Appendix A   Additional Tables and Figures

This appendix contains additional tables and figures from "Health, Human Capital and Domestic Violence." We discuss them in the order that they appear in the main text of the paper.

Table A1 shows that demographics, being in the treatment group, and experiencing violence pre-HAART are not related to the likelihood of leaving the sample or the number of visits that one stays in the sample. We also test if observations are missing at random. We regress missing visits on an indicator for the treatment group, lagged CD4 count, and an interaction between lagged CD4 and the treatment group along with the basic controls discussed in Section IV. Table A2 shows the coefficients on the interaction. Although health is a significant predictor of missing a visit, we find that health does not have differential effects on the likelihood of missing a visit in the treatment group versus the control group.

To verify that the difference-in-differences approach is valid, we conduct an event study. We regress each of the main outcomes we study (domestic violence, cocaine use and heroin use) on dummies for the periods leading up to the introduction of HAART and the periods after HAART introduction, an indicator for the treatment group, and interactions between the treatment group and the lead/lag periods. We also include the basic controls discussed in Section IV. In Figure A1 we show results from the interactions between the treatment group and the time periods, plotting coefficients. Importantly, we find that the periods leading up to HAART are never significantly negative, implying that our findings are not driven by trends that existed before the introduction of HAART.

To test that black women were affected more by the introduction of HAART, we interact an indicator for the treatment group with HAART availability and being black. Table A3 shows the findings from this triple interaction and is described in Section IV.A.

To test that our results are not driven by survival bias, we estimate models including only women who stayed in the survey for at least 15 visits (about 7.5 years). These results are shown in Table A4. As an additional robustness check, we also conduct our analysis using propensity score weighting. Table A5 shows the normalized differences for observable characteristics of the sample. Given that these differences are all very small, we conclude that the treatment group and high CD4 count HIV+ women are quite similar prior to HAART. In fact, no outcomes are above the threshold of .25 suggested by Imbens (2015). Table A6 shows the results from our propensity score estimation. We estimate both a linear specification and a quadratic specification. Again, we follow the algorithm proposed by Imbens (2015) in choosing the controls for the propensity score matching. Table A6 shows that prior to HAART, the groups were very similar in terms of violence, cocaine use and

heroin use. However, we find that the introduction of HAART had a significant impact on the treatment group in comparison to the control group. Propensity score matching requires that the two groups have good overlap of the score, and we show that this is the case in Figure A2. This figure shows the overlap in propensity scores between the treatment group and the control group for domestic violence. The figures for other outcomes are quite similar and are available upon request from the corresponding author.

Turning to mechanisms, we allow for the fact that drug use and domestic violence may be correlated and jointly estimate the impact of HAART on violence and cocaine use in Table A7 and heroin use in Table A8.

References

Imbens, Guido W, "Matching Methods in Practice: Three Examples," *Journal of Human Resources*, 2015, *50* (2), 373–419.

Appendix A.1   Supplemental Tables and Figures
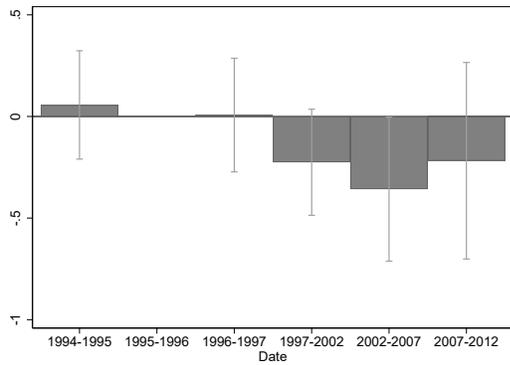
(a) Domestic Violence, HIV+ High CD4
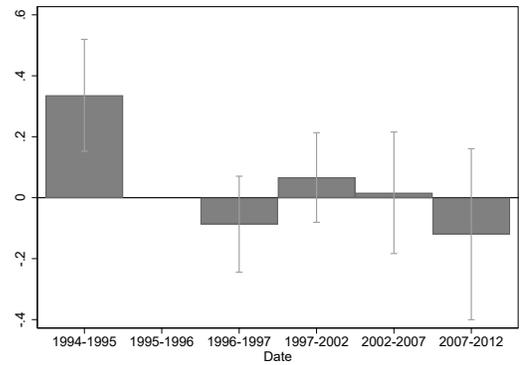
(b) Cocaine Use, HIV+ High CD4
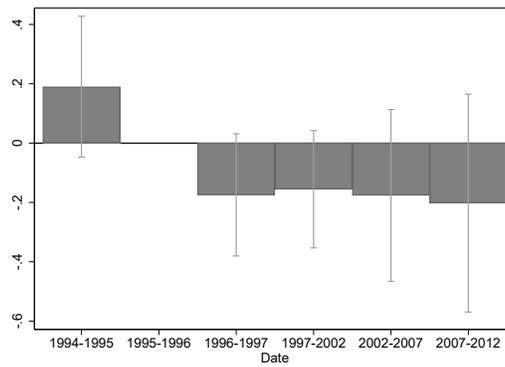
(c) Heroin Use, HIV+ High CD4

