Submitted to the Annals of Applied Statistics

APPENDICES: ESTIMATING CAUSAL EFFECTS OF HIV PREVENTION INTERVENTIONS WITH INTERFERENCE IN NETWORK-BASED STUDIES AMONG PEOPLE WHO INJECT DRUGS

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APPENDIX A: PROOF OF PROPOSITION 1

To show $\widehat{Y}^{IPW_1}(a,\alpha)$ is unbiased with a known propensity score, see the following:

$$\begin{aligned}
E[\widehat{Y}^{IPW_1}(a,\alpha)] &= \frac{1}{n}\sum_{i=1}^{n} E\Big[\frac{y_i(A_i,A_{\mathcal{N}_i})I(A_i=a)\pi(A_{\mathcal{N}_i};\alpha)}{f_1(A_i,A_{\mathcal{N}_i}|Z_i,Z_{\mathcal{N}_i})}\Big] \\
&= \frac{1}{n}\sum_{i=1}^{n}\sum_{a_i,a_{\mathcal{N}_i}} \frac{y_i(a_i,a_{\mathcal{N}_i})I(a_i=a)\pi(a_{\mathcal{N}_i};\alpha)}{f_1(a_i,a_{\mathcal{N}_i}|Z_i,Z_{\mathcal{N}_i})} f_1(a_i,a_{\mathcal{N}_i}|Z_i,Z_{\mathcal{N}_i}) \\
&= \frac{1}{n}\sum_{i=1}^{n}\sum_{a_{\mathcal{N}_i}} y_i(a_i=a,a_{\mathcal{N}_i})\pi(a_{\mathcal{N}_i};\alpha) \\
&= \bar{y}(a,\alpha)
\end{aligned}$$

The unbiasedness of the inverse probability weighted marginal estimator, $\widehat{Y}^{IPW_1}(\alpha)$, can be proved similarly.

Under the assumption that $y(a_i,a_{\mathcal{N}_i}) = y(a_i,s_i)$, IPW_2 is also unbiased with a known propensity score

$$\begin{aligned}
E[\widehat{Y}^{IPW_2}(a,\alpha)] &= \frac{1}{n}\sum_{i=1}^{n} E\Big[\frac{y_i(A_i,S_i)I(A_i=a)\pi(A_{\mathcal{N}_i};\alpha)}{f_2(A_i,S_i|Z_i,Z_{\mathcal{N}_i})}\Big] \\
&= \frac{1}{n}\sum_{i=1}^{n}\sum_{a_i,s_i} \frac{y_i(a_i,s_i)I(a_i=a)\pi(a_{\mathcal{N}_i};\alpha)}{f_2(a_i,s_i|Z_i,Z_{\mathcal{N}_i})} f_2(a_i,s_i|Z_i,Z_{\mathcal{N}_i}) \\
&= \frac{1}{n}\sum_{i=1}^{n}\sum_{j=0}^{d_i} \binom{d_i}{j} y_i(a_i=a,j)\alpha^j(1-\alpha)^{d_i-j} \\
&= \frac{1}{n}\sum_{i=1}^{n}\sum_{a_{\mathcal{N}_i}} y_i(a_i=a,a_{\mathcal{N}_i})\pi(a_{\mathcal{N}_i};\alpha) = \bar{y}(a,\alpha)
\end{aligned}$$

APPENDIX B: PROPOSITION 2 AND SANDWICH-TYPE ESTIMATORS OF THE VARIANCE

Following Boos and Stefanski (2013), to estimate the parameters in the exposure propensity score model $\hat{\Theta}$, we let

$$\psi_\eta(Y_\nu, A_\nu, Z_\nu; \theta) = \frac{1}{k} \sum_{i \in V(C_\nu)} \frac{\partial \log f_r(A_{\nu i}, A_{\mathcal{N}_{\nu i}} | Z_{\nu i}, Z_{\mathcal{N}_{\nu i}})}{\partial \eta}, \eta \in \Theta.$$

Estimates $\hat{\eta}$ that maximize the $\log$ likelihood are solutions to the score equation

$$\sum_{\nu=1}^{m} \psi_\eta(Y_\nu, A_\nu, Z_\nu; \theta) = \frac{1}{k} \sum_{\nu=1}^{m} \sum_{i \in V(C_\nu)} \frac{\partial \log f_r(A_{\nu i}, A_{\mathcal{N}_{\nu i}} | Z_{\nu i}, Z_{\mathcal{N}_{\nu i}})}{\partial \eta} = 0.$$

The estimating equations for the remaining parameters $\hat{\theta}_{0\alpha}, \hat{\theta}_{1\alpha}, \hat{\theta}_\alpha$ are described in Section 5.3. Let

$$\psi_\nu(Y_\nu, A_\nu, Z_\nu; \theta) = \begin{pmatrix} \psi_\eta(Y_\nu, A_\nu, Z_\nu; \theta) \\ \psi_0(Y_\nu, A_\nu, Z_\nu; \theta; \alpha) \\ \psi_1(Y_\nu, A_\nu, Z_\nu; \theta; \alpha) \\ \psi_2(Y_\nu, A_\nu, Z_\nu; \theta; \alpha) \end{pmatrix}_{\eta \in \Theta}.$$

Therefore, $\sum_{i=1}^{m} \psi_\nu(Y_\nu, A_\nu, Z_\nu; \hat{\theta}) = 0$. Under suitable regularity conditions and due to the unbiased estimating equations, as $m \to \infty$, $\hat{\theta}$ converges in probability to θ and $\sqrt{m}(\hat{\theta} - \theta)$ converges in distribution to a multivariate normal $N(0, \Sigma)$, where

$$\Sigma = \frac{1}{m} A^{-1}(\theta) B(\theta) A(\theta)^{-T}$$

with

$$A(\theta) = E[-\dot{\psi}_\nu(Y_\nu, A_\nu, Z_\nu; \theta)] = E[-\partial \psi_\nu(Y_\nu, A_\nu, Z_\nu; \theta)/\partial \theta^T]$$

and

$$B(\theta) = E[\psi_\nu(Y_\nu, A_\nu, Z_\nu; \theta) \psi_\nu(Y_\nu, A_\nu, Z_\nu; \theta)^T].$$

The true parameter θ is defined as the solution to the equation

$$\int \psi_\nu(Y_\nu, A_\nu, Z_\nu; \theta) dF_\nu(Y_\nu, A_\nu, Z_\nu) = 0$$

where F_ν is the cumulative distribution function of (Y_ν, A_ν, Z_ν).

The empirical sandwich-type estimator can be used to estimate the asymptotic variance for the direct, disseminated, composite and overall estimators. Replacing $A(\theta)$ and $B(\theta)$ with empirical estimators in Proposition 2 yields a consistent sandwich estimator of the asymptotic variance Σ

$$\hat{\Sigma}_m = \frac{1}{m} A_m(\hat{\theta})^{-1} B_m(\hat{\theta}) A_m(\hat{\theta}))^{-T}$$

where

$$A_m(\hat{\theta}) = \frac{1}{m} \sum_{\nu=1}^{m} -\dot{\psi}_\nu(Y_\nu, A_\nu, Z_\nu; \hat{\theta}; \alpha) = -\frac{1}{m} \sum_{\nu=1}^{m} \begin{pmatrix} A_{11}(Y_\nu, A_\nu, Z_\nu; \hat{\theta}) & 0 \\ A_{2\cdot}(Y_\nu, A_\nu, Z_\nu; \hat{\theta}; \alpha) & -I_{3\times 3} \end{pmatrix}$$

in which

$$A_{11}(Y_\nu, A_\nu, Z_\nu; \hat{\theta}) = \left(\frac{\partial \psi_\eta(Y_\nu, A_\nu, Z_\nu; \hat{\theta})}{\partial \eta'} \right)_{\eta, \eta' \in \Theta}$$

$$A_{21}(Y_\nu, A_\nu, Z_\nu; \hat{\theta}; \alpha) = \left(\frac{\partial \psi_0(Y_\nu, A_\nu, Z_\nu; \hat{\theta}; \alpha)}{\partial \eta'} \right)_{\eta' \in \Theta}$$

$$A_{31}(Y_\nu, A_\nu, Z_\nu; \hat{\theta}; \alpha) = \left(\frac{\partial \psi_1(Y_\nu, A_\nu, Z_\nu; \hat{\theta}; \alpha)}{\partial \eta'} \right)_{\eta' \in \Theta}$$

and

$$A_{41}(Y_\nu, A_\nu, Z_\nu; \hat{\theta}; \alpha) = \left(\frac{\partial \psi_2(Y_\nu, A_\nu, Z_\nu; \hat{\theta}; \alpha)}{\partial \eta'} \right)_{\eta' \in \Theta}.$$

