Online Appendix

A1 Attrition

This section discusses attrition in more detail and examines whether attrition may bias our results. MLSFH interviewers do not pursue respondents who are absent from the village, which leads to a 10 percent loss to follow-up between adjacent survey rounds. Surveyors replenish the sample in order to maintain the sample size (Kohler et al. 2014). In addition to death and permanent emigration, temporary migration contributes substantially to loss to follow-up. 44 percent of respondents who are absent in 2008 (but present in 2006) reappear in 2010.

Attrition may confound our estimates if it is correlated with ART proximity and the outcome variables. For instance, attrition by people near ART with poor mental health or low work time may spuriously suggest that ART availability increases these outcomes. We analyze attrition for respondents who are present in 2006, the final pre-ART survey round. We distinguish between three types of respondents: non-attriters are present in 2006, 2008, and 2010; "temporary migrants" are present in 2006 and 2010, but not 2008; attriters are present in 2006 but are absent in 2010. By this definition, people who leave temporarily in 2010 are categorized as attriters.

In practice, attrition is unlikely to pose a problem because it is uncorrelated with ART proximity. Figure A3 shows the non-parametric relationship between the three attrition categories and the distance to ART. The ART distance gradient is generally flat, which indicates that attrition does not vary systematically with the distance to ART. Analogous linear regressions (available from the authors) also show small and insignificant effects. The figure also addresses the concern that respondents may move in order to live closer to an ART facility. Anyone who relocates (for ART or another reason) is classified as an attriter. Systematic relocation toward ART would lead to an upward sloping attrition gradient, which is not evident in the figure.

Table A2 examines how baseline characteristics vary with attrition status. Mental health is similar across all groups but work time is significantly lower for attriters and temporary migrants. In principle, this difference could confound our estimates if attriters differentially live near ART. In addition to the lack of such a correlation, the work time difference between attriters and non-attriters is too small to explain our estimates. As a bounding exercise, we reproduce our work time regressions after assigning attriters the maximum value of ART proximity (0.99). After this modification, the effect on work time is 24 percent smaller but remains statistically significant. Other differences by attrition status are consistent with death and permanent emigration as causes of attrition: attriters are younger, wealthier, more often married, and more likely to have HIV.

As another test of whether results are sensitive to attrition, we reproduce our main results for only non-attriters in Table A3. Respondents in these regressions are present in all survey rounds, which eliminates selection as a possible confound. Estimates are strongly significant and closely resemble the results in the paper. As before, results are not sensitive to including the interaction of Post and demographic and economic controls.

A2 Estimates for HIV-Positive Respondents and Caretakers

This section reports results for HIV-positive and caretaker respondents. The analysis in the paper excludes these respondents in order to isolate the role of HIV *risk*. Existing economic and public health studies document the direct effect of ART on the mental health and labor supply of HIV-positive recipients and caretakers (Els et al. 1999, McLaren 2010, Tostes et al. 2004, Thirumurthy et al. 2008, Thom 2009, Kuo et al. 2012, Thirumurthy et al. 2012, Okeke and Wagner 2013). Small samples of HIV-positive and caretaker respondents limit the power to detect effects for these groups. The sample includes 99 people who are ever HIV-positive and 425 people who ever qualify as caretakers.

Table A4 reproduces our main estimates for HIV positive and and caretaker respondents. Estimates for HIV-positive respondents in Panel A are extremely imprecise. Standard errors

are over four times larger in the HIV-positive subsample than in the HIV-negative subsample. The effect on mental health has a 95 percent confidence interval of -21.0 to 20.3, compared to an interval of 3.7 to 13.2 for HIV−/NCTs. Estimates for caretakers in Panel B resemble the HIV−/NCT results in the paper. The effects on mental health and subjective mortality risk are slightly larger than results in the paper and are statistically significant, while the effect on work time is smaller and is not significant. Other estimates for these subsamples are available from the authors.

