Appendix A   Supplementary tables and Figures

Table A.1: Process of identifying the eligible sample

Sector	Orientation sign-ups	Verified eligible	Baseline completed
Kaduha	273	261	235
Kibumbwe	144	139	127
Kigabiro	66	52	49
Kiyumba	102	70	66
Mugano	244	198	196
Muhazi	192	170	159
Munyaga	157	137	124
Munyiginya	115	102	94
Musange	170	115	110
Mushishiro	88	87	82
Nyakariro	227	200	190
Nyarusange	245	226	214
Shyogwe	252	210	202
Total	2275	1967	1848

Notes: Table gives the number of individuals participating in each of three phases of study recruitment, for each of the 13 sectors in which recruitment took place.

Table A.2: Survey modules by instrument and round

Module	Baseline instrument	Endline instrument
Identification	Both	Both
Social network	Beneficiary	—
Firm creation and employment history	Beneficiary	—
Wage employment	Beneficiary	Beneficiary
Microenterprise activities and assets	Both	Both
Time use	Beneficiary	Beneficiary
Income	Both	Beneficiary
Savings	Both	Both
Borrowing	Both	Both
Lending	Both	Both
Business contacts	Beneficiary	—
Private consumption	Beneficiary	Beneficiary
Private assets	Beneficiary	Beneficiary
Psychometrics	Beneficiary	Beneficiary
Raven's test	Beneficiary	—
Digit-span recall	Beneficiary	—
Numeracy	Beneficiary	—
Lottery choice	Beneficiary	—
Convex time budget	Beneficiary	—
Locus of control	Beneficiary	Beneficiary
Big Five	—	Beneficiary
Aspirations	—	Beneficiary
Mental health	—	Beneficiary
Business knowledge	—	Beneficiary
Business attitudes	—	Beneficiary
Program participation	—	Beneficiary
Gender empowerment	—	Beneficiary
Household roster	Household	Household
Dwelling characteristics	Household	Household
Land use and ownership	Household	Household
Inter-household transfers	Household	Household
Consumption	Household	Household
Dietary diversity	Household	Household
Household assets	Household	Household

Table A.3: Correlates of HD Participation

	Huguka Dukore stage completed...			
	Complier	Work Ready Now	Be Your Own Boss	Technical Training
Ubudehe category I	0.0106	0.0146	0.0128	−0.0199
	(0.0281)	(0.0319)	(0.0356)	(0.0327)
Beneficiary female	0.0142	0.0146	0.0284	−0.0187
	(0.0285)	(0.0317)	(0.0363)	(0.0336)
Beneficiary age	0.0120***	0.0100**	0.0085*	0.0067
	(0.0041)	(0.0048)	(0.0052)	(0.0042)
Beneficiary years of education	0.0037	0.0051	0.0050	0.0073
	(0.0061)	(0.0071)	(0.0083)	(0.0073)
Household members	0.0025	0.0061	0.0083	0.0146*
	(0.0074)	(0.0078)	(0.0085)	(0.0079)
Employed	0.0930*	0.0757	0.0846	0.0450
	(0.0504)	(0.0555)	(0.0615)	(0.0590)
Productive hours	−0.0038***	−0.0041***	−0.0047***	−0.0044***
	(0.0014)	(0.0015)	(0.0015)	(0.0014)
Monthly income	−0.0019	−0.0008	0.0004	−0.0026
	(0.0045)	(0.0051)	(0.0055)	(0.0050)
Productive assets	−0.0001	0.0004	−0.0016	−0.0027
	(0.0030)	(0.0037)	(0.0041)	(0.0040)
HH consumption per capita	0.0027	0.0042	0.0103	0.0157
	(0.0134)	(0.0152)	(0.0179)	(0.0154)
Beneficiary-specific consumption	−0.0092*	−0.0139**	−0.0109*	−0.0021
	(0.0053)	(0.0059)	(0.0064)	(0.0058)
HH net non-land wealth	0.0030	0.0040*	0.0050*	0.0026
	(0.0023)	(0.0024)	(0.0028)	(0.0024)
Savings	−0.0018	−0.0028	−0.0023	−0.0030
	(0.0033)	(0.0036)	(0.0041)	(0.0036)
Debt	0.0080**	0.0099***	0.0096**	0.0086**
	(0.0034)	(0.0038)	(0.0042)	(0.0038)
HH livestock wealth	0.0025	0.0025	−0.0003	−0.0034
	(0.0026)	(0.0030)	(0.0033)	(0.0030)
Business Knowledge	−0.0129	0.0056	0.0019	−0.0151
	(0.0135)	(0.0154)	(0.0179)	(0.0156)
Average completion rate	0.86	0.79	0.69	0.48
Observations	668	668	668	668
R^2	0.12	0.16	0.18	0.47
p-value	0.00	0.00	0.01	0.00

Notes: Table estimates Linear Probability Model for four measures of progression through the Huguka Dukore program: attending the first week of the WRN coursework and hence triggering payment to the implementer, then completing each of the three subsequent components of the program. Rows are the baseline covariates over which we look for heterogeneity in these compliance rates. p-value in the final row is from F-test on the joint significance of all of the covariates. Standard errors in parentheses; *=10%, **=5%, and ***=1% significance

Table A.4: Sampling of Attritors for Intensive Tracking Exercise

	Intensive tracking	Control mean	Observations	R^2
Ubudehe category I	−0.10 (0.09) [1.00]	0.38	120	0.01
Beneficiary female	−0.00 (0.09) [1.00]	0.62	122	0.00
Beneficiary age	1.66 (0.61) [0.13]	22.64	122	0.06
Beneficiary years of education	0.07 (0.45) [1.00]	8.10	122	0.00
Household members	−0.25 (0.37) [1.00]	4.66	122	0.00
Employed	−0.00 (0.09) [1.00]	0.31	122	0.00
Productive hours	2.48 (4.09) [1.00]	11.75	122	0.00
Monthly income	−0.41 (0.91) [1.00]	4.15	122	0.00
Productive assets	0.65 (0.85) [1.00]	2.59	122	0.00
HH consumption per capita	0.14 (0.20) [1.00]	9.44	122	0.00
Beneficiary-specific consumption	0.08 (0.36) [1.00]	7.61	122	0.00
HH net non-land wealth	0.95 (1.02) [1.00]	10.48	122	0.01
Savings	0.42 (0.83) [1.00]	7.67	122	0.00
Debt	−0.21 (0.86) [1.00]	7.60	122	0.00
HH livestock wealth	2.22 (1.09) [0.37]	5.26	122	0.04
Business Knowledge	0.34 (0.18) [0.37]	−0.02	122	0.03