Let $A_{2\cdot}(Y_\nu, A_\nu, Z_\nu; \hat{\theta}; \alpha) = \big(A_{21}(Y_\nu, A_\nu, Z_\nu; \hat{\theta}; \alpha)\ A_{31}(Y_\nu, A_\nu, Z_\nu; \hat{\theta}; \alpha)\ A_{41}(Y_\nu, A_\nu, Z_\nu; \hat{\theta}; \alpha) \big)^T$

$$B_m(\hat{\theta}) = \frac{1}{m} \sum_{\nu=1}^{m} \psi_\nu(Y_\nu, A_\nu, Z_\nu; \hat{\theta}) \psi_\nu(Y_\nu, A_\nu, Z_\nu; \hat{\theta})^T$$

That is, $\hat{\Sigma}_m$ is a consistent estimator of Σ. We provide a sandwich estimator of the variance for the disseminated effect. An analogous procedure can be used to obtain the sandwich variance of the variance for the estimators of the direct, overall, and total effects. Let

$$\psi_\nu(Y_\nu, A_\nu, Z_\nu; \theta) = \begin{pmatrix} \psi_\eta(Y_\nu, A_\nu, Z_\nu; \theta) \\ \psi_0(Y_\nu, A_\nu, Z_\nu; \theta; \alpha_1) \\ \psi_0(Y_\nu, A_\nu, Z_\nu; \theta; \alpha_0) \\ \psi_1(Y_\nu, A_\nu, Z_\nu; \theta; \alpha_1) \\ \psi_1(Y_\nu, A_\nu, Z_\nu; \theta; \alpha_0) \\ \psi_2(Y_\nu, A_\nu, Z_\nu; \theta; \alpha_1) \\ \psi_2(Y_\nu, A_\nu, Z_\nu; \theta; \alpha_0) \end{pmatrix}_{\eta \in \Theta}.$$

Replacing $A(\theta)$ and $B(\theta)$ with empirical estimators in Proposition 2 yields a consistent sandwich estimator of the asymptotic variance of $\overline{IE}(\alpha_1, \alpha_0)$ is

$$\hat{\Sigma}_{IE} = \frac{1}{m} \lambda^T A_m(\hat{\theta})^{-1} B_m(\hat{\theta}) A_m(\hat{\theta})^{-T} \lambda$$

with $\lambda = (0_{1\times p}, 1, -1, 0, 0, 0, 0)^T$. The estimated standard error (se) is $\widehat{\text{se}}(\widehat{\overline{IE}}_r(\alpha_1, \alpha_0)) = \sqrt{\hat{\Sigma}_{IE}}$.

APPENDIX C: SIMULATION RESULTS

In this section, we include the simulation results from 1000 simulation datasets on networks with 10, 50, 100, 150, 200 components. The simulation results include the true values of the average potential outcomes, and bias for estimation of inverse probability weighted estimators (IPW_1 and IPW_2) for exposed ($a = 1$) and not exposed ($a = 0$), and marginal estimators under allocation strategies 25%, 50%, and 75%, the asymptotic standard errors (ASE), the empirical standard errors (ESE), and empirical coverage probabilities (ECP) (Table A1 to A5). Additionally, we used a different exposure generating model given by $A_i = \text{Bern}(p = \text{logit}^{-1}(-0.5 - 1.5 \cdot Z_i + b_\nu))$ in data simulating on a network with 100 components (Table A6).

TABLE A1
Simulation results of IPW_1 (left) and IPW_2 (right) on network with 10 components.

		IPW_1				IPW_2			
	True	Bias	ESE	ASE	ECP	Bias	ESE	ASE	ECP
$\widehat{Y}(1, 0.25)$	0.247	0.004	0.158	0.110	0.73	-0.013	0.285	0.122	0.77
$\widehat{Y}(1, 0.5)$	0.226	0.005	0.098	0.076	0.83	-0.001	0.091	0.077	0.90
$\widehat{Y}(1, 0.75)$	0.205	<0.001	0.124	0.083	0.75	0.016	0.095	0.074	0.79
$\widehat{Y}(0, 0.25)$	0.227	0.004	0.111	0.082	0.80	0.013	0.115	0.079	0.80
$\widehat{Y}(0, 0.5)$	0.274	0.010	0.098	0.082	0.83	0.004	0.088	0.081	0.91
$\widehat{Y}(0, 0.75)$	0.324	0.016	0.171	0.128	0.76	0.011	0.189	0.127	0.78
$\widehat{Y}(0.25)$	0.232	0.004	0.093	0.073	0.82	0.006	0.114	0.073	0.83
$\widehat{Y}(0.5)$	0.250	0.007	0.070	0.061	0.85	0.001	0.064	0.060	0.92
$\widehat{Y}(0.75)$	0.235	0.004	0.103	0.076	0.79	0.015	0.087	0.071	0.81

TABLE A2
Simulation results of IPW_1 (left) and IPW_2 (right) on network with 50 components

		IPW_1				IPW_2			
	True	Bias	ESE	ASE	ECP	Bias	ESE	ASE	ECP
$\widehat{Y}(1, 0.25)$	0.249	0.004	0.066	0.060	0.91	-0.008	0.077	0.062	0.89
$\widehat{Y}(1, 0.5)$	0.227	0.002	0.040	0.038	0.94	-0.001	0.033	0.034	0.96
$\widehat{Y}(1, 0.75)$	0.206	-0.002	0.053	0.048	0.91	-0.001	0.052	0.044	0.91
$\widehat{Y}(0, 0.25)$	0.227	-0.002	0.049	0.048	0.94	-0.002	0.048	0.043	0.92
$\widehat{Y}(0, 0.5)$	0.274	0.003	0.038	0.040	0.97	-0.002	0.033	0.036	0.97
$\widehat{Y}(0, 0.75)$	0.325	0.002	0.071	0.067	0.93	-0.014	0.081	0.071	0.93
$\widehat{Y}(0.25)$	0.233	-0.001	0.040	0.039	0.94	-0.003	0.040	0.038	0.93
$\widehat{Y}(0.5)$	0.250	0.002	0.028	0.029	0.97	-0.001	0.023	0.026	0.98
$\widehat{Y}(0.75)$	0.235	-0.001	0.042	0.041	0.94	-0.006	0.044	0.040	0.93

TABLE A3
Simulation results of IPW$_1$ (left) and IPW$_2$ (right) on network with 100 components

		IPW$_1$				IPW$_2$			
	True	Bias	ESE	ASE	ECP	Bias	ESE	ASE	ECP
$\widehat{Y}(1,0.25)$	0.249	<0.001	0.047	0.044	0.92	-0.010	0.051	0.047	0.92
$\widehat{Y}(1,0.5)$	0.227	-0.001	0.029	0.027	0.91	-0.001	0.023	0.024	0.96
$\widehat{Y}(1,0.75)$	0.206	-0.005	0.041	0.035	0.91	-0.005	0.036	0.033	0.94
$\widehat{Y}(0,0.25)$	0.227	-0.006	0.033	0.034	0.92	-0.002	0.032	0.032	0.95
$\widehat{Y}(0,0.5)$	0.274	0.003	0.025	0.029	0.95	-0.002	0.023	0.025	0.98
$\widehat{Y}(0,0.75)$	0.325	0.006	0.047	0.048	0.89	-0.016	0.058	0.053	0.94
$\widehat{Y}(0.25)$	0.233	-0.004	0.028	0.028	0.95	-0.004	0.028	0.028	0.97
$\widehat{Y}(0.5)$	0.250	0.001	0.019	0.021	0.95	-0.002	0.016	0.018	0.99
$\widehat{Y}(0.75)$	0.235	-0.002	0.033	0.030	0.92	-0.008	0.031	0.030	0.96

TABLE A4
Simulation results of IPW$_1$ (left) and IPW$_2$ (right) on network with 150 components

		IPW$_1$				IPW$_2$			
	True	Bias	ESE	ASE	ECP	Bias	ESE	ASE	ECP
$\widehat{Y}(1,0.25)$	0.249	0.001	0.036	0.037	0.93	-0.012	0.041	0.039	0.95
$\widehat{Y}(1,0.5)$	0.226	0.001	0.021	0.022	0.96	-0.001	0.017	0.020	0.98
$\widehat{Y}(1,0.75)$	0.205	-0.003	0.028	0.029	0.95	-0.004	0.027	0.028	0.96
$\widehat{Y}(0,0.25)$	0.228	-0.002	0.027	0.028	0.95	-0.004	0.026	0.027	0.97
$\widehat{Y}(0,0.5)$	0.274	0.001	0.022	0.023	0.96	-0.002	0.018	0.020	0.98
$\widehat{Y}(0,0.75)$	0.325	0.001	0.040	0.041	0.94	-0.017	0.044	0.044	0.96
$\widehat{Y}(0.25)$	0.233	-0.001	0.023	0.023	0.94	-0.006	0.022	0.023	0.97
$\widehat{Y}(0.5)$	0.250	0.001	0.015	0.017	0.97	-0.002	0.012	0.015	0.99
$\widehat{Y}(0.75)$	0.235	-0.002	0.023	0.024	0.96	-0.007	0.023	0.024	0.97