A3 Policy Targeting and Mean Reversion

Mean reversion may confound our estimates if ART proximity is correlated with unobservable shocks in the outcome variables. Under this mechanism, outcomes improve near ART because of random variation rather than a causal effect. ART proximity could be correlated with unobservable shocks if policymakers targeted ART toward places with low labor supply or poor mental health, either directly or through other variables like HIV prevalence. As we discuss above, the MoH adopted an explicit policy to maximize geographic coverage. The resulting coverage pattern, in which ART demand is negatively correlated with supply, suggests that officials adhered to this policy.

We address this concern further by controlling for the interaction between the initial level of the dependent variable and 2008 and 2010 dummies. This approach addresses the possibility mean reversion because unobservable trends are correlated with the baseline level of the dependent variable under this mechanism.[24] Panel A of Table A5 shows estimates for our main outcomes under this approach. All estimates are attenuated but effects on work time and mental health remain significant. The effect on subjective mortality risk is also marginally significant with a p-value of around 0.15. Estimates for HIV-negative and non-caretaker subsamples are similar and are available from the authors. These results suggest

[24]For work time, which has two pre-intervention rounds, we interact with both the 2004 and 2006 levels of the dependent variable.

that mean reversion does not explain our findings.

A4 Other Distance Parameterizations

This section provides estimates using alternative distance parameterizations. As we explain in the text, proximity (inverse distance) captures the non-linear relationship between distance and access in a parsimonious way. Table A6 shows estimates based on first, second, and third order polynomials of ART distance for our main outcome variables. Linear distance regressions appear in Columns 1, 4, and 7. Column 1 shows that an an additional kilometer decreases work time by 0.05 hours (3.2 minutes), an insignificant result. This approach places equal weight on respondents at all distances, including 62 percent of the sample who are farther than 8 kilometers from an ART facility and show no effect in Figure 4. Linear distance estimates for subjective mortality risk and mental health in Columns 4 and 7 are also less significant than their counterparts in the paper. The addition of quadratic and cubic polynomial terms substantially improves the precision of the estimates, which confirms that the relationship between distance and outcomes is non-linear. Higher-order polynomial terms are not significant in these regressions.

Table A7 shows estimates under two additional parameterization. Panel A uses a piecewise linear spline in which we interact ART distance with dummies for distances above and below 8 kilometers. Year interactions with $[\text{D} \leq 8] \cdot$ ART distance provide the linear distance impacts for people within 8 kilometers of an ART facility. In Column 1, an additional kilometer reduces work time by 0.46 hours within 8 kilometers, while an additional kilometer has no effect on work time beyond 8 kilometers. The unrealistically large work time estimate within 8 kilometers suggests that the specification remains a poor fit. Estimates for mortality risk and mental health are similarly large and significant within 8 kilometers and small and insignificant beyond 8 kilometers.

Panel B of Table A7 shows estimates using discrete distance bins for less than 4 kilometers, $4-8$ kilometers, and more than 8 kilometers. People within 4 kilometers of ART work

1.1 hours more than those beyond 8 kilometers ($p = 0.105$). They perceive a 7.4 percent lower probability of death within five years and they have MCS-12 scores that are 3.12 points higher in 2010. These estimates discard intra-bin variation in distance and are less precise than the ART proximity estimates in the paper.