Notes: Table regresses a sequence of covariates on a dummy variable for having been sampled for intensive tracking, within the sample of original attritors. Standard errors in parentheses, p-values corrected for False Discovery Rate across whole table in hard brackets; stars are based on FDR-adjusted values, *=10%, **=5%, and ***=1% significance.

Table A.5: Intent-to-treat analysis: Primary outcomes, aggregated specification

		GiveDirectly			Control				p-values		
	HD	Main	Large	Combined	Mean	Obs.	R^2	(a)	(b)	(c)
Employed	0.02	0.03	0.01	0.01	0.48	1770	0.16	0.89	0.52	0.46
	(0.03)	(0.03)	(0.05)	(0.04)						
	[0.29]	[0.24]	[0.51]	[0.51]						
Productive hours	2.80*	4.34***	1.12	2.33	18.64	1770	0.18	0.93	0.03	0.07
	(1.57)	(1.65)	(2.06)	(2.03)						
	[0.07]	[0.01]	[0.35]	[0.17]						
Monthly income	0.32	1.00***	0.73**	1.04***	8.05	1770	0.21	0.11	0.02	0.10
	(0.26)	(0.25)	(0.35)	(0.32)						
	[0.16]	[0.00]	[0.03]	[0.00]						
Productive assets	1.54***	3.86***	4.02***	4.42***	5.61	1770	0.26	0.00	0.00	0.00
	(0.35)	(0.34)	(0.47)	(0.44)						
	[0.00]	[0.00]	[0.00]	[0.00]						
HH consumption per capita	0.05	0.23***	0.36***	0.27***	9.46	1737	0.33	0.05	0.64	0.17
	(0.06)	(0.06)	(0.07)	(0.07)						
	[0.23]	[0.00]	[0.00]	[0.00]						

Note: Intention to treat pooling the three smaller cash transfer amounts into a single arm, GD Main. Regressions include but do not report the lagged dependent variable, fixed effects for randomization blocks, and a set of LASSO-selected baseline covariates, and are weighted to reflect intensive tracking. Standard errors are (in soft brackets) are clustered at the household level to reflect the design effect, and p-values corrected for False Discovery Rates across all the outcomes in the table are presented in hard brackets. Stars on coefficient estimates are derived from the FDR-corrected p-values, *=10%, **=5%, and ***=1% significance. p-values in final three columns derived from F-tests of hypotheses that benefit-cost ratios are equal between (a) GD Main and HD; (b) GD Main and GD Large; and (c) GD Main and Combined. Employed is a dummy variable for spending more than 10 hours per week working for a wage or as primary operator of a microenterprise. Productive hours are measured over prior 7 days in all activities other than own-farm agriculture. Monthly income, productive assets, and household consumption are winsorized at 1% and 99% and analyzed in Inverse Hyperbolic Sine, meaning that treatment effects can be interpreted as percent changes.

Table A.6: Intent-to-treat analysis: Secondary outcomes, aggregated specification

| | HD | GiveDirectly | | Combined | Control Mean | Obs. | R^2 | p-values | | |
		Main	Large					(a)	(b)	(c)
Panel A. Beneficiary welfare										
Subjective well-being	0.19***	0.47***	0.55***	0.41***	0.00	1770	0.13	0.03	0.03	0.00
	(0.07)	(0.07)	(0.09)	(0.09)						
	[0.00]	[0.00]	[0.00]	[0.00]						
Mental health	−0.04	0.01	0.11	0.12	0.00	1770	0.07	0.43	0.48	0.40
	(0.07)	(0.07)	(0.10)	(0.09)						
	[0.34]	[0.34]	[0.16]	[0.12]						
Beneficiary-specific consumption	0.15	0.58***	0.45***	0.69***	8.27	1770	0.23	0.01	0.00	0.02
	(0.11)	(0.10)	(0.15)	(0.12)						
	[0.12]	[0.00]	[0.00]	[0.00]						
Panel B. Household wealth										
HH net non-land wealth	−0.17	0.91***	1.11***	0.90**	11.28	1770	0.20	0.02	0.41	0.28
	(0.40)	(0.35)	(0.41)	(0.48)						
	[0.31]	[0.01]	[0.01]	[0.05]						
HH livestock wealth	−0.00	2.08***	2.17***	2.22***	7.81	1770	0.25	0.00	0.02	0.02
	(0.37)	(0.35)	(0.47)	(0.45)						
	[0.46]	[0.00]	[0.00]	[0.00]						
Savings	1.04***	1.30***	1.43***	1.70***	9.24	1770	0.20	0.40	0.04	0.15
	(0.23)	(0.23)	(0.31)	(0.27)						
	[0.00]	[0.00]	[0.00]	[0.00]						
Debt	0.40	−0.29	−0.37	0.00	8.75	1770	0.20	0.02	0.80	0.34
	(0.28)	(0.30)	(0.42)	(0.38)						
	[0.10]	[0.19]	[0.22]	[0.46]						
Panel C. Beneficiary cognitive and non-cognitive skills										
Locus of control	0.06	0.05	0.08	0.23**	0.00	1770	0.27	0.58	0.98	0.14
	(0.06)	(0.06)	(0.08)	(0.08)						
	[0.45]	[0.53]	[0.45]	[0.02]						
Aspirations	−0.01	0.05	0.03	0.14	0.00	1770	0.08	0.52	0.60	0.63
	(0.07)	(0.07)	(0.09)	(0.08)						
	[1.00]	[0.54]	[1.00]	[0.20]						
Big Five index	0.12	0.07	−0.08	0.02	0.00	1770	0.10	0.23	0.10	0.40
	(0.07)	(0.07)	(0.09)	(0.09)						
	[0.20]	[0.45]	[0.53]	[1.00]						
Business knowledge	0.65***	0.08	−0.03	0.63***	0.00	1770	0.23	0.00	0.19	0.00
	(0.07)	(0.07)	(0.09)	(0.09)						
	[0.00]	[0.45]	[1.00]	[0.00]						
Business attitudes	0.12	0.16*	0.06	0.15	0.00	1770	0.09	0.81	0.06	0.26
	(0.07)	(0.06)	(0.09)	(0.09)						
	[0.20]	[0.06]	[0.65]	[0.20]						