TABLE A5
Simulation results of IPW$_1$ (left) and IPW$_2$ (right) on network with 200 components

		IPW$_1$				IPW$_2$			
	True	Bias	ESE	ASE	ECP	Bias	ESE	ASE	ECP
$\widehat{Y}(1,0.25)$	0.248	0.001	0.031	0.032	0.94	-0.011	0.036	0.034	0.95
$\widehat{Y}(1,0.5)$	0.226	0.001	0.019	0.019	0.94	<0.001	0.016	0.017	0.97
$\widehat{Y}(1,0.75)$	0.205	-0.002	0.025	0.025	0.94	-0.004	0.024	0.024	0.95
$\widehat{Y}(0,0.25)$	0.228	-0.003	0.023	0.024	0.95	-0.007	0.024	0.024	0.95
$\widehat{Y}(0,0.5)$	0.274	0.001	0.019	0.020	0.96	-0.002	0.016	0.018	0.97
$\widehat{Y}(0,0.75)$	0.325	-0.001	0.036	0.035	0.94	-0.016	0.041	0.038	0.95
$\widehat{Y}(0.25)$	0.233	-0.002	0.019	0.020	0.97	-0.007	0.021	0.021	0.97
$\widehat{Y}(0.5)$	0.250	0.001	0.014	0.014	0.96	-0.001	0.011	0.013	0.98
$\widehat{Y}(0.75)$	0.235	-0.002	0.021	0.021	0.95	-0.008	0.020	0.020	0.97

TABLE A6

Simulation results of IPW$_1$ (left) and IPW$_2$ (right) using propensity score model $A_i = \text{Bern}(\text{logit}^{-1}(-0.5 - 1.5 \cdot Z_i + b_\nu)$ on a network with 100 components.

		IPW$_1$				IPW$_2$			
	True	Bias	ESE	ASE	ECP	Bias	ESE	ASE	ECP
$\widehat{Y}(1, 0.25)$	0.2482	0.0017	0.041	0.044	0.94	0.0017	0.035	0.038	0.97
$\widehat{Y}(1, 0.5)$	0.2260	0.0006	0.068	0.074	0.86	0.0011	0.114	0.055	0.92
$\widehat{Y}(1, 0.75)$	0.2051	-0.0005	0.171	0.183	0.68	-0.0079	0.540	0.099	0.71
$\widehat{Y}(0, 0.25)$	0.2278	0.0011	0.020	0.022	0.96	-0.0002	0.017	0.019	0.99
$\widehat{Y}(0, 0.5)$	0.2743	0.0003	0.050	0.045	0.90	-0.0093	0.052	0.045	0.95
$\widehat{Y}(0, 0.75)$	0.3325	0.0021	0.172	0.124	0.79	-0.0348	0.208	0.130	0.81
$\widehat{Y}(0.25)$	0.2329	0.0012	0.018	0.021	0.97	0.0002	0.015	0.018	0.98
$\widehat{Y}(0.5)$	0.2502	0.0005	0.042	0.047	0.89	-0.0041	0.063	0.040	0.95
$\widehat{Y}(0.75)$	0.2350	-0.0018	0.133	0.150	0.73	-0.0146	0.408	0.091	0.78

APPENDIX D: COMMUNITY ALERTS AND HIV RISK BEHAVIOR IN TRIP AT 6 MONTHS

In this section, we report the point estimates for direct, indirect, total, and overall effects under allocation strategies 20%, 30%, 40% and 50% and their corresponding 95% confidence intervals for the estimated effects of community alerts at baseline on HIV risk behavior at 6-month follow up in TRIP using different set of measured confounding variables. The full set of baseline confounding variables are HIV status, shared drug equipment (e.g. syringe) in last six months, the calendar date at first interview, education (primary school, first 3 years of high school, last 3 years of high school, and post high school), and employment status (employed, unemployed/looking for a work, can't work because of health reason, and other). We first considered univariate models; that is, only use one confounding variable at a time (Tables A7, A8, A9, A10, A11), and a model not adjusted for any confounders (Table A17). Second, we estimated the effects using all of the variables, but excluding one at a time (Tables A12, A13, A14, A15, A16). The 95% CI (10) were estimated by original 10 components TRIP network, and 95% CI (20) were estimated by dividing TRIP network into 20 components using community detection with a modularity-based, fast greedy approach.

TABLE A7

Estimated risk differences and 95% confidence intervals (CIs) of the effects of community alerts on HIV risk behavior at 6 months in TRIP adjusted only for HIV status.

Effects	Coverage	IPW_1			IPW_2		
	(α, α')	RD	95% CI (10)	95% CI (20)	RD	95% CI (10)	95% CI (20)
Direct	(20%, 20%)	-0.0803	(-0.154,-0.007)	(-0.246, 0.085)	-0.0237	(-0.070, 0.022)	(-0.219, 0.171)
Direct	(30%, 30%)	-0.1301	(-0.285, 0.025)	(-0.327, 0.067)	-0.1196	(-0.272, 0.033)	(-0.312, 0.073)
Direct	(40%, 40%)	-0.1808	(-0.439, 0.078)	(-0.408, 0.046)	-0.1913	(-0.481, 0.099)	(-0.430, 0.048)
Direct	(50%, 50%)	-0.2256	(-0.587, 0.136)	(-0.482, 0.031)	-0.2366	(-0.622, 0.149)	(-0.517, 0.044)
Indirect	(30%, 20%)	0.0055	(-0.011, 0.022)	(-0.020, 0.031)	0.0063	(-0.010, 0.022)	(-0.050, 0.063)
Indirect	(40%, 20%)	-0.0057	(-0.026, 0.015)	(-0.063, 0.052)	-0.0058	(-0.016, 0.005)	(-0.103, 0.091)
Indirect	(50%, 20%)	-0.0240	(-0.059, 0.011)	(-0.128, 0.080)	-0.0269	(-0.052,-0.002)	(-0.158, 0.105)
Indirect	(40%, 30%)	-0.0112	(-0.025, 0.002)	(-0.046, 0.023)	-0.0120	(-0.025, 0.001)	(-0.055, 0.031)
Indirect	(50%, 40%)	-0.0184	(-0.040, 0.003)	(-0.068, 0.032)	-0.0211	(-0.046, 0.004)	(-0.060, 0.018)
Indirect	(50%, 30%)	-0.0295	(-0.064, 0.005)	(-0.113, 0.054)	-0.0331	(-0.071, 0.004)	(-0.113, 0.047)
Total	(30%, 20%)	-0.1246	(-0.268, 0.018)	(-0.325, 0.076)	-0.1134	(-0.252, 0.025)	(-0.311, 0.084)
Total	(40%, 20%)	-0.1865	(-0.439, 0.066)	(-0.398, 0.025)	-0.1970	(-0.484, 0.090)	(-0.407, 0.013)
Total	(50%, 20%)	-0.2496	(-0.617, 0.118)	(-0.455,-0.045)	-0.2635	(-0.671, 0.144)	(-0.476,-0.051)
Total	(40%, 30%)	-0.1920	(-0.458, 0.074)	(-0.403, 0.019)	-0.2033	(-0.506, 0.099)	(-0.423, 0.016)
Total	(50%, 40%)	-0.2440	(-0.618, 0.130)	(-0.466,-0.022)	-0.2577	(-0.668, 0.152)	(-0.512,-0.004)
Total	(50%, 30%)	-0.2552	(-0.636, 0.126)	(-0.461,-0.050)	-0.2697	(-0.692, 0.152)	(-0.501,-0.039)
Overall	(30%, 20%)	-0.0174	(-0.039, 0.004)	(-0.051, 0.017)	-0.0249	(-0.061, 0.011)	(-0.072, 0.022)
Overall	(40%, 20%)	-0.0619	(-0.148, 0.024)	(-0.118,-0.006)	-0.0775	(-0.196, 0.041)	(-0.151,-0.004)
Overall	(50%, 20%)	-0.1208	(-0.297, 0.056)	(-0.194,-0.048)	-0.1404	(-0.360, 0.079)	(-0.230,-0.051)
Overall	(40%, 30%)	-0.0445	(-0.110, 0.021)	(-0.069,-0.020)	-0.0526	(-0.135, 0.030)	(-0.087,-0.018)
Overall	(50%, 40%)	-0.0588	(-0.149, 0.032)	(-0.086,-0.032)	-0.0629	(-0.164, 0.038)	(-0.096,-0.030)
Overall	(50%, 30%)	-0.1033	(-0.259, 0.053)	(-0.152,-0.055)	-0.1155	(-0.299, 0.068)	(-0.178,-0.053)

TABLE A8

Estimated risk differences and 95% confidence intervals (CIs) of the effects of community alerts on HIV risk behavior at 6 months in TRIP adjusted only for the calendar date at first interview.