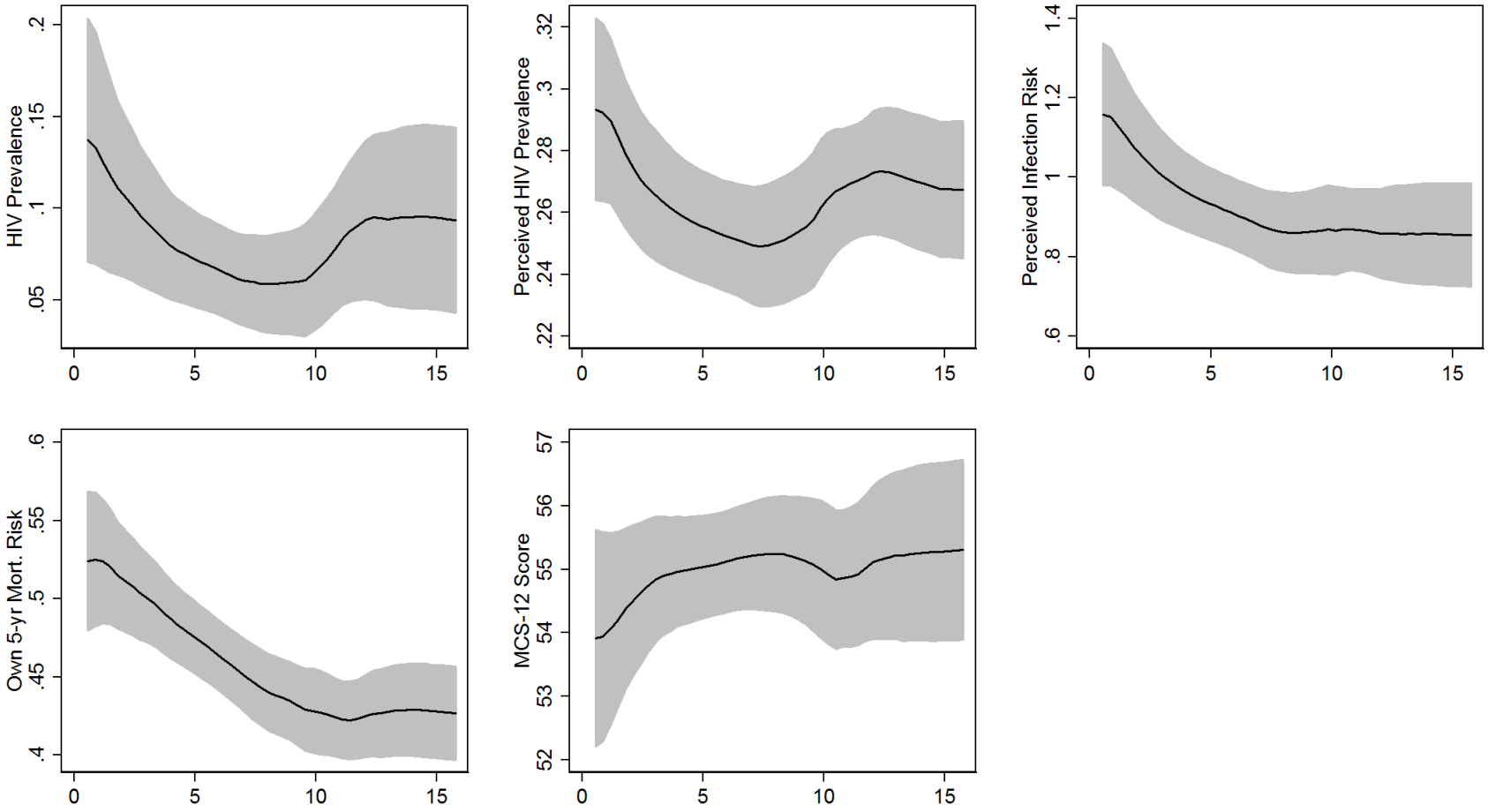

Figure 1: HIV Severity and the Distance to a Trading Center in the Balaka Region