Notes: Regressions include but do not report the lagged dependent variable, fixed effects for randomization blocks, and a set of LASSO-selected baseline covariates, and are weighted to reflect intensive tracking. Standard errors are (in soft brackets) are clustered at the household level to reflect the design effect, and p-values corrected for False Discovery Rates across all the outcomes in the table are presented in hard brackets. Stars on coefficient estimates are derived from the FDR-corrected p-values, *=10%, **=5%, and ***=1% significance.

Table A.7: Breakdown of employment impacts

| | | GiveDirectly | | | | Control | | | |
	HD	Lower	Middle	Upper	Large	Combined	Mean	Obs.	R^2	p-value
Panel A. Employment composition										
Non-agricultural microenterprise	0.05	0.09*	0.08*	0.14**	0.17***	0.12**	0.22	1770	0.12	0.00
	(0.03)	(0.04)	(0.04)	(0.05)	(0.04)	(0.04)				
	[0.11]	[0.06]	[0.08]	[0.02]	[0.00]	[0.02]				
Other microenterprise or self-employment	0.04*	0.04	0.11**	0.07*	0.05*	0.04	0.07	1770	0.09	0.02
	(0.02)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)				
	[0.06]	[0.11]	[0.02]	[0.06]	[0.09]	[0.11]				
Agricultural processing or trading	0.01	0.13**	0.01	0.07*	0.06	0.02	0.17	1770	0.08	0.05
	(0.03)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)				
	[0.24]	[0.02]	[0.24]	[0.08]	[0.11]	[0.24]				
Agricultural wage labor	−0.02	−0.08**	−0.07*	−0.08**	−0.11**	−0.09**	0.22	1770	0.15	0.00
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)				
	[0.24]	[0.03]	[0.06]	[0.03]	[0.02]	[0.03]				
Non-agricultural wage labor	0.06*	−0.04	0.01	−0.06	−0.07*	0.01	0.30	1770	0.20	0.00
	(0.03)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)				
	[0.06]	[0.16]	[0.24]	[0.11]	[0.09]	[0.24]				
Panel B. Alternative hours thresholds										
Employed (0 hr)	0.05	0.05	0.07	0.02	0.06	0.06	0.70	1770	0.12	0.46
	(0.03)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)				
	[1.00]	[1.00]	[1.00]	[1.00]	[1.00]	[1.00]				
Employed (10 hr)	0.02	0.03	0.05	0.00	0.01	0.01	0.48	1770	0.16	0.95
	(0.03)	(0.05)	(0.05)	(0.05)	(0.05)	(0.04)				
	[1.00]	[1.00]	[1.00]	[1.00]	[1.00]	[1.00]				
Employed (20 hr)	0.04	0.04	0.08	0.02	0.01	0.04	0.29	1770	0.17	0.62
	(0.03)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)				
	[1.00]	[1.00]	[1.00]	[1.00]	[1.00]	[1.00]				
Employed (30 hr)	0.02	0.03	0.09	0.04	0.00	0.06	0.19	1770	0.17	0.37
	(0.03)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)				
	[1.00]	[1.00]	[1.00]	[1.00]	[1.00]	[1.00]				
Employed (40 hr)	0.03	0.03	0.09	−0.01	0.02	0.04	0.13	1770	0.17	0.26
	(0.02)	(0.03)	(0.04)	(0.03)	(0.03)	(0.03)				
	[1.00]	[1.00]	[0.70]	[1.00]	[1.00]	[1.00]				

Notes: Panel A presents impacts on indicators for employment of any hours in the corresponding activity type in the preceding week. Panel B presents impacts on an indicator for overall employment, using the reported threshold for minimum hours. Regressions include but do not report an indicator for lagged employment status, fixed effects for randomization blocks, and a set of LASSO-selected baseline covariates, and are weighted to reflect intensive tracking. Standard errors are (in soft brackets) are clustered at the household level to reflect the design effect, and p-values corrected for False Discovery Rates across outcomes in each panel are presented in hard brackets. Stars on coefficient estimates are derived from the FDR-corrected p-values, *=10%, **=5%, and ***=1% significance.

Table A.8: Robustness of Linearity in Primary Cost Equivalence Adjustment

	Base Linear	Quad-ratic	Cubic	Drop lower	Drop mid	Drop upper	Drop huge
Employed	−0.012	−0.022	0.072	−0.020	−0.002	−0.024	−0.022
	(0.041)	(0.067)	(0.143)	(0.058)	(0.046)	(0.043)	(0.055)
Productive hours	−2.249	0.706	8.098	−4.722	−0.980	−2.460	−0.398
	(2.189)	(3.616)	(7.736)	(3.054)	(2.473)	(2.225)	(2.928)
Monthly income	−0.709**	−0.204	−0.070	−1.005**	−0.677*	−0.654*	−0.358
	(0.322)	(0.534)	(1.102)	(0.419)	(0.370)	(0.335)	(0.439)
Productive assets	−2.272***	−2.499***	−2.567*	−2.130***	−2.271***	−2.292***	−2.492***
	(0.434)	(0.678)	(1.524)	(0.603)	(0.480)	(0.449)	(0.563)
HH consumption per capita	−0.133*	−0.151	0.003	−0.158	−0.110	−0.147*	−0.157
	(0.077)	(0.116)	(0.267)	(0.106)	(0.084)	(0.081)	(0.097)

Notes: Table reports the coefficient on the differential effect of HD over cost-equivalent cash using seven different specifications. Column 1 is the linear adjustment reported elsewhere. Column 2 includes a quadratic, and column 3 a quadratic and cubic term in the cost deviations from Gikuriro. Columns 4-7 leave out one of the cash treatment arms and repeat the linear cost adjustment. Asterices denote significance at the 10, 5, and 1 percent levels, and are based on household-clustered standard errors, in parentheses.

