.0210 (0.0177)	0.0451	-0.0351 (0.0293)	0.235	0.231	0.577	0.706	
Risk Assessment Pathway $(N = 346)$										
	Victimizations: Shootings & Homicides	0.1088	0.0136 (0.0191)	0.0960	0.0373 (0.0519)	0.476	0.473	0.808	0.593	
	Arrests: Shootings & Homicides	0.0211	-0.0041 (0.0077)	0.0202	-0.0114 (0.0209)	0.593	0.587	0.808	0.593	
	Arrests: Other Serious Violence	0.0552	0.0115 (0.0143)	0.0618	0.0316 (0.0389)	0.422	0.417	0.808	0.593	

Standard errors are robust. p<.01 ***; p<.05 **; p<.05 **; p<.1 *. Each outcome-specific regression (e.g. 'Victimizations: Shootings and Homicides') uses the full sample (N = 2,456) and includes treatment-pathway interaction terms as well as pathway fixed effects, neighborhood fixed effects, month of randomization fixed effects, and covariates that measure age at randomization and pre-randomization characteristics for prior arrest, victimization, and incarceration. All baseline covariate categories are mutually exclusive.

¹ FWER p-values control for the familywise error rate using the Westfall and Young (1993) method for step-down resampling. P-values adjusted for multiple hypothesis testing rely on the following families of outcomes: 1) the three estimates for Primary Index of Serious Violence across each pathway are treated as a family, and 2) the three estimates for the Primary Outcome Components are treated as a family within each pathway.

² FDR-q values control for the false discovery rate using the Benjamini and Hochberg (1995) method. The families of outcomes used to compute the FDR-q values are the same as those used in the FWER procedure.

³ The Primary Index of Serious Violence is constructed by equally weighting three components which measure the observed violence experienced by men in the study: shooting and homicide victimizations, shooting and homicide arrests, and other arrests for serious violence. For each component, the number of events observed for each individual is re-scaled with reference to the distribution of violence experienced by the control group. Specifically, for each component, every observation is de-meaned by subtracting the control group mean from the number of events observed for each individual; this difference is then divided by the control group standard deviation to produce a control-group-standardized measure of each component. Finally, the index is constructed for each individual by taking the average of the three standardized components.

⁴ Arrests: Other Serious Violence include all arrests for Part I violent crimes that do not involve a shooting or homicide. Specifically, these include arrests for criminal sexual assault, robbery, and aggravated assault and battery.

READI's estimated effect on the harm to society from observed violence

		Estin	p-values			
Outcome	CM	ITT	CCM	TOT	Observed ITT	Observed TOT
Social Cost of Observed Crime ¹						
Bottom-Up (Conservative Estimate)	\$295,092	-\$99,625 (\$46,299)	\$372,226	-\$184,825 (\$85,107)	0.032**	0.030**
Willingness-to-Pay (Inclusive Estimate)	\$695,057	-\$233,749 (\$109,271)	\$877,271	-\$433,654 (\$200,862)	0.033**	0.031**

N=2,456. Standard errors are robust. p<.01 ***; p<.05 **; p<.1 *. Covariates include pathway and neighborhood fixed effects, month of randomization fixed effects, age at randomization, and pre-randomization characteristics for prior arrest, victimization, and incarceration. All baseline covariate categories are mutually exclusive.

¹Estimates for the cost of crime are from Cohen and Piquero (2009) and all cost figures are adjusted to 2017 dollars. The dependent variable in each model is the sum of the social costs associated with each arrest and victimization observed during the study follow-up for each individual.