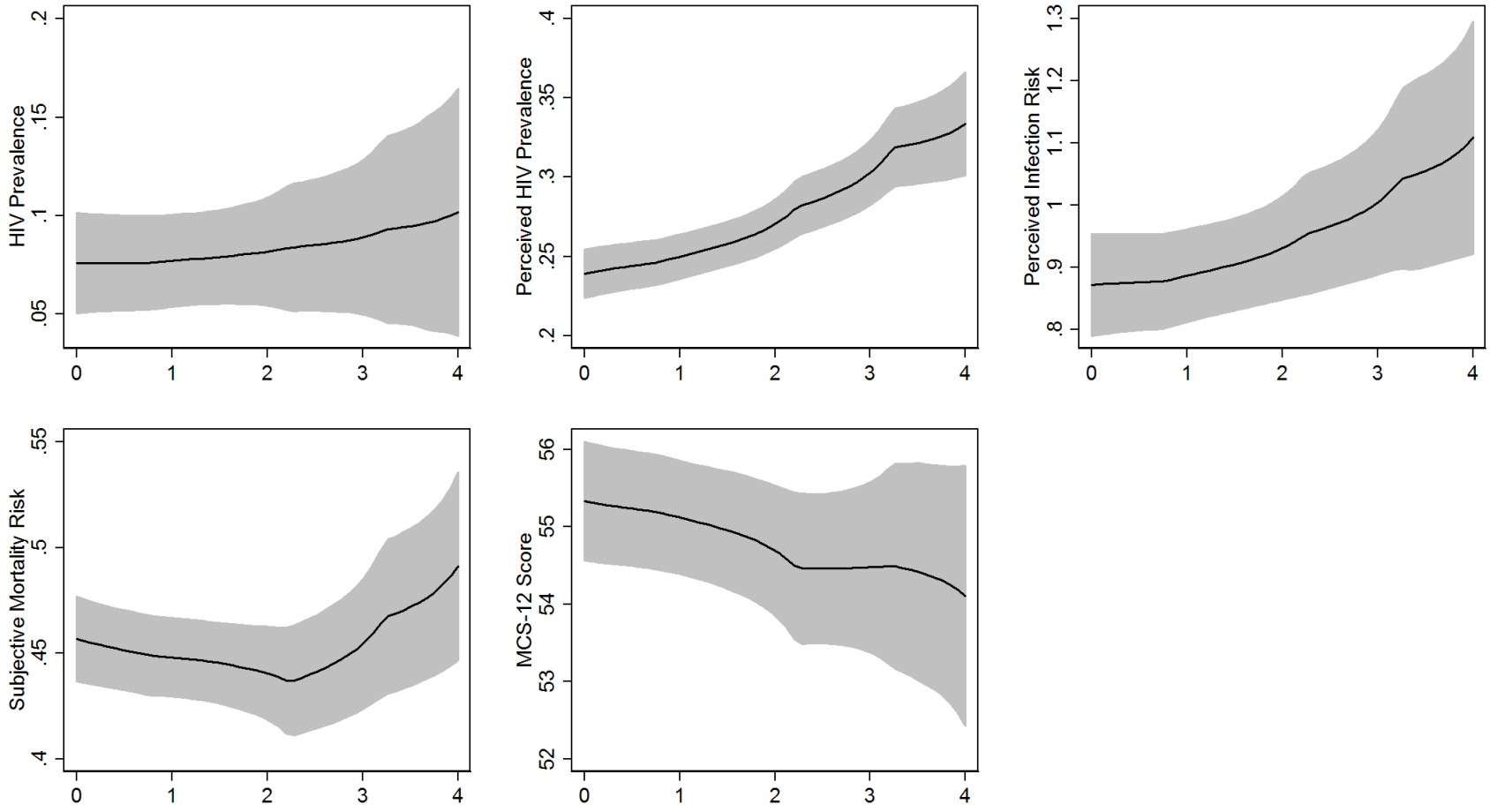

Figure 2: HIV Severity and Respondent-Observed AIDS Deaths in Balaka District, 2006