Table A.9: Robustness of Linearity in Secondary Cost Equivalence Adjustment

	Base Linear	Quad-ratic	Cubic	Drop lower	Drop mid	Drop upper	Drop huge
Panel A. Beneficiary welfare							
Subjective well-being	−0.229***	−0.193	0.011	−0.288**	−0.199**	−0.225**	−0.225**
	(0.085)	(0.135)	(0.300)	(0.119)	(0.094)	(0.087)	(0.111)
Mental health	−0.001	0.059	0.268	−0.074	0.032	−0.009	0.048
	(0.090)	(0.142)	(0.298)	(0.122)	(0.099)	(0.092)	(0.117)
Beneficiary-specific consumption	−0.444***	−0.265	−0.213	−0.573***	−0.419***	−0.429***	−0.317**
	(0.120)	(0.169)	(0.359)	(0.166)	(0.128)	(0.124)	(0.146)
Panel B. Household wealth							
HH net non-land wealth	−0.803	0.284	0.879	−1.515***	−0.683	−0.634	−0.169
	(0.491)	(0.877)	(1.641)	(0.549)	(0.583)	(0.524)	(0.713)
HH livestock wealth	−1.918***	−1.286*	−2.520	−2.215***	−2.109***	−1.832***	−1.412**
	(0.453)	(0.706)	(1.559)	(0.620)	(0.498)	(0.475)	(0.593)
Savings	−0.097	0.278	0.063	−0.308	−0.086	−0.044	0.183
	(0.280)	(0.446)	(1.005)	(0.390)	(0.314)	(0.292)	(0.364)
Debt	0.567	0.233	0.675	0.743	0.660	0.480	0.337
	(0.394)	(0.642)	(1.374)	(0.556)	(0.442)	(0.401)	(0.521)
Panel C. Beneficiary cognitive and non-cognitive skills							
Locus of control	−0.003	−0.129	−0.168	0.097	−0.027	−0.027	−0.084
	(0.078)	(0.126)	(0.269)	(0.104)	(0.088)	(0.081)	(0.103)
Aspirations	−0.061	−0.024	−0.420	−0.035	−0.121	−0.026	−0.025
	(0.089)	(0.139)	(0.296)	(0.117)	(0.100)	(0.093)	(0.117)
Big Five index	−0.011	0.012	0.139	−0.040	0.014	−0.008	−0.003
	(0.087)	(0.145)	(0.300)	(0.114)	(0.099)	(0.091)	(0.118)
Business knowledge	0.536***	0.548***	0.539*	0.558***	0.538***	0.527***	0.543***
	(0.090)	(0.142)	(0.292)	(0.119)	(0.101)	(0.093)	(0.118)
Business attitudes	−0.092	−0.125	−0.004	−0.070	−0.072	−0.103	−0.129
	(0.085)	(0.143)	(0.290)	(0.113)	(0.097)	(0.088)	(0.116)

Notes: Table reports the coefficient on the differential effect of HD over cost-equivalent cash using seven different specifications. Column 1 is the linear adjustment reported elsewhere. Column 2 includes a quadratic, and column 3 a quadratic and cubic term in the cost deviations from Gikuriro. Columns 4-7 leave out one of the cash treatment arms and repeat the linear cost adjustment. Asterices denote significance at the 10, 5, and 1 percent levels, and are based on household-clustered standard errors, in parentheses.

Table A.10: Heterogeneity: Gender

	Employed	Productive Hours	Monthly Income	Productive Assets	Consumption
HD	0.09	1.43	0.14	1.03	0.01
	(0.05)	(2.78)	(0.37)	(0.61)	(0.10)
	[0.30]	[0.96]	[0.96]	[0.30]	[1.00]
GD main	0.05	4.44	0.79*	2.97***	0.29**
	(0.05)	(2.98)	(0.33)	(0.59)	(0.10)
	[0.71]	[0.41]	[0.06]	[0.00]	[0.02]
GD large	0.04	−0.08	0.62	3.18***	0.36**
	(0.07)	(3.62)	(0.51)	(0.77)	(0.12)
	[0.88]	[1.00]	[0.52]	[0.00]	[0.01]
Combined	0.05	3.55	0.59	3.50***	0.37**
	(0.06)	(3.67)	(0.43)	(0.71)	(0.13)
	[0.75]	[0.71]	[0.44]	[0.00]	[0.02]
HD × Female	−0.12	2.16	0.02	0.32	0.11
	(0.07)	(3.35)	(0.50)	(0.75)	(0.13)
	[0.30]	[0.88]	[1.00]	[0.96]	[0.71]
GD main × Female	−0.05	−0.32	−0.07	1.17	−0.06
	(0.07)	(3.53)	(0.48)	(0.73)	(0.12)
	[0.75]	[1.00]	[1.00]	[0.33]	[0.96]
GD large × Female	−0.04	1.95	0.28	1.02	−0.01
	(0.09)	(4.29)	(0.68)	(0.99)	(0.15)
	[0.96]	[0.96]	[0.96]	[0.70]	[1.00]
Combined × Female	−0.08	−2.65	0.61	1.25	−0.21
	(0.09)	(4.30)	(0.60)	(0.89)	(0.16)
	[0.71]	[0.88]	[0.70]	[0.44]	[0.49]
Female	−0.16***	−13.87***	−1.80***	−1.32*	0.03
	(0.05)	(2.26)	(0.35)	(0.53)	(0.09)
	[0.01]	[0.00]	[0.00]	[0.05]	[0.96]
Control mean	0.48	18.64	8.05	5.61	9.46
Observations	1770	1770	1770	1770	1737
R^2	0.06	0.10	0.07	0.11	0.10
p-value	0.53	0.84	0.81	0.43	0.38