Effects	Coverage (α, α')	IPW_1 RD	IPW_1 95% CI (10)	IPW_1 95% CI (20)	IPW_2 RD	IPW_2 95% CI (10)	IPW_2 95% CI (20)
Direct	(20%, 20%)	-0.0688	(-0.132,-0.005)	(-0.270,0.133)	0.0052	(-0.100, 0.111)	(-0.212, 0.223)
Direct	(30%, 30%)	-0.1066	(-0.215, 0.002)	(-0.333, 0.120)	-0.0739	(-0.143,-0.005)	(-0.304, 0.156)
Direct	(40%, 40%)	-0.1515	(-0.349, 0.046)	(-0.386, 0.083)	-0.1454	(-0.342, 0.051)	(-0.406, 0.116)
Direct	(50%, 50%)	-0.1947	(-0.492, 0.103)	(-0.437, 0.048)	-0.2039	(-0.521, 0.113)	(-0.501, 0.093)
Indirect	(30%, 20%)	0.0040	(-0.011, 0.019)	(-0.019, 0.026)	0.0040	(-0.008, 0.016)	(-0.046, 0.054)
Indirect	(40%, 20%)	-0.0103	(-0.029, 0.009)	(-0.054, 0.033)	-0.0044	(-0.015, 0.007)	(-0.096, 0.087)
Indirect	(50%, 20%)	-0.0333	(-0.072, 0.006)	(-0.106, 0.039)	-0.0174	(-0.032,-0.003)	(-0.153, 0.119)
Indirect	(40%, 30%)	-0.0142	(-0.030, 0.002)	(-0.039, 0.010)	-0.0084	(-0.015,-0.001)	(-0.053, 0.036)
Indirect	(50%, 40%)	-0.0230	(-0.050, 0.004)	(-0.057, 0.011)	-0.0131	(-0.025,-0.001)	(-0.063, 0.037)
Indirect	(50%, 30%)	-0.0373	(-0.080, 0.005)	(-0.095, 0.020)	-0.0214	(-0.040,-0.003)	(-0.114, 0.071)
Total	(30%, 20%)	-0.1027	(-0.204,-0.001)	(-0.335, 0.129)	-0.0699	(-0.131,-0.009)	(-0.309, 0.170)
Total	(40%, 20%)	-0.1618	(-0.361, 0.038)	(-0.395, 0.072)	-0.1498	(-0.342, 0.042)	(-0.392, 0.092)
Total	(50%, 20%)	-0.2280	(-0.547, 0.091)	(-0.450,-0.006)	-0.2213	(-0.542, 0.100)	(-0.447, 0.004)
Total	(40%, 30%)	-0.1658	(-0.376, 0.044)	(-0.395, 0.063)	-0.1538	(-0.356, 0.048)	(-0.395, 0.087)
Total	(50%, 40%)	-0.2177	(-0.537, 0.101)	(-0.444, 0.009)	-0.2169	(-0.542, 0.109)	(-0.474, 0.040)
Total	(50%, 30%)	-0.2320	(-0.563, 0.099)	(-0.451,-0.012)	-0.2253	(-0.556, 0.106)	(-0.458, 0.007)
Overall	(30%, 20%)	-0.0143	(-0.030, 0.002)	(-0.051, 0.023)	-0.0192	(-0.044, 0.006)	(-0.070, 0.031)
Overall	(40%, 20%)	-0.0571	(-0.132, 0.017)	(-0.118, 0.004)	-0.0636	(-0.155, 0.028)	(-0.140, 0.013)
Overall	(50%, 20%)	-0.1169	(-0.282, 0.049)	(-0.195,-0.038)	-0.1204	(-0.301, 0.060)	(-0.204,-0.037)
Overall	(40%, 30%)	-0.0429	(-0.104, 0.018)	(-0.070,-0.016)	-0.0443	(-0.111, 0.022)	(-0.074,-0.015)
Overall	(50%, 40%)	-0.0598	(-0.152, 0.032)	(-0.085,-0.034)	-0.0568	(-0.146, 0.032)	(-0.084,-0.030)
Overall	(50%, 30%)	-0.1026	(-0.256, 0.050)	(-0.153,-0.053)	-0.1012	(-0.257, 0.054)	(-0.150,-0.053)

TABLE A9

Estimated risk differences and 95% confidence intervals (CIs) of the effects of community alerts on HIV risk behavior at 6 months in TRIP adjusted only for shared drug equipment (e.g. syringe) in last six months.

Effects	Coverage (α, α')	IPW_1 RD	IPW_1 95% CI (10)	IPW_1 95% CI (20)	IPW_2 RD	IPW_2 95% CI (10)	IPW_2 95% CI (20)
Direct	(20%, 20%)	-0.0889	(-0.173,-0.004)	(-0.324, 0.146)	0.0253	(-0.121, 0.172)	(-0.222, 0.273)
Direct	(30%, 30%)	-0.1337	(-0.288, 0.020)	(-0.417, 0.15)	-0.0609	(-0.107,-0.015)	(-0.335, 0.213)
Direct	(40%, 40%)	-0.1792	(-0.423, 0.065)	(-0.489, 0.131)	-0.1386	(-0.318, 0.041)	(-0.452, 0.175)
Direct	(50%, 50%)	-0.2186	(-0.552, 0.115)	(-0.548, 0.110)	-0.2019	(-0.514, 0.110)	(-0.556, 0.152)
Indirect	(30%, 20%)	0.0057	(-0.012, 0.024)	(-0.019, 0.031)	0.0104	(-0.015, 0.035)	(-0.048, 0.068)
Indirect	(40%, 20%)	-0.0057	(-0.025, 0.013)	(-0.065, 0.053)	0.0074	(-0.025, 0.040)	(-0.104, 0.119)
Indirect	(50%, 20%)	-0.0259	(-0.057, 0.006)	(-0.137, 0.085)	-0.0024	(-0.037, 0.032)	(-0.169, 0.165)
Indirect	(40%, 30%)	-0.0114	(-0.024, 0.001)	(-0.049, 0.027)	-0.0030	(-0.012, 0.006)	(-0.059, 0.053)
Indirect	(50%, 40%)	-0.0202	(-0.044, 0.003)	(-0.077, 0.036)	-0.0097	(-0.018,-0.001)	(-0.071, 0.051)
Indirect	(50%, 30%)	-0.0316	(-0.067,0.004)	(-0.125, 0.062)	-0.0127	(-0.027, 0.002)	(-0.128, 0.102)
Total	(30%, 20%)	-0.1280	(-0.270, 0.014)	(-0.411, 0.155)	-0.0506	(-0.091,-0.010)	(-0.329, 0.228)
Total	(40%, 20%)	-0.1848	(-0.424, 0.054)	(-0.470, 0.100)	-0.1312	(-0.282, 0.019)	(-0.410, 0.148)
Total	(50%, 20%)	-0.2445	(-0.592, 0.103)	(-0.505, 0.016)	-0.2043	(-0.487, 0.079)	(-0.459, 0.050)
Total	(40%, 30%)	-0.1906	(-0.444, 0.063)	(-0.477, 0.096)	-0.1416	(-0.316, 0.032)	(-0.425, 0.142)
Total	(50%, 40%)	-0.2388	(-0.592, 0.115)	(-0.525, 0.047)	-0.2117	(-0.525, 0.101)	(-0.514, 0.091)
Total	(50%, 30%)	-0.2502	(-0.612, 0.112)	(-0.513, 0.013)	-0.2147	(-0.521, 0.092)	(-0.482, 0.053)
Overall	(30%, 20%)	-0.0166	(-0.035, 0.002)	(-0.058, 0.025)	-0.0130	(-0.025,-0.001)	(-0.068, 0.042)
Overall	(40%, 20%)	-0.0595	(-0.138, 0.019)	(-0.124, 0.005)	-0.0531	(-0.122, 0.016)	(-0.135, 0.029)
Overall	(50%, 20%)	-0.1174	(-0.285, 0.050)	(-0.194,-0.041)	-0.1084	(-0.263, 0.046)	(-0.195,-0.021)
Overall	(40%, 30%)	-0.0429	(-0.104, 0.019)	(-0.069,-0.017)	-0.0401	(-0.098, 0.018)	(-0.070,-0.010)
Overall	(50%, 40%)	-0.0578	(-0.147, 0.032)	(-0.086,-0.030)	-0.0553	(-0.141, 0.030)	(-0.081,-0.029)
Overall	(50%, 30%)	-0.1008	(-0.252, 0.050)	(-0.149,-0.052)	-0.0954	(-0.239, 0.048)	(-0.142,-0.048)

TABLE A10

Estimated risk differences and 95% confidence intervals (CIs) of the effects of community alerts on HIV risk behavior at 6 months in TRIP adjusted only for education (primary school, high school, and post high school).