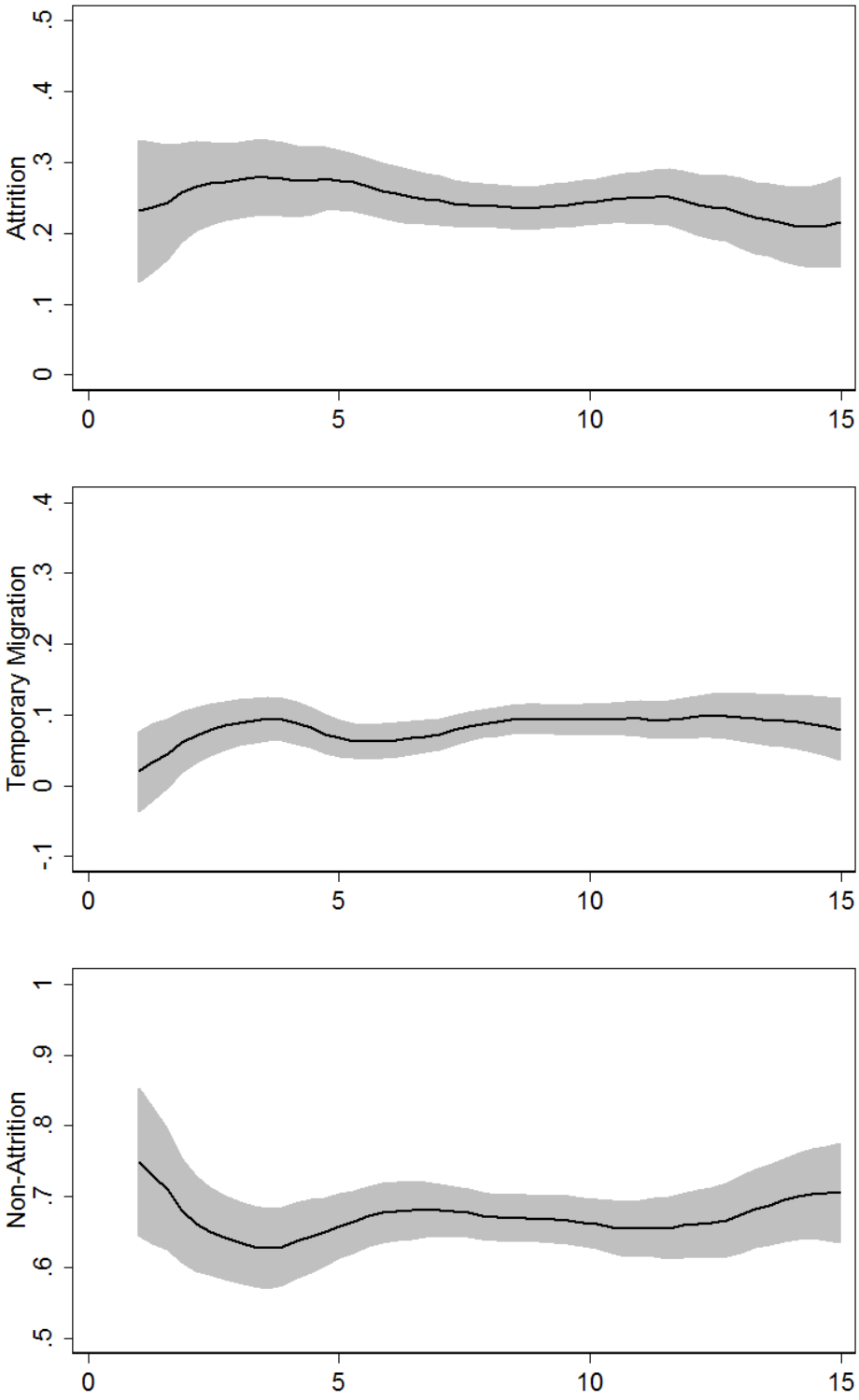

Figure 3: Local Linear Regressions of Attrition Status on the Distance to ART

Table A1: Clinic Characteristics

ART Arrival:	Through May 2006 (1)	June 2006 - May 2008 (2)	June 2008- Sept. 2010 (3)
Catchment Population (thousands)	54***	32	19***
Number of Beds	182***	20	12**
Electricity	0.97***	0.53	0.42
Flush Toilet	0.98***	0.45	0.31**
HIV Testing	0.95	0.95	0.82**
Outpatient	0.98	1.00	0.96
Inpatient Maternity	0.95	1.00	0.74***
Inpatient General	0.86***	0.26	0.15**
Antenatal Clinic	0.98	1.00	0.81***
STI Clinic	0.83***	0.46	0.34*
TB Clinic	0.92*	0.82	0.70**
Laboratory	0.91***	0.44	0.17***
Observations	65	57	483

Note: Stars in Columns 1 and 3 indicate significant differences with Column 2. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table A2: 2006 Respondent Characteristics by Attrition Status