Notes: Table presents tests for heterogeneity of treatment effects by Gender. Uninteracted coefficients in the first four rows give the treatment effect of the program on men, and the next four rows test for the differential effect between women and men. Standard errors are (in soft brackets) are clustered at the household level to reflect the design effect, and p-values corrected for False Discovery Rates across all the outcomes in the table are presented in hard brackets. Stars on coefficient estimates are derived from the FDR-corrected p-values, *=10%, **=5%, and ***=1% significance. p-value in the last row from an F-test on whether treatments have a jointly differential effect by gender.

Table A.11: Heterogeneity: Risk aversion

	Employed	Productive Hours	Monthly Income	Productive Assets	Consumption
HD	0.01	2.64	0.12	1.21***	0.08
	(0.03)	(1.62)	(0.27)	(0.37)	(0.06)
	[0.84]	[0.23]	[0.84]	[0.01]	[0.40]
GD main	0.01	4.25**	0.74**	3.68***	0.25***
	(0.03)	(1.70)	(0.26)	(0.36)	(0.06)
	[0.84]	[0.05]	[0.02]	[0.00]	[0.00]
GD large	0.02	0.78	0.74	3.83***	0.35***
	(0.05)	(2.10)	(0.37)	(0.49)	(0.08)
	[0.84]	[0.84]	[0.13]	[0.00]	[0.00]
Combined	0.01	2.66	1.01***	4.26***	0.26***
	(0.04)	(2.11)	(0.31)	(0.43)	(0.08)
	[0.84]	[0.38]	[0.01]	[0.00]	[0.01]
HD × Baseline risk aversion	0.03	1.68	0.50	−0.11	0.04
	(0.03)	(1.61)	(0.26)	(0.37)	(0.06)
	[0.67]	[0.50]	[0.15]	[0.84]	[0.84]
GD main × Baseline risk aversion	0.01	−0.51	0.34	−0.06	0.00
	(0.03)	(1.71)	(0.25)	(0.35)	(0.06)
	[0.84]	[0.84]	[0.38]	[0.84]	[0.94]
GD large × Baseline risk aversion	0.05	1.96	0.55	−0.68	−0.01
	(0.05)	(2.07)	(0.37)	(0.49)	(0.08)
	[0.40]	[0.56]	[0.30]	[0.36]	[0.84]
Combined × Baseline risk aversion	0.07	3.75	0.75*	0.12	−0.03
	(0.04)	(2.07)	(0.31)	(0.43)	(0.08)
	[0.23]	[0.18]	[0.05]	[0.84]	[0.84]
Baseline risk aversion	−0.01	−0.38	−0.43*	0.10	−0.05
	(0.02)	(1.10)	(0.19)	(0.26)	(0.04)
	[0.84]	[0.84]	[0.06]	[0.84]	[0.50]
Control mean	0.48	18.64	8.05	5.61	9.46
Observations	1770	1770	1770	1770	1737
R^2	0.02	0.03	0.03	0.11	0.10
p-value	0.42	0.27	0.13	0.65	0.95

Notes: Table presents tests for heterogeneity of treatment effects by Risk Aversion. Risk Aversion demeaned before interaction so first four rows give effect of treatment at average value, and next four rows test for differential treatment effect by risk aversion. Standard errors are (in soft brackets) are clustered at the household level to reflect the design effect, and p-values corrected for False Discovery Rates across all the outcomes in the table are presented in hard brackets. Stars on coefficient estimates are derived from the FDR-corrected p-values, *=10%, **=5%, and ***=1% significance. p-value in the last row from an F-test on whether treatments have a jointly differential effect by gender.

Table A.12: Heterogeneity: Baseline household consumption

	Employed	Productive Hours	Monthly Income	Productive Assets	Consumption
HD	0.01	2.60	0.14	1.27***	0.13*
	(0.03)	(1.62)	(0.27)	(0.37)	(0.06)
	[0.64]	[0.18]	[0.63]	[0.00]	[0.09]
GD main	0.02	4.31**	0.76**	3.72***	0.28***
	(0.03)	(1.70)	(0.26)	(0.36)	(0.06)
	[0.63]	[0.04]	[0.01]	[0.00]	[0.00]
GD large	0.03	1.17	0.84*	3.93***	0.40***
	(0.05)	(2.08)	(0.36)	(0.48)	(0.08)
	[0.63]	[0.63]	[0.06]	[0.00]	[0.00]
Combined	0.02	2.90	1.08***	4.32***	0.26***
	(0.04)	(2.14)	(0.30)	(0.42)	(0.08)
	[0.64]	[0.27]	[0.00]	[0.00]	[0.00]
HD × Baseline HH consumption per AE	−0.04	−1.09	0.03	−0.19	−0.02
	(0.03)	(1.72)	(0.25)	(0.38)	(0.07)
	[0.31]	[0.63]	[0.80]	[0.63]	[0.64]
GD main × Baseline HH consumption per AE	0.01	0.83	0.29	−0.07	−0.11
	(0.03)	(1.63)	(0.27)	(0.34)	(0.06)
	[0.64]	[0.63]	[0.37]	[0.76]	[0.13]
GD large × Baseline HH consumption per AE	0.09*	2.51	0.70	0.46	−0.13
	(0.04)	(1.95)	(0.39)	(0.48)	(0.08)
	[0.09]	[0.29]	[0.14]	[0.45]	[0.18]
Combined × Baseline HH consumption per AE	−0.02	−1.44	−0.69*	−0.68	0.00
	(0.04)	(2.15)	(0.30)	(0.41)	(0.11)
	[0.63]	[0.63]	[0.06]	[0.17]	[0.82]
Baseline HH consumption per AE	0.02	0.43	0.10	0.51	0.32***
	(0.02)	(1.05)	(0.18)	(0.27)	(0.04)
	[0.63]	[0.64]	[0.63]	[0.12]	[0.00]
Control mean	0.48	18.64	8.05	5.61	9.46
Observations	1770	1770	1770	1770	1737
R^2	0.02	0.03	0.04	0.12	0.18
p-value	0.05	0.43	0.01	0.21	0.24