Effects	Coverage (α, α')	IPW_1			IPW_2		
		RD	95% CI (10)	95% CI (20)	RD	95% CI (10)	95% CI (20)
Direct	(20%, 20%)	-0.0799	(-0.156,-0.004)	(-0.266, 0.106)	0.0049	(-0.093, 0.102)	(-0.212, 0.222)
Direct	(30%, 30%)	-0.1294	(-0.294, 0.035)	(-0.347, 0.088)	-0.0827	(-0.172, 0.006)	(-0.313, 0.148)
Direct	(40%, 40%)	-0.1799	(-0.456, 0.096)	(-0.418, 0.058)	-0.1650	(-0.414, 0.084)	(-0.453, 0.123)
Direct	(50%, 50%)	-0.2246	(-0.608, 0.159)	(-0.481, 0.032)	-0.2347	(-0.631, 0.162)	(-0.592, 0.122)
Indirect	(30%, 20%)	0.0054	(-0.016, 0.027)	(-0.014, 0.025)	0.0106	(-0.017, 0.038)	(-0.048, 0.069)
Indirect	(40%, 20%)	-0.0060	(-0.037, 0.025)	(-0.047, 0.035)	0.0136	(-0.037, 0.064)	(-0.108, 0.135)
Indirect	(50%, 20%)	-0.0245	(-0.069, 0.020)	(-0.104, 0.054)	0.0139	(-0.062, 0.090)	(-0.179, 0.207)
Indirect	(40%, 30%)	-0.0114	(-0.026, 0.003)	(-0.037, 0.014)	0.0031	(-0.020, 0.027)	(-0.062, 0.068)
Indirect	(50%, 40%)	-0.0185	(-0.038, 0.001)	(-0.061, 0.024)	0.0003	(-0.026, 0.026)	(-0.076, 0.076)
Indirect	(50%, 30%)	-0.0299	(-0.064, 0.004)	(-0.097, 0.037)	0.0034	(-0.046, 0.053)	(-0.137, 0.143)
Total	(30%, 20%)	-0.1240	(-0.273, 0.025)	(-0.350, 0.102)	-0.0722	(-0.139,-0.005)	(-0.309, 0.164)
Total	(40%, 20%)	-0.1859	(-0.446, 0.074)	(-0.422, 0.050)	-0.1514	(-0.353, 0.050)	(-0.395, 0.092)
Total	(50%, 20%)	-0.2491	(-0.622, 0.123)	(-0.475,-0.023)	-0.2207	(-0.547, 0.105)	(-0.452, 0.011)
Total	(40%, 30%)	-0.1913	(-0.469, 0.086)	(-0.421, 0.038)	-0.1619	(-0.390, 0.066)	(-0.412, 0.088)
Total	(50%, 40%)	-0.2431	(-0.634, 0.147)	(-0.472,-0.014)	-0.2344	(-0.609, 0.140)	(-0.526, 0.057)
Total	(50%, 30%)	-0.2545	(-0.646, 0.137)	(-0.475,-0.034)	-0.2313	(-0.584, 0.121)	(-0.479, 0.016)
Overall	(30%, 20%)	-0.0174	(-0.039, 0.004)	(-0.056, 0.021)	-0.0152	(-0.031,0.0005)	(-0.066, 0.036)
Overall	(40%, 20%)	-0.0620	(-0.145, 0.021)	(-0.125, 0.001)	-0.0533	(-0.122, 0.015)	(-0.130, 0.023)
Overall	(50%, 20%)	-0.1208	(-0.292, 0.050)	(-0.199,-0.043)	-0.1044	(-0.249, 0.040)	(-0.190,-0.019)
Overall	(40%, 30%)	-0.0445	(-0.108, 0.019)	(-0.071,-0.018)	-0.0381	(-0.091, 0.015)	(-0.067,-0.009)
Overall	(50%, 40%)	-0.0589	(-0.147, 0.030)	(-0.085,-0.032)	-0.0510	(-0.128, 0.026)	(-0.077,-0.025)
Overall	(50%, 30%)	-0.1034	(-0.255, 0.048)	(-0.153,-0.054)	-0.0891	(-0.219, 0.041)	(-0.137,-0.042)

TABLE A11

Estimated risk differences and 95% confidence intervals (CIs) of the effects of community alerts on HIV risk behavior at 6 months in TRIP adjusted only for employment status (employed, unemployed/looking for a work, can't work because of health reason, and other).

Effects	Coverage (α, α')	IPW_1 RD	IPW_1 95% CI (10)	IPW_1 95% CI (20)	IPW_2 RD	IPW_2 95% CI (10)	IPW_2 95% CI (20)
Direct	(20%, 20%)	-0.0821	(-0.158,-0.006)	(-0.282, 0.118)	0.0185	(-0.107, 0.144)	(-0.198, 0.235)
Direct	(30%, 30%)	-0.1309	(-0.279, 0.017)	(-0.385, 0.123)	-0.0481	(-0.094,-0.002)	(-0.287, 0.191)
Direct	(40%, 40%)	-0.1807	(-0.427, 0.066)	(-0.474, 0.113)	-0.1076	(-0.241, 0.025)	(-0.371, 0.156)
Direct	(50%, 50%)	-0.2253	(-0.573, 0.123)	(-0.548, 0.098)	-0.1578	(-0.394, 0.079)	(-0.444, 0.129)
Indirect	(30%, 20%)	0.0051	(-0.011, 0.021)	(-0.024, 0.034)	-0.0060	(-0.015, 0.003)	(-0.046, 0.034)
Indirect	(40%, 20%)	-0.0069	(-0.026, 0.012)	(-0.077, 0.063)	-0.0247	(-0.057, 0.007)	(-0.097, 0.047)
Indirect	(50%, 20%)	-0.0255	(-0.059, 0.008)	(-0.151, 0.100)	-0.0462	(-0.102, 0.010)	(-0.154, 0.062)
Indirect	(40%, 30%)	-0.0120	(-0.026, 0.002)	(-0.055, 0.031)	-0.0188	(-0.043, 0.005)	(-0.053, 0.016)
Indirect	(50%, 40%)	-0.0186	(-0.039, 0.002)	(-0.077, 0.040)	-0.0215	(-0.046, 0.003)	(-0.064, 0.021)
Indirect	(50%, 30%)	-0.0305	(-0.065, 0.004)	(-0.131, 0.070)	-0.0402	(-0.089, 0.009)	(-0.115, 0.035)
Total	(30%, 20%)	-0.1258	(-0.264, 0.012)	(-0.378, 0.126)	-0.0540	(-0.101,-0.007)	(-0.302, 0.194)
Total	(40%, 20%)	-0.1876	(-0.432, 0.057)	(-0.451, 0.076)	-0.1324	(-0.295, 0.030)	(-0.387, 0.123)
Total	(50%, 20%)	-0.2508	(-0.610, 0.108)	(-0.498,-0.004)	-0.2041	(-0.495, 0.087)	(-0.443, 0.035)
Total	(40%, 30%)	-0.1927	(-0.449, 0.064)	(-0.461, 0.075)	-0.1264	(-0.283, 0.030)	(-0.377, 0.124)
Total	(50%, 40%)	-0.2439	(-0.607, 0.119)	(-0.521, 0.034)	-0.1793	(-0.440, 0.081)	(-0.434, 0.076)
Total	(50%, 30%)	-0.2558	(-0.628, 0.116)	(-0.508,-0.004)	-0.1981	(-0.482, 0.086)	(-0.438, 0.042)
Overall	(30%, 20%)	-0.0178	(-0.040, 0.004)	(-0.057, 0.021)	-0.0241	(-0.057, 0.009)	(-0.074, 0.026)
Overall	(40%, 20%)	-0.0628	(-0.148, 0.023)	(-0.126,0.0003)	-0.0715	(-0.176, 0.033)	(-0.150, 0.007)
Overall	(50%, 20%)	-0.1217	(-0.297, 0.054)	(-0.200,-0.043)	-0.1288	(-0.324, 0.066)	(-0.219,-0.038)
Overall	(40%, 30%)	-0.0450	(-0.110, 0.020)	(-0.072,-0.018)	-0.0474	(-0.119, 0.025)	(-0.081,-0.014)
Overall	(50%, 40%)	-0.0589	(-0.150, 0.032)	(-0.087,-0.031)	-0.0574	(-0.148, 0.033)	(-0.085,-0.029)
Overall	(50%, 30%)	-0.1039	(-0.260, 0.052)	(-0.154,-0.054)	-0.1047	(-0.267, 0.057)	(-0.159,-0.050)

TABLE A12

Estimated risk differences and 95% confidence intervals (CIs) of the effects of community alerts on HIV risk behavior at 6 months in TRIP adjusted for shared drug equipment (e.g. syringe) in last six months, the calendar date at first interview, education (primary school, high school, and post high school), and employment status (employed, unemployed/looking for a work, can't work because of health reason, and other).