Figure A1: This figure shows coefficients of the interaction between the treatment group and the periods leading up to and lagging HAART. Each bar represents the estimated coefficient and the capped, vertical line show the estimated 90% confidence interval.
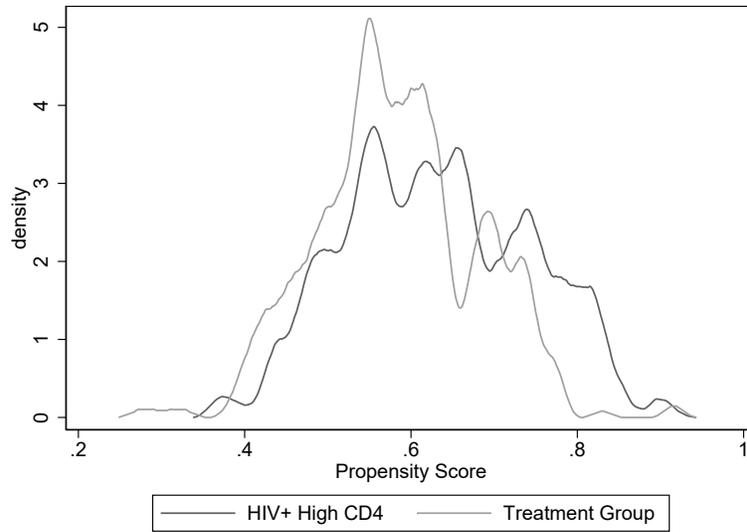
Figure A2: This figure shows overlap of the estimated propensity score using a linear specification for the treatment group and the control group.

Table A1: TEST OF NON-RANDOM ATTRITION

|	Leaving the Sample			No. of Visits in Study		
Treatment Group	.147	.093	.098	-.695	-.656	-.645
	(.215)	(.229)	(.229)	(.817)	(.799)	(.802)
Age	.	.054	.049	.	.681	.678
		(.509)	(.508)		(1.592)	(1.594)
Age squared	.	.001	.001	.	-.023	-.023
		(.013)	(.013)		(.042)	(.042)
Age cubed	.	-.00002	-.00002	.	.0002	.0002
		(.0001)	(.0001)		(.0004)	(.0004)
Black	.	.117	.100	.	-1.143	-1.177
		(.356)	(.358)		(1.228)	(1.239)
Hispanic	.	-.633	-.641	.	1.673	1.660
		(.438)	(.438)		(1.474)	(1.477)
Other race	.	-.128	-.157	.	-1.990	-2.022
		(.917)	(.924)		(3.037)	(3.044)
Violence pre-HAART	.	.	.101	.	.	.187
			(.242)			(.842)
Obs.	435	435	435	435	435	435
Mean	0.294	0.294	0.294	28.526	28.526	28.526
Pseudo R^2	0.001	0.065	0.066	.	.	.
R^2	.	.	.	0.002	0.102	0.102

Columns 1-3 show estimated coefficients from a logit model where the outcome is leaving the study at any time. Columns 4-6 show results from an OLS model where the outcome is the number of visits that the woman stays in the study. In every specification, site of visit is controlled for (Chicago omitted).

Table A2: MISSING OUTCOMES

	Domestic Violence	Cocaine Use	Heroin Use	Employ-ment	Income
Treatment Group	.016	.027	.026	.019	.0007
	(.082)	(.062)	(.062)	(.061)	(.022)
Log CD4	-.017***	-.019***	-.018***	-.018***	-.001
	(.003)	(.003)	(.003)	(.003)	(.002)
Treatment × CD4	-.0007	-.003	-.003	-.002	.0001
	(.014)	(.010)	(.010)	(.010)	(.004)
Obs.	14949	23215	23215	23215	23215
Mean	0.078	0.080	0.081	0.077	0.023
R^2	0.015	0.015	0.015	0.014	0.009
Basic controls	Y	Y	Y	Y	Y

This table shows results from an OLS model where the outcome variable is an indicator for missing an observation for the event listed. Basic controls include age at visit, age squared, age cubed, race (Caucasian omitted), and site of visit (Chicago omitted). In all specifications, errors are clustered at the individual level. Visits from sites in Los Angeles and San Francisco are dropped from the domestic violence outcome.