Notes: Table presents tests for heterogeneity of treatment effects by baseline Household Consumption. Consumption demeaned before interaction so first four rows give effect of treatment at average value, and next four rows test for differential treatment effect by consumption. Standard errors are (in soft brackets) are clustered at the household level to reflect the design effect, and p-values corrected for False Discovery Rates across all the outcomes in the table are presented in hard brackets. Stars on coefficient estimates are derived from the FDR-corrected p-values, *=10%, **=5%, and ***=1% significance. p-value in the last row from an F-test on whether treatments have a jointly differential effect by gender.

Table A.13: Heterogeneity: Baseline local employment rates

	Employed	Productive Hours	Monthly Income	Productive Assets	Consumption
HD	0.01	2.53	0.10	1.21***	0.08
	(0.03)	(1.61)	(0.27)	(0.37)	(0.06)
	[1.00]	[0.37]	[1.00]	[0.01]	[0.60]
GD main	0.01	4.29**	0.73**	3.68***	0.25***
	(0.03)	(1.71)	(0.26)	(0.36)	(0.06)
	[1.00]	[0.05]	[0.02]	[0.00]	[0.00]
GD large	0.02	0.83	0.77	3.84***	0.34***
	(0.05)	(2.11)	(0.37)	(0.49)	(0.08)
	[1.00]	[1.00]	[0.13]	[0.00]	[0.00]
Combined	0.02	2.80	1.04***	4.30***	0.26***
	(0.04)	(2.13)	(0.31)	(0.42)	(0.08)
	[1.00]	[0.60]	[0.01]	[0.00]	[0.01]
HD × Baseline cell share employed	0.35	19.81	2.94	4.69	0.15
	(0.32)	(16.21)	(2.56)	(3.64)	(0.62)
	[0.60]	[0.60]	[0.60]	[0.60]	[1.00]
GD main × Baseline cell share employed	0.17	−1.97	3.00	1.72	0.26
	(0.32)	(17.05)	(2.47)	(3.50)	(0.59)
	[1.00]	[1.00]	[0.60]	[1.00]	[1.00]
GD large × Baseline cell share employed	0.34	0.26	2.38	5.25	−0.88
	(0.46)	(22.84)	(3.23)	(4.42)	(0.79)
	[1.00]	[1.00]	[1.00]	[0.60]	[0.60]
Combined × Baseline cell share employed	0.27	−1.71	2.68	7.59	1.51
	(0.43)	(21.35)	(3.11)	(4.23)	(0.76)
	[1.00]	[1.00]	[1.00]	[0.23]	[0.16]
Baseline cell share employed	0.04	0.29	1.02	−1.41	−0.24
	(0.25)	(12.35)	(1.98)	(2.87)	(0.50)
	[1.00]	[1.00]	[1.00]	[1.00]	[1.00]
Control mean	0.48	18.64	8.05	5.61	9.46
Observations	1770	1770	1770	1770	1737
R^2	0.02	0.03	0.03	0.11	0.10
p-value	0.85	0.65	0.77	0.35	0.10

Notes: Table presents tests for heterogeneity of treatment effects by baseline Employment Rates. Employment demeaned before interaction so first four rows give effect of treatment at average value, and next four rows test for differential treatment effect by employment rates. Standard errors are (in soft brackets) are clustered at the household level to reflect the design effect, and p-values corrected for False Discovery Rates across all the outcomes in the table are presented in hard brackets. Stars on coefficient estimates are derived from the FDR-corrected p-values, *=10%, **=5%, and ***=1% significance. p-value in the last row from an F-test on whether treatments have a jointly differential effect by gender.

Table A.14: Heterogeneity: Age 23 and over

	Employed	Productive Hours	Monthly Income	Productive Assets	Consumption
HD	0.06	4.32	0.26	1.17	0.09
	(0.05)	(2.52)	(0.43)	(0.56)	(0.10)
	[0.64]	[0.32]	[1.00]	[0.15]	[0.82]
GD main	0.02	2.39	0.72	4.26***	0.28**
	(0.05)	(2.46)	(0.42)	(0.53)	(0.09)
	[1.00]	[0.82]	[0.32]	[0.00]	[0.02]
GD large	0.00	0.03	0.88	4.27***	0.31*
	(0.07)	(3.23)	(0.62)	(0.76)	(0.12)
	[1.00]	[1.00]	[0.47]	[0.00]	[0.05]
Combined	0.08	2.02	1.53**	3.97***	0.21
	(0.06)	(2.98)	(0.47)	(0.63)	(0.11)
	[0.64]	[1.00]	[0.01]	[0.00]	[0.30]
HD × Older than 22	−0.08	−3.01	−0.23	0.08	−0.01
	(0.07)	(3.25)	(0.55)	(0.74)	(0.12)
	[0.64]	[0.82]	[1.00]	[1.00]	[1.00]
GD main × Older than 22	0.00	3.64	0.12	−1.06	−0.05
	(0.07)	(3.41)	(0.53)	(0.72)	(0.12)
	[1.00]	[0.71]	[1.00]	[0.47]	[1.00]
GD large × Older than 22	0.01	1.04	−0.29	−0.76	0.04
	(0.10)	(4.23)	(0.74)	(0.99)	(0.15)
	[1.00]	[1.00]	[1.00]	[0.97]	[1.00]
Combined × Older than 22	−0.11	1.55	−0.88	0.57	0.10
	(0.09)	(4.19)	(0.63)	(0.86)	(0.16)
	[0.64]	[1.00]	[0.47]	[1.00]	[1.00]
Older than 22	0.12*	2.47	1.04*	0.28	0.22*
	(0.05)	(2.18)	(0.39)	(0.53)	(0.09)
	[0.06]	[0.64]	[0.05]	[1.00]	[0.06]
Control mean	0.48	18.64	8.05	5.61	9.46
Observations	1770	1770	1770	1770	1737
R^2	0.02	0.04	0.04	0.11	0.11
p-value	0.51	0.46	0.57	0.26	0.90