Effects	Coverage	IPW_1			IPW_2		
	(α, α')	RD	95% CI (10)	95% CI (20)	RD	95% CI (10)	95% CI (20)
Direct	(20%, 20%)	-0.0671	(-0.125,-0.010)	(-0.317, 0.183)	0.0343	(-0.108, 0.176)	(-0.191, 0.260)
Direct	(30%, 30%)	-0.0992	(-0.198,-0.00004)	(-0.395, 0.196)	-0.0420	(-0.072,-0.012)	(-0.290, 0.206)
Direct	(40%, 40%)	-0.1396	(-0.321, 0.042)	(-0.442, 0.163)	-0.1120	(-0.272, 0.048)	(-0.397, 0.173)
Direct	(50%, 50%)	-0.1791	(-0.451, 0.093)	(-0.469, 0.111)	-0.1735	(-0.467, 0.120)	(-0.501, 0.154)
Indirect	(30%, 20%)	0.0053	(-0.014, 0.024)	(-0.021, 0.032)	0.0036	(-0.013, 0.021)	(-0.043, 0.050)
Indirect	(40%, 20%)	-0.0093	(-0.028, 0.009)	(-0.055, 0.037)	-0.0013	(-0.028, 0.025)	(-0.094, 0.091)
Indirect	(50%, 20%)	-0.0350	(-0.075, 0.005)	(-0.104, 0.034)	-0.0079	(-0.048, 0.032)	(-0.156, 0.141)
Indirect	(40%, 30%)	-0.0146	(-0.031, 0.002)	(-0.038, 0.009)	-0.0049	(-0.016, 0.006)	(-0.054, 0.044)
Indirect	(50%, 40%)	-0.0257	(-0.059, 0.008)	(-0.055, 0.003)	-0.0065	(-0.021, 0.008)	(-0.068, 0.054)
Indirect	(50%, 30%)	-0.0403	(-0.090, 0.009)	(-0.092, 0.011)	-0.0114	(-0.037, 0.014)	(-0.120, 0.097)
Total	(30%, 20%)	-0.0939	(-0.182,-0.005)	(-0.393, 0.205)	-0.0384	(-0.069,-0.008)	(-0.296, 0.219)
Total	(40%, 20%)	-0.1489	(-0.328, 0.030)	(-0.442, 0.144)	-0.1133	(-0.251, 0.024)	(-0.377, 0.151)
Total	(50%, 20%)	-0.2140	(-0.510, 0.082)	(-0.474, 0.046)	-0.1813	(-0.441, 0.079)	(-0.427, 0.064)
Total	(40%, 30%)	-0.1542	(-0.348, 0.040)	(-0.445, 0.137)	-0.1169	(-0.270, 0.036)	(-0.378, 0.144)
Total	(50%, 40%)	-0.2047	(-0.504, 0.095)	(-0.476, 0.067)	-0.1800	(-0.464, 0.104)	(-0.457, 0.097)
Total	(50%, 30%)	-0.2193	(-0.532, 0.093)	(-0.478, 0.040)	-0.1849	(-0.461, 0.091)	(-0.434, 0.064)
Overall	(30%, 20%)	-0.0111	(-0.023, 0.001)	(-0.058, 0.036)	-0.0159	(-0.032,0.0002)	(-0.067, 0.035)
Overall	(40%, 20%)	-0.0517	(-0.116, 0.012)	(-0.122, 0.019)	-0.0530	(-0.120, 0.014)	(-0.131, 0.025)
Overall	(50%, 20%)	-0.1111	(-0.267, 0.044)	(-0.189,-0.033)	-0.1015	(-0.242, 0.039)	(-0.188,-0.015)
Overall	(40%, 30%)	-0.0407	(-0.098, 0.017)	(-0.067,-0.015)	-0.0371	(-0.089, 0.015)	(-0.067,-0.007)
Overall	(50%, 40%)	-0.0593	(-0.152, 0.033)	(-0.084,-0.034)	-0.0485	(-0.121, 0.025)	(-0.072,-0.025)
Overall	(50%, 30%)	-0.1000	(-0.250, 0.050)	(-0.144,-0.056)	-0.0856	(-0.210, 0.039)	(-0.132,-0.039)

TABLE A13

Estimated risk differences and 95% confidence intervals (CIs) of the effects of community alerts on HIV risk behavior at 6 months in TRIP adjusted for HIV status, shared drug equipment (e.g. syringe) in last six months, education (primary school, high school, and post high school), and employment status (employed, unemployed/looking for a work, can't work because of health reason, and other).

Effects	Coverage (α, α')	IPW_1			IPW_2		
		RD	95% CI (10)	95% CI (20)	RD	95% CI (10)	95% CI (20)
Direct	(20%, 20%)	-0.0884	(-0.195, 0.018)	(-0.276, 0.100)	0.0077	(-0.083, 0.099)	(-0.191, 0.206)
Direct	(30%, 30%)	-0.1322	(-0.332, 0.067)	(-0.340, 0.075)	-0.0874	(-0.189, 0.014)	(-0.274, 0.099)
Direct	(40%, 40%)	-0.1772	(-0.478, 0.123)	(-0.391, 0.036)	-0.1588	(-0.403, 0.086)	(-0.385, 0.067)
Direct	(50%, 50%)	-0.2169	(-0.610, 0.176)	(-0.440, 0.006)	-0.2083	(-0.561, 0.145)	(-0.479, 0.062)
Indirect	(30%, 20%)	0.0055	(-0.016, 0.027)	(-0.018, 0.029)	0.0019	(-0.012, 0.016)	(-0.045, 0.048)
Indirect	(40%, 20%)	-0.0063	(-0.038, 0.026)	(-0.054, 0.041)	-0.0089	(-0.022, 0.005)	(-0.095, 0.077)
Indirect	(50%, 20%)	-0.0266	(-0.072, 0.019)	(-0.106, 0.053)	-0.0242	(-0.042,-0.007)	(-0.152, 0.104)
Indirect	(40%, 30%)	-0.0118	(-0.028, 0.004)	(-0.039, 0.015)	-0.0108	(-0.018,-0.003)	(-0.053, 0.031)
Indirect	(50%, 40%)	-0.0203	(-0.042, 0.002)	(-0.059,0.018)	-0.0153	(-0.027,-0.003)	(-0.062, 0.031)
Indirect	(50%, 30%)	-0.0322	(-0.069, 0.005)	(-0.096, 0.032)	-0.0261	(-0.045,-0.007)	(-0.113, 0.061)
Total	(30%, 20%)	-0.1267	(-0.308, 0.055)	(-0.347, 0.093)	-0.0854	(-0.176, 0.005)	(-0.284, 0.113)
Total	(40%, 20%)	-0.1836	(-0.464, 0.096)	(-0.406, 0.039)	-0.1676	(-0.404, 0.069)	(-0.377, 0.041)
Total	(50%, 20%)	-0.2435	(-0.623, 0.136)	(-0.454,-0.033)	-0.2325	(-0.586, 0.121)	(-0.439,-0.026)
Total	(40%, 30%)	-0.1891	(-0.488, 0.110)	(-0.401, 0.023)	-0.1696	(-0.418, 0.079)	(-0.378, 0.039)
Total	(50%, 40%)	-0.2372	(-0.637, 0.163)	(-0.443,-0.031)	-0.2236	(-0.585, 0.138)	(-0.459, 0.012)
Total	(50%, 30%)	-0.2491	(-0.647, 0.149)	(-0.452,-0.047)	-0.2344	(-0.600, 0.131)	(-0.448,-0.021)
Overall	(30%, 20%)	-0.0165	(-0.038, 0.005)	(-0.057, 0.024)	-0.0258	(-0.060, 0.008)	(-0.071, 0.020)
Overall	(40%, 20%)	-0.0595	(-0.140, 0.021)	(-0.125, 0.006)	-0.0739	(-0.180, 0.032)	(-0.147,-0.001)
Overall	(50%, 20%)	-0.1174	(-0.282, 0.047)	(-0.197,-0.038)	-0.1299	(-0.323, 0.064)	(-0.217,-0.043)
Overall	(40%, 30%)	-0.0431	(-0.103,0.017)	(-0.070,-0.016)	-0.0481	(-0.120, 0.024)	(-0.081,-0.016)
Overall	(50%, 40%)	-0.0579	(-0.142, 0.027)	(-0.083,-0.033)	-0.0560	(-0.143, 0.032)	(-0.083,-0.029)
Overall	(50%, 30%)	-0.1009	(-0.245, 0.043)	(-0.149,-0.053)	-0.1041	(-0.264, 0.056)	(-0.159,-0.049)

TABLE A14

Estimated risk differences and 95% confidence intervals (CIs) of the effects of community alerts on HIV risk behavior at 6 months in TRIP adjusted for HIV status, the calendar date at first interview, education (primary school, high school, and post high school), and employment status (employed, unemployed/looking for a work, can't work because of health reason, and other).