	Non-attriters	Temporary Migrants	Attriters
	(1)	(2)	(3)
Panel A: Mental Health and Labor Supply			
MCS-12	55.6	55.9	55.4
Depressed in last four weeks	0.30	0.30	0.30
Energetic in last four weeks	0.59	0.58	0.54
Calm in last four weeks	0.56	0.55	0.55
MH limits on activity	0.10	0.08	0.12
MH limits on accomplishments	0.10	0.09	0.12
Subjective well-being	0.67	0.65	0.73**
Total productive time (hrs per day)	8.50	7.79**	7.66***
Cultivation time (hrs per day)	2.84	2.21**	2.25***
Home production time (hrs per day)	4.20	3.94	3.60***
Other production time (hrs per day)	1.49	1.63	1.80**
Panel B: Mortality Risk			
Five-year subjective mortality risk	0.39	0.38	0.41*
Infection risk A (Likert scale)	0.70	0.87**	0.77
Infection risk B	0.22	0.20	0.22
Five-year subjective HIV+ mortality risk	0.69	0.66	0.70
HIV-positive	0.04	0.07**	0.09***
Perceived HIV prevalence	0.27	0.28	0.30**
Worried about HIV	0.40	0.46	0.39
Panel C: Demographic Characteristics			
Education	5.1	6.0***	5.3
Age	36.9	31.8***	34.0***
Married	0.84	0.66***	0.73***
Household size	5.5	5.1*	5.2**
Metal roof	0.15	0.15	0.21**
Monetary wealth (2006 USD)	25.5	28.1	47.7**
Sample size	1260	154	463

Note: Attrition is defined with respect to the 2006 survey. Non-attriters are present in 2006, 2008 and 2010. Temporary migrants are present in 2006 and 2010 but absent in 2008. Attriters are present in 2006 but absent in 2010. Stars in Columns 2 and 3 indicate significant differences with Column 1. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table A3: Key Estimates for Non-Attriters

Dependent variable:	Work Time		Own Mort. Risk		MCS-12	
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Full Sample:						
2008 · ART proximity	-	-	-0.19**	-0.19**	6.39**	6.87**
			(0.079)	(0.085)	(2.71)	(2.76)
			[-0.021]	[-0.024]	[0.77]	[0.86]
2010 · ART proximity	5.18**	5.40***	-0.28***	-0.27***	7.18***	7.75***
	(2.04)	(1.82)	(0.083)	(0.082)	(2.07)	(2.54)
	[0.65]	[0.67]	[-0.033]	[-0.034]	[0.84]	[0.97]
Proportional selection δ (2008)	-	-	-	1.72	-	-0.70
Proportional selection δ (2010)	-	-1.95	-	1.70	-	-0.65
Dependent variable mean	7.46	7.46	0.41	0.41	54.3	54.3
Observations	3711	3711	3828	3828	3840	3840
Panel B: HIV−/NCT Sample:						
2008 · ART proximity	-	-	-0.16	-0.12	5.95**	5.91*
			(0.096)	(0.098)	(2.99)	(3.10)
			[-0.016]	[-0.015]	[0.70]	[0.74]
2010 · ART proximity	5.74***	5.25***	-0.25**	-0.21*	6.67***	6.72***
	(2.09)	(1.90)	(0.11)	(0.11)	(2.29)	(2.49)
	[0.72]	[0.66]	[-0.030]	[-0.026]	[0.78]	[0.84]
Proportional selection δ (2008)	-	-	-	0.46	-	5.33
Proportional selection δ (2010)	-	1.04	-	0.72	-	-3.46
Dependent variable mean	7.47	7.47	0.40	0.40	54.9	54.9
Observations	2769	2769	2865	2865	2866	2866
Demo. and economic controls	-	Yes	-	Yes	-	Yes

Note: Village-clustered standard errors appear in parentheses. Impacts of a change from 8 kilometers to 4 kilometers ($0.125 \cdot \hat{\beta}$) appear in brackets. Regressions only include respondents who are present in 2006, 2008, and 2010. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table A4: Estimates for HIV-Positive and Caretaker Respondents