Notes: Table presents tests for heterogeneity of treatment effects by age. First four rows give effect of treatment among young, and next four rows test for differential treatment effect for those 23 and over. Standard errors are (in soft brackets) are clustered at the household level to reflect the design effect, and p-values corrected for False Discovery Rates across all the outcomes in the table are presented in hard brackets. Stars on coefficient estimates are derived from the FDR-corrected p-values, *=10%, **=5%, and ***=1% significance. p-value in the last row from an F-test on whether treatments have a jointly differential effect by gender.

Table A.15: Spillover effects: full model, employment outcome

| | Treatment | | |
	HD	GD Main	GD Huge
Direct effects of treatment at saturation level of zero			
Direct effect	−0.02	−0.02	0.05
	(0.07)	(0.07)	(0.13)
	[1.00]	[1.00]	[1.00]
Spillover effects of treatment onto control individuals			
Spillover to control	−0.01	−0.09	0.06
	(0.09)	(0.09)	(0.16)
	[1.00]	[1.00]	[1.00]
Additional effect of treatment onto individuals assigned to...			
HD	0.00	0.10	−0.10
	(0.11)	(0.11)	(0.19)
	[1.00]	[1.00]	[1.00]
GD main	0.02	0.15	−0.28
	(0.11)	(0.12)	(0.20)
	[1.00]	[1.00]	[1.00]
GD large	0.03	−0.08	−0.23
	(0.22)	(0.17)	(0.42)
	[1.00]	[1.00]	[1.00]
Saturation mean	0.36	0.36	0.09
Saturation SD	0.23	0.23	0.13
p-value	1.00	0.55	0.49

Notes: Each column describes the direct and spillover effects of a specific treatment on Employment; all results in the table are from a single estimation. Saturation mean and standard deviation correspond to the distribution of saturation rates for the treatment in question. Regressions include but do not report the lagged dependent variable, fixed effects for randomization blocks, and a set of LASSO-selected baseline covariates, and are weighted to reflect intensive tracking. Standard errors are (in soft brackets) are clustered at the household level to reflect the design effect, and p-values corrected for False Discovery Rates across all the outcomes in the table are presented in hard brackets. Stars on coefficient estimates are derived from the FDR-corrected p-values, *=10%, **=5%, and ***=1% significance. *p*-value in the last row corresponds to a test for whether the treatment in question has interference effects on any arm, including control.

Table A.16: Spillover effects: full model, productive hours outcome

| | Treatment | | |
	HD	GD Main	GD Huge
Direct effects of treatment at saturation level of zero			
Direct effect	2.26	5.60	9.52
	(3.71)	(3.67)	(6.27)
	[1.00]	[0.76]	[0.76]
Spillover effects of treatment onto control individuals			
Spillover to control	0.81	1.74	−0.12
	(4.39)	(4.68)	(6.56)
	[1.00]	[1.00]	[1.00]
Additional effect of treatment onto individuals assigned to...			
HD	0.81	−2.50	−8.79
	(5.72)	(5.82)	(9.63)
	[1.00]	[1.00]	[0.87]
GD main	−7.55	2.76	−12.81
	(5.60)	(6.39)	(8.73)
	[0.76]	[1.00]	[0.76]
GD large	−5.79	−11.98	−31.75
	(10.27)	(7.70)	(17.74)
	[1.00]	[0.76]	[0.76]
Saturation mean	0.36	0.36	0.09
Saturation SD	0.23	0.23	0.13
p-value	0.65	0.49	0.09

 Notes: Each column describes the direct and spillover effects of a specific treatment on Productive Hours; all results in the table are from a single estimation. Saturation mean and standard deviation correspond to the distribution of saturation rates for the treatment in question. Regressions include but do not report the lagged dependent variable, fixed effects for randomization blocks, and a set of LASSO-selected baseline covariates, and are weighted to reflect intensive tracking. Standard errors are (in soft brackets) are clustered at the household level to reflect the design effect, and p-values corrected for False Discovery Rates across all the outcomes in the table are presented in hard brackets. Stars on coefficient estimates are derived from the FDR-corrected p-values, *=10%, **=5%, and ***=1% significance. *p*-value in the last corresponds to a test for whether the treatment in question has interference effects on any arm, including control.

Table A.17: Spillover effects: full model, monthly income outcome

| | Treatment | | |
	HD	GD Main	GD Huge
Direct effects of treatment at saturation level of zero			
Direct effect	0.23	0.96	1.77
	(0.55)	(0.58)	(0.88)
	[1.00]	[1.00]	[1.00]
Spillover effects of treatment onto control individuals			
Spillover to control	0.48	−0.69	0.53
	(0.82)	(0.79)	(1.13)
	[1.00]	[1.00]	[1.00]
Additional effect of treatment onto individuals assigned to...			
HD	−0.92	0.91	0.05
	(0.87)	(0.82)	(1.57)
	[1.00]	[1.00]	[1.00]
GD main	−0.28	0.39	−1.10
	(0.91)	(0.92)	(1.40)
	[1.00]	[1.00]	[1.00]
GD large	−1.61	−1.75	2.08
	(1.41)	(1.40)	(3.37)
	[1.00]	[1.00]	[1.00]
Saturation mean	0.36	0.36	0.09
Saturation SD	0.23	0.23	0.13
p-value	0.66	0.28	0.88