Effects	Coverage (α, α')	IPW_1			IPW_2		
		RD	95% CI (10)	95% CI (20)	RD	95% CI (10)	95% CI (20)
Direct	(20%, 20%)	-0.0691	(-0.137,-0.001)	(-0.266, 0.128)	-0.0073	(-0.069, 0.054)	(-0.198, 0.183)
Direct	(30%, 30%)	-0.1053	(-0.247, 0.036)	(-0.329, 0.118)	-0.0948	(-0.215, 0.025)	(-0.275, 0.085)
Direct	(40%, 40%)	-0.1490	(-0.392, 0.094)	(-0.372, 0.074)	-0.1606	(-0.410, 0.089)	(-0.371, 0.050)
Direct	(50%, 50%)	-0.1919	(-0.538, 0.155)	(-0.409, 0.025)	-0.2056	(-0.552, 0.141)	(-0.449, 0.038)
Indirect	(30%, 20%)	0.0033	(-0.016, 0.022)	(-0.017, 0.024)	-0.0020	(-0.007, 0.003)	(-0.043, 0.039)
Indirect	(40%, 20%)	-0.0119	(-0.040, 0.016)	(-0.049, 0.025)	-0.0175	(-0.033,-0.002)	(-0.088, 0.053)
Indirect	(50%, 20%)	-0.0357	(-0.083, 0.012)	(-0.093, 0.021)	-0.0368	(-0.072,-0.002)	(-0.138, 0.064)
Indirect	(40%, 30%)	-0.0153	(-0.033, 0.002)	(-0.035, 0.004)	-0.0155	(-0.032, 0.001)	(-0.048, 0.017)
Indirect	(50%, 40%)	-0.0237	(-0.050, 0.003)	(-0.051, 0.003)	-0.0194	(-0.040, 0.001)	(-0.055, 0.016)
Indirect	(50%, 30%)	-0.0390	(-0.082, 0.004)	(-0.084, 0.006)	-0.0348	(-0.072, 0.002)	(-0.102, 0.032)
Total	(30%, 20%)	-0.1020	(-0.230, 0.026)	(-0.336, 0.132)	-0.0969	(-0.214, 0.020)	(-0.290, 0.097)
Total	(40%, 20%)	-0.1610	(-0.393, 0.071)	(-0.395, 0.073)	-0.1781	(-0.440, 0.084)	(-0.385, 0.029)
Total	(50%, 20%)	-0.2276	(-0.574, 0.119)	(-0.445,-0.010)	-0.2425	(-0.621, 0.136)	(-0.450,-0.035)
Total	(40%, 30%)	-0.1643	(-0.411, 0.083)	(-0.389, 0.060)	-0.1761	(-0.441, 0.089)	(-0.379, 0.027)
Total	(50%, 40%)	-0.2156	(-0.573, 0.142)	(-0.425,-0.007)	-0.2250	(-0.590, 0.140)	(-0.446,-0.004)
Total	(50%, 30%)	-0.2309	(-0.593, 0.131)	(-0.441,-0.021)	-0.2405	(-0.622, 0.141)	(-0.451,-0.030)
Overall	(30%, 20%)	-0.0145	(-0.032, 0.003)	(-0.055, 0.026)	-0.0290	(-0.071, 0.013)	(-0.074, 0.016)
Overall	(40%, 20%)	-0.0577	(-0.135, 0.019)	(-0.124, 0.008)	-0.0802	(-0.202, 0.042)	(-0.155,-0.005)
Overall	(50%, 20%)	-0.1178	(-0.283, 0.048)	(-0.199,-0.037)	-0.1382	(-0.353, 0.076)	(-0.231,-0.045)
Overall	(40%, 30%)	-0.0433	(-0.104, 0.017)	(-0.071,-0.015)	-0.0512	(-0.131, 0.029)	(-0.087,-0.016)
Overall	(50%, 40%)	-0.0600	(-0.149, 0.029)	(-0.086,-0.034)	-0.0580	(-0.150, 0.035)	(-0.088,-0.028)
Overall	(50%, 30%)	-0.1033	(-0.253, 0.046)	(-0.154,-0.053)	-0.1092	(-0.282, 0.064)	(-0.171,-0.048)

TABLE A15

Estimated risk differences and 95% confidence intervals (CIs) of the effects of community alerts on HIV risk behavior at 6 months in TRIP adjusted for HIV status, shared drug equipment (e.g. syringe) in last six months, the calendar date at first interview, and employment status (employed, unemployed/looking for a work, can't work because of health reason, and other).

Effects	Coverage (α, α')	IPW_1			IPW_2		
		RD	95% CI (10)	95% CI (20)	RD	95% CI (10)	95% CI (20)
Direct	(20%, 20%)	-0.0621	(-0.130, 0.006)	(-0.341, 0.216)	0.0073	(-0.082, 0.096)	(-0.189, 0.203)
Direct	(30%, 30%)	-0.0933	(-0.206, 0.019)	(-0.411, 0.225)	-0.0820	(-0.171, 0.007)	(-0.276, 0.112)
Direct	(40%, 40%)	-0.1338	(-0.325, 0.057)	(-0.449, 0.181)	-0.1440	(-0.353, 0.065)	(-0.363, 0.075)
Direct	(50%, 50%)	-0.1738	(-0.453, 0.105)	(-0.473, 0.125)	-0.1838	(-0.477, 0.110)	(-0.426, 0.058)
Indirect	(30%, 20%)	0.0055	(-0.014, 0.025)	(-0.029, 0.040)	-0.0019	(-0.008, 0.004)	(-0.046, 0.042)
Indirect	(40%, 20%)	-0.0094	(-0.028, 0.009)	(-0.074, 0.056)	-0.0220	(-0.049, 0.005)	(-0.097, 0.053)
Indirect	(50%, 20%)	-0.0357	(-0.076, 0.004)	(-0.130, 0.059)	-0.0483	(-0.109, 0.012)	(-0.152, 0.056)
Indirect	(40%, 30%)	-0.0149	(-0.031, 0.002)	(-0.048, 0.018)	-0.0200	(-0.047, 0.007)	(-0.054, 0.014)
Indirect	(50%, 40%)	-0.0263	(-0.060, 0.007)	(-0.062, 0.009)	-0.0264	(-0.061, 0.008)	(-0.062, 0.009)
Indirect	(50%, 30%)	-0.0412	(-0.091, 0.008)	(-0.108, 0.026)	-0.0464	(-0.108, 0.015)	(-0.114, 0.021)
Total	(30%, 20%)	-0.0878	(-0.192, 0.016)	(-0.419, 0.243)	-0.0839	(-0.172, 0.004)	(-0.289, 0.121)
Total	(40%, 20%)	-0.1432	(-0.333, 0.047)	(-0.464, 0.177)	-0.1660	(-0.400, 0.068)	(-0.380, 0.048)
Total	(50%, 20%)	-0.2095	(-0.512, 0.093)	(-0.489, 0.070)	-0.2321	(-0.585, 0.121)	(-0.440,-0.024)
Total	(40%, 30%)	-0.1487	(-0.352, 0.055)	(-0.457, 0.160)	-0.1640	(-0.399, 0.071)	(-0.375, 0.047)
Total	(50%, 40%)	-0.2001	(-0.506, 0.106)	(-0.479, 0.079)	-0.2101	(-0.538, 0.118)	(-0.432, 0.012)
Total	(50%, 30%)	-0.2150	(-0.533, 0.103)	(-0.485, 0.055)	-0.2302	(-0.585, 0.124)	(-0.442,-0.019)
Overall	(30%, 20%)	-0.0101	(-0.026, 0.006)	(-0.069, 0.049)	-0.0280	(-0.069, 0.013)	(-0.075, 0.019)
Overall	(40%, 20%)	-0.0505	(-0.117,0 .016)	(-0.140, 0.039)	-0.0810	(-0.206, 0.044)	(-0.160,-0.002)
Overall	(50%, 20%)	-0.1102	(-0.268, 0.048)	(-0.207,-0.013)	-0.1417	(-0.364, 0.081)	(-0.239,-0.044)
Overall	(40%, 30%)	-0.0404	(-0.098, 0.018)	(-0.073,-0.008)	-0.0530	(-0.137, 0.031)	(-0.091,-0.016)
Overall	(50%, 40%)	-0.0597	(-0.153, 0.033)	(-0.084,-0.035)	-0.0606	(-0.159, 0.037)	(-0.092,-0.029)
Overall	(50%, 30%)	-0.1001	(-0.251, 0.051)	(-0.149,-0.051)	-0.1137	(-0.296, 0.068)	(-0.179,-0.049)

TABLE A16

Estimated risk differences and 95% confidence intervals (CIs) of the effects of community alerts on HIV risk behavior at 6 months in TRIP adjusted for full set of confounding variables, HIV status, shared drug equipment (e.g. syringe) in last six months, the calendar date at first interview, and education (primary school, high school, and post high school).