Table A3: HETEROGENEITY IN EFFECTS OF HAART ON DOMESTIC VIOLENCE

	[1]	[2]
Treatment vs Control Group Women		
HAART available	-.269**	-.123
	(.128)	(.141)
Treatment Group	-.230	-.205
	(.202)	(.204)
Black	.242	.462**
	(.153)	(.180)
Treatment × HAART	-.005	.002
	(.186)	(.197)
AA × HAART	-.142	-.162
	(.157)	(.164)
Treatment × AA	.226	.249
	(.246)	(.247)
Treatment × AA × HAART	-.267	-.296
	(.235)	(.245)
Obs.	6669	6669
Mean	0.063	0.063
Pseudo R^2	0.030	0.061
Basic controls	N	Y

This table shows difference-in-differences probit model estimates, where the outcome variable is experiencing domestic violence since the last visit. We also include dummy variables and interactions for women who are black to estimate heterogeneity in effects of HAART by race. Basic controls include age at visit, age squared, age cubed and site of visit (Chicago omitted). In all specifications, errors are clustered at the individual level.

Table A4: HEALTH, VIOLENCE AND DRUG USE: MARGINAL EFFECTS OF WOMEN WHO DID NOT DIE WITHIN 7.5 YEARS OF STUDY

	Domestic Violence		Cocaine Use		Heroin Use	
	[1]	[2]	[3]	[4]	[5]	[6]
Full Sample						
Treatment × HAART	-0.016*	-0.017*	-0.034**	-0.027**	-0.022***	-0.019***
	(0.008)	(0.009)	(0.013)	(0.013)	(0.007)	(0.007)
	0.059	0.058	0.011	0.043	0.003	0.009
Observations	6448	6448	15860	15860	15857	15857
Pre-HAART treatment group mean	0.109	0.109	0.151	0.151	0.079	0.079
Mean	0.062	0.062	0.118	0.118	0.050	0.050
Pseudo R^2	0.028	0.059	0.006	0.064	0.010	0.088
Black Sample						
Treatment × HAART	-0.021**	-0.023**	-0.044**	-0.041**	-0.021**	-0.017*
	(0.011)	(0.011)	(0.020)	(0.021)	(0.010)	(0.010)
	0.049	0.040	0.031	0.049	0.028	0.094
Observations	4097	4097	9047	9047	9044	9044
Pre-HAART treatment group mean	0.141	0.141	0.193	0.193	0.082	0.082
Mean	0.069	0.069	0.140	0.140	0.050	0.050
Pseudo R^2	0.039	0.059	0.006	0.059	0.012	0.101
Basic controls	N	Y	N	Y	N	Y

This table shows the marginal effects of the interaction term from the difference-in-differences probit models. Standard errors are presented in parenthesis, and p-values are found below. Basic controls include age at visit, age squared, age cubed, race (Caucasian omitted), and site of visit (Chicago omitted). In all specifications, errors are clustered at the individual level. The sample is restricted to women who participated in the study for at least 15 visits (7.5 years).

Table A5: NORMALIZED DIFFERENCES

	HIV+, Healthy Sample
African American	0.08
Hispanic	-0.03
White	-0.02
Other race	-0.16
Max income pre-HAART	-0.00
Max inc pre-HAART < 6000	0.00
Max inc pre-HAART 6001-12000	0.02
Max inc pre-HAART 12001-18000	-0.03
Max inc pre-HAART 18001-24000	0.04
Max inc pre-HAART 24001-30000	-0.09
Max inc pre-HAART > 30000	0.04
Age at visit	0.19
Bronx	0.05
Brooklyn	-0.07
DC	0.24
LA	-0.09
Less than HS	-0.08
HS graduate	0.00
Some college	0.08
College graduate	0.09
Married pre-HAART	0.15
Lived with kids at baseline	0.09
Experienced DV pre-HAART	-0.13
Cocaine use pre-HAART	-0.05
Heroin use pre-HAART	0.07
Employed pre-HAART	-0.13
Smokes	-0.09
Drinks	-0.01
Time since 1st + HIV test	0.16
Observations	263

This table shows normalized differences between the treatment group and the control group.