	Work Time	Own Mort. Risk	MCS-12
	(1)	(2)	(3)
Panel A: HIV+ Sample			
2008 · ART proximity	-	0.053	0.44
		(0.55)	(14.4)
		[0.007]	[0.055]
2010 · ART proximity	6.90	-0.13	-1.23
	(7.96)	(0.37)	(11.1)
	[0.86]	[-0.017]	[-0.15]
Dependent variable mean	7.51	0.48	52.0
Observations	348	265	265
Panel B: Caretaker Sample			
2008 · ART proximity	-	-0.44***	9.01*
		(0.16)	(5.39)
		[-0.056]	[1.13]
2010 · ART proximity	3.46	-0.37**	10.8**
	(5.36)	(0.14)	(4.89)
	[0.43]	[-0.046]	[1.35]
Dependent variable mean	7.52	0.45	52.3
Observations	1110	1033	1033

Note: Village-clustered standard errors appear in parentheses. Impacts of a change from 8 kilometers to 4 kilometers ($0.125 \cdot \hat{\beta}$) appear in brackets. A person is classified as HIV-positive or a caretaker if he or she satisfies these conditions in any survey round. All regressions include individual and region · year fixed effects. $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

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Table A5: Estimates that Address Mean Reversion

Dependent variable:	Work Time	Own Mort. Risk	MCS-12
	(1)	(2)	(3)
2008 · ART proximity	-	0.053	2.66
		(0.060)	(2.78)
2010 · ART proximity	2.43	-0.13	5.68***
	(1.98)	(0.084)	(1.89)
Observations	2981	3280	3280

Note: Village-clustered standard errors appear in parentheses. Regressions control for the 2006 value of the dependent variable · 2008 and 2010, as well as the 2004 value of the dependent variable · 2008 and 2010 in Column 2. All regressions include individual and region · year fixed effects. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table A6: Estimates Using Distance Polynomials

	Work Time			Mortality Risk			MCS-12		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
$2010 \cdot$ ART distance	-0.053	-0.61**	-1.58***	0.0056*	0.027**	0.060***	-0.19**	-1.30***	-1.25*
	(0.072)	(0.29)	(0.51)	(0.003)	(0.011)	(0.019)	(0.089)	(0.28)	(0.65)
$2010 \cdot$ ART distance^2	-	0.029*	0.15***	-	-0.0012**	-0.0051**	-	0.060***	0.054
		(0.016)	(0.052)		(0.001)	(0.002)		(0.015)	(0.073)
$2010 \cdot$ ART distance^3	-	-	-0.004**	-	-	0.00014**	-	-	0.0002
			(0.002)			(0.00066)			(0.003)
P-value: all terms	0.46	0.06	0.02	0.10	0.05	0.01	0.03	0.00	0.00
Observations	5380	5380	5380	4875	4875	4875	4875	4875	4875

Note: clustered standard errors appear in parentheses. $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table A7: Alternative Distance Parameterizations

Dependent variable:	Work Time	Own Mort. Risk	MCS-12
	(1)	(2)	(3)
Panel A: Piecewise Linear Spline			
$2008 \cdot [D \leq 8] \cdot$ ART distance	-	0.019**	-0.25
		(0.0089)	(0.24)
$2008 \cdot [D > 8] \cdot$ ART distance	-	-0.016**	0.20
		(0.0067)	(0.21)
$2010 \cdot [D \leq 8] \cdot$ ART distance	-0.46***	0.022***	-0.67***
	(0.17)	(0.0080)	(0.24)
$2010 \cdot [D > 8] \cdot$ ART distance	-0.037	-0.0079	0.24
	(0.12)	(0.0049)	(0.25)
Panel B: Discrete Distance Bins			
$2008 \cdot [D \leq 4]$	-	-0.079**	2.13**
		(0.031)	(0.98)
$2008 \cdot [4 < D \leq 8]$	-	0.012	1.93**
		(0.027)	(0.84)
$2010 \cdot [D \leq 4]$	1.10	-0.074	3.12***
	(0.68)	(0.045)	(0.92)
$2010 \cdot [4 < D \leq 8]$	0.22	-0.022	1.22
	(0.47)	(0.022)	(0.90)
Observations	4998	4542	4542

Note: Village-clustered standard errors appear in parentheses. $[D < 4]$ is an indicator for distances to ART under 4 kilometers. $[D < 8]$ is an indicator for distances to ART under 8 kilometers. $[4 < D \leq 8]$ is an indicator for distances to ART between 4 and 8 kilometers. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.