Effects	Coverage (α, α')	IPW_1			IPW_2		
		RD	95% CI (10)	95% CI (20)	RD	95% CI (10)	95% CI (20)
Direct	(20%, 20%)	-0.0653	(-0.151, 0.020)	(-0.366, 0.235)	-0.0079	(-0.076, 0.060)	(-0.210, 0.194)
Direct	(30%, 30%)	-0.0983	(-0.250, 0.053)	(-0.458, 0.262)	-0.1122	(-0.254, 0.030)	(-0.304, 0.080)
Direct	(40%, 40%)	-0.1397	(-0.381, 0.102)	(-0.492, 0.213)	-0.1938	(-0.498, 0.110)	(-0.437, 0.050)
Direct	(50%, 50%)	-0.1795	(-0.512, 0.153)	(-0.493, 0.135)	-0.2500	(-0.675, 0.175)	(-0.549, 0.049)
Indirect	(30%, 20%)	0.0059	(-0.017, 0.029)	(-0.024, 0.036)	0.0122	(-0.019, 0.043)	(-0.048, 0.072)
Indirect	(40%, 20%)	-0.0078	(-0.036, 0.020)	(-0.053, 0.037)	0.0113	(-0.033, 0.056)	(-0.101, 0.124)
Indirect	(50%, 20%)	-0.0331	(-0.073, 0.007)	(-0.096, 0.029)	0.0028	(-0.048, 0.053)	(-0.159, 0.165)
Indirect	(40%, 30%)	-0.0138	(-0.028, 0.001)	(-0.035, 0.008)	-0.0008	(-0.015, 0.014)	(-0.055, 0.053)
Indirect	(50%, 40%)	-0.0253	(-0.053, 0.002)	(-0.055, 0.004)	-0.0085	(-0.018, 0.001)	(-0.062, 0.045)
Indirect	(50%, 30%)	-0.0391	(-0.079, 0.001)	(-0.088, 0.010)	-0.0094	(-0.031, 0.013)	(-0.115, 0.097)
Total	(30%, 20%)	-0.0924	(-0.228, 0.043)	(-0.468, 0.283)	-0.1000	(-0.213, 0.013)	(-0.300, 0.100)
Total	(40%, 20%)	-0.1475	(-0.371, 0.076)	(-0.514, 0.219)	-0.1825	(-0.443, 0.078)	(-0.390, 0.025)
Total	(50%, 20%)	-0.2126	(-0.540, 0.115)	(-0.525, 0.100)	-0.2472	(-0.625, 0.131)	(-0.451,-0.044)
Total	(40%, 30%)	-0.1535	(-0.396, 0.089)	(-0.505, 0.198)	-0.1946	(-0.486, 0.096)	(-0.409, 0.020)
Total	(50%, 40%)	-0.2048	(-0.551, 0.141)	(-0.507, 0.098)	-0.2585	(-0.680, 0.163)	(-0.515,-0.002)
Total	(50%, 30%)	-0.2185	(-0.566, 0.129)	(-0.519, 0.082)	-0.2593	(-0.667, 0.149)	(-0.481,-0.038)
Overall	(30%, 20%)	-0.0105	(-0.026, 0.005)	(-0.077, 0.056)	-0.0199	(-0.044, 0.004)	(-0.068, 0.029)
Overall	(40%, 20%)	-0.0506	(-0.116, 0.014)	(-0.150, 0.049)	-0.0646	(-0.154, 0.025)	(-0.139, 0.009)
Overall	(50%, 20%)	-0.1098	(-0.260, 0.040)	(-0.214,-0.005)	-0.1206	(-0.297, 0.056)	(-0.205,-0.036)
Overall	(40%, 30%)	-0.0401	(-0.095, 0.014)	(-0.076,-0.005)	-0.0447	(-0.111, 0.022)	(-0.075,-0.014)
Overall	(50%, 40%)	-0.0592	(-0.146, 0.027)	(-0.087,-0.031)	-0.0560	(-0.143, 0.031)	(-0.082,-0.030)
Overall	(50%, 30%)	-0.0993	(-0.240, 0.041)	(-0.152,-0.047)	-0.1007	(-0.254, 0.053)	(-0.151,-0.050)

TABLE A17

Estimated risk differences and 95% confidence intervals (CIs) of the effects of community alerts on HIV risk behavior at 6 months in TRIP not adjusted for any covariates.

Effects	Coverage (α, α')	IPW_1 RD	IPW_1 95% CI (10)	IPW_1 95% CI (20)	IPW_2 RD	IPW_2 95% CI (10)	IPW_2 95% CI (20)
Direct	(20%, 20%)	-0.0802	(-0.154,-0.006)	(-0.279, 0.119)	0.0063	(-0.102, 0.114)	(-0.218, 0.231)
Direct	(30%, 30%)	-0.1299	(-0.276, 0.017)	(-0.385, 0.126)	-0.0748	(-0.145,-0.004)	(-0.319, 0.169)
Direct	(40%, 40%)	-0.1806	(-0.427, 0.066)	(-0.475, 0.113)	-0.1492	(-0.353, 0.055)	(-0.433, 0.135)
Direct	(50%, 50%)	-0.2254	(-0.573, 0.123)	(-0.549, 0.098)	-0.2108	(-0.542, 0.121)	(-0.540, 0.118)
Indirect	(30%, 20%)	0.0055	(-0.010, 0.022)	(-0.021, 0.032)	0.0060	(-0.010, 0.022)	(-0.047, 0.059)
Indirect	(40%, 20%)	-0.0057	(-0.024, 0.013)	(-0.068, 0.057)	0.0005	(-0.019, 0.020)	(-0.102, 0.103)
Indirect	(50%, 20%)	-0.0241	(-0.056, 0.008)	(-0.140, 0.092)	-0.0096	(-0.033, 0.013)	(-0.165, 0.146)
Indirect	(40%, 30%)	-0.0112	(-0.024, 0.002)	(-0.050, 0.027)	-0.0055	(-0.012, 0.001)	(-0.057, 0.046)
Indirect	(50%, 40%)	-0.0184	(-0.039, 0.002)	(-0.075, 0.038)	-0.0101	(-0.019,-0.001)	(-0.068, 0.048)
Indirect	(50%, 30%)	-0.0296	(-0.062, 0.003)	(-0.124, 0.065)	-0.0156	(-0.030,-0.001)	(-0.123, 0.092)
Total	(30%, 20%)	-0.1244	(-0.261, 0.012)	(-0.377, 0.128)	-0.0688	(-0.128,-0.009)	(-0.318, 0.181)
Total	(40%, 20%)	-0.1863	(-0.429, 0.057)	(-0.451, 0.078)	-0.1488	(-0.337, 0.040)	(-0.402, 0.105)
Total	(50%, 20%)	-0.2495	(-0.607, 0.109)	(-0.498,-0.001)	-0.2205	(-0.538, 0.097)	(-0.457, 0.016)
Total	(40%, 30%)	-0.1918	(-0.447, 0.064)	(-0.461, 0.078)	-0.1548	(-0.358, 0.048)	(-0.412, 0.102)
Total	(50%, 40%)	-0.2438	(-0.607, 0.119)	(-0.522, 0.035)	-0.2209	(-0.554, 0.112)	(-0.502, 0.060)
Total	(50%, 30%)	-0.2550	(-0.626, 0.116)	(-0.509,-0.0005)	-0.2265	(-0.558, 0.106)	(-0.475, 0.022)
Overall	(30%, 20%)	-0.0174	(-0.039, 0.004)	(-0.055, 0.020)	-0.0177	(-0.039, 0.004)	(-0.069, 0.033)
Overall	(40%, 20%)	-0.0619	(-0.147, 0.023)	(-0.123,-0.001)	-0.0605	(-0.144, 0.023)	(-0.137, 0.016)
Overall	(50%, 20%)	-0.1207	(-0.296, 0.054)	(-0.196,-0.045)	-0.1163	(-0.286, 0.054)	(-0.200,-0.033)
Overall	(40%, 30%)	-0.0445	(-0.109, 0.020)	(-0.070,-0.019)	-0.0428	(-0.106, 0.020)	(-0.072,-0.014)
Overall	(50%, 40%)	-0.0588	(-0.150, 0.032)	(-0.086,-0.031)	-0.0558	(-0.142, 0.030)	(-0.082,-0.029)
Overall	(50%, 30%)	-0.1033	(-0.259, 0.052)	(-0.152,-0.055)	-0.0986	(-0.248, 0.051)	(-0.146,-0.051)