Table A6: PROPENSITY SCORE RESULTS

	Pre-HAART		Post-HAART	
	Linear	Quadratic	Linear	Quadratic
Treatment vs Control Group Women				
Domestic violence	0.0093	-0.0001	-0.0337***	-0.0388***
	(0.0178)	(0.0190)	(0.0121)	(0.0123)
	1329	1294	1697	1675
Heroin use	0.0084	0.0087	-0.0177***	-0.0135**
	(0.0112)	(0.0119)	(0.0053)	(0.0053)
	1435	1325	5192	4722
Cocaine use	0.0149	0.0032	0.0022	-0.0050
	(0.0151)	(0.0158)	(0.0084)	(0.0082)
	1351	1348	4670	4721

This table shows the average treatment effects from propensity score matching. We show findings from both a linear and quadratic specification. Controls following the algorithm proposed by Imbens (2015) are included. For each outcome, we show the estimated coefficient, standard error in parenthesis, and number of observations.

Table A7: Joint Estimation: Domestic Violence and Cocaine Use, Treatment and Control Groups

	[1]	[2]
Panel A: Full Sample		
Domestic Violence		
HAART available	-.374***	-.248***
	(.074)	(.084)
Treatment Group	-.070	-.028
	(.115)	(.116)
Treatment × HAART	-.188	-.201*
	(.117)	(.121)
Obs.	6669	6669
Cocaine Use		
HAART available	-.154**	-.190***
	(.061)	(.068)
Treatment Group	.020	.047
	(.126)	(.125)
Treatment × HAART	-.123	-.121
	(.099)	(.101)
Obs.	6669	6669
Mean domestic violence	0.063	0.063
Mean cocaine use	0.120	0.120
Rho	0.331***	0.325***
Panel B: Black Sample		
Domestic Violence		
HAART available	-.418***	-.331***
	(.092)	(.098)
Treatment Group	-.011	.036
	(.140)	(.141)
Treatment × HAART	-.262*	-.279*
	(.145)	(.148)
Obs.	4280	4280
Cocaine Use		
HAART available	-.151**	-.209**
	(.077)	(.085)
Treatment Group	.178	.211
	(.155)	(.159)
Treatment × HAART	-.151	-.141
	(.119)	(.122)
Obs.	4280	4280
Mean domestic violence	0.069	0.069
Mean cocaine use	0.130	0.130
Rho	0.319***	0.319***
Basic controls	N	Y

This table shows difference-in-differences estimates from a bivariate probit model where the outcome variables are domestic violence and cocaine use and the control group consists of relatively healthy HIV+ women. Basic controls include age at visit, age squared, age cubed, race (Caucasian omitted), and site of visit (Chicago omitted). In all specifications, errors are clustered at the individual level.

Table A8: Joint Estimation: Domestic Violence and Heroin Use, Treatment and Control Groups

	[1]	[2]
Panel A: Full Sample		
Domestic Violence		
HAART available	-.365***	-.234***
	(.075)	(.085)
Treatment Group	-.065	-.027
	(.115)	(.116)
Treatment × HAART	-.199*	-.211*
	(.117)	(.121)
Obs.	6669	6669
Heroin Use		
HAART available	-.055	-.125
	(.069)	(.081)
Treatment Group	.133	.153
	(.144)	(.145)
Treatment × HAART	-.318**	-.306**
	(.127)	(.131)
Obs.	6669	6669
Mean domestic violence	0.063	0.063
Mean heroin use	0.051	0.051
Rho	0.233***	0.262***
Panel A: Black Sample		
Domestic Violence		
HAART available	-.409***	-.319***
	(.092)	(.098)
Treatment Group	-.009	.033
	(.140)	(.141)
Treatment × HAART	-.272*	-.290*
	(.146)	(.148)
Obs.	4280	4280
Heroin Use		
HAART available	-.087	-.229***
	(.081)	(.081)
Treatment Group	.161	.170
	(.178)	(.177)
Treatment × HAART	-.298*	-.253
	(.155)	(.159)
Obs.	4280	4280
Mean domestic violence	0.069	0.069
Mean heroin use	0.046	0.046
Rho	0.272***	0.289***
Basic controls	N	Y

This table shows difference-in-differences estimates from a bivariate probit model where the outcome variables are domestic violence and heroin use and the control group consists of relatively healthy HIV+ women. Basic controls include age at visit, age squared, age cubed, race (Caucasian omitted), and site of visit (Chicago omitted). In all specifications, errors are clustered at the individual level.