Notes: Each column describes the direct and spillover effects of a specific treatment on Monthly Income (IHS); all results in the table are from a single estimation. Saturation mean and standard deviation correspond to the distribution of saturation rates for the treatment in question. Regressions include but do not report the lagged dependent variable, fixed effects for randomization blocks, and a set of LASSO-selected baseline covariates, and are weighted to reflect intensive tracking. Standard errors are (in soft brackets) are clustered at the household level to reflect the design effect, and p-values corrected for False Discovery Rates across all the outcomes in the table are presented in hard brackets. Stars on coefficient estimates are derived from the FDR-corrected p-values, *=10%, **=5%, and ***=1% significance. *p*-value in the last row corresponds to a test for whether the treatment in question has interference effects on any arm, including control.

Table A.18: Spillover effects: productive assets outcome

| | | Treatment | |
	HD	GD Main	GD Huge
Direct effects of treatment at saturation level of zero			
Direct effect	2.34***	4.35***	5.64***
	(0.74)	(0.73)	(1.09)
	[0.01]	[0.00]	[0.00]
Spillover effects of treatment onto control individuals			
Spillover to control	1.05	1.69	2.18
	(1.00)	(1.10)	(1.72)
	[0.36]	[0.26]	[0.34]
Additional effect of treatment onto individuals assigned to...			
HD	−0.61	−1.95	−2.85
	(1.32)	(1.17)	(2.10)
	[0.49]	[0.26]	[0.32]
GD main	−2.17	0.23	−1.82
	(1.34)	(1.11)	(1.88)
	[0.26]	[0.52]	[0.36]
GD large	−0.88	−2.22	−7.88
	(1.90)	(1.87)	(4.10)
	[0.49]	[0.35]	[0.20]
Saturation mean	0.36	0.36	0.09
Saturation SD	0.23	0.23	0.13
p-value	0.62	0.21	0.27

Notes: Each column describes the direct and spillover effects of a specific treatment on Productive Assets (IHS); all results in the table are from a single estimation. Saturation mean and standard deviation correspond to the distribution of saturation rates for the treatment in question. Regressions include but do not report the lagged dependent variable, fixed effects for randomization blocks, and a set of LASSO-selected baseline covariates, and are weighted to reflect intensive tracking. Standard errors are (in soft brackets) are clustered at the household level to reflect the design effect, and p-values corrected for False Discovery Rates across all the outcomes in the table are presented in hard brackets. Stars on coefficient estimates are derived from the FDR-corrected p-values, *=10%, **=5%, and ***=1% significance. *p*-value in the last row corresponds to a test for whether the treatment in question has interference effects on any arm, including control.

Table A.19: Spillover effects: consumption

	HD	Treatment GD Main	GD Huge
Direct effects of treatment at saturation level of zero			
Direct effect	0.01	0.29	0.20
	(0.12)	(0.11)	(0.20)
	[1.00]	[0.23]	[1.00]
Spillover effects of treatment onto control individuals			
Spillover to control	0.05	0.02	−0.36
	(0.16)	(0.18)	(0.25)
	[1.00]	[1.00]	[0.75]
Additional effect of treatment onto individuals assigned to...			
HD	0.16	−0.05	−0.01
	(0.20)	(0.19)	(0.32)
	[1.00]	[1.00]	[1.00]
GD main	−0.21	−0.08	0.53
	(0.17)	(0.19)	(0.28)
	[1.00]	[1.00]	[0.40]
GD large	−0.04	0.18	1.22
	(0.33)	(0.30)	(0.59)
	[1.00]	[1.00]	[0.37]
Saturation mean	0.36	0.36	0.09
Saturation SD	0.23	0.23	0.13
p-value	0.68	0.90	0.11

Notes: Each column describes the direct and spillover effects of a specific treatment on Household Consumption (IHS); all results in the table are from a single estimation. Saturation mean and standard deviation correspond to the distribution of saturation rates for the treatment in question. Standard errors are (in soft brackets) are clustered at the household level to reflect the design effect, and p-values corrected for False Discovery Rates across all the outcomes in the table are presented in hard brackets. Stars on coefficient estimates are derived from the FDR-corrected p-values, *=10%, **=5%, and ***=1% significance. *p*-value in the last row corresponds to a test for whether the treatment in question has interference effects on any arm, including control.

Table A.20: Impact on Business Outcomes

	GiveDirectly						Control Mean	Obs.	R^2
	HD	Lower	Middle	Upper	Large	Combined			
Number of businesses	-0.01	0.43***	0.58***	0.59***	0.58***	0.62***	1.40	1770	0.09
	(0.09)	(0.13)	(0.13)	(0.13)	(0.14)	(0.12)			
Household workers	0.16**	0.21**	0.21**	0.45***	0.41***	0.24**	0.27	1770	0.03
	(0.06)	(0.09)	(0.08)	(0.12)	(0.10)	(0.10)			
Non-household workers	0.20	0.12	0.09	0.50	0.24*	0.34*	0.22	1770	0.02
	(0.15)	(0.13)	(0.11)	(0.31)	(0.13)	(0.19)			
Own work days per month	2.71**	8.01***	6.65***	11.59***	11.37***	8.63***	9.11	1770	0.07
	(1.07)	(1.51)	(1.77)	(1.70)	(1.76)	(1.50)			
Monthly customers	12.61	75.78**	54.03**	34.68**	41.11***	38.22**	31.13	1770	0.02
	(12.44)	(30.91)	(25.10)	(14.59)	(15.19)	(14.96)			
Daily sales	5.57	9.81***	13.79***	14.42***	10.22***	18.53***	6.64	1770	0.02
	(4.38)	(3.46)	(3.21)	(4.15)	(2.87)	(4.97)			
Monthly profits	6.22***	9.81***	9.86***	12.08***	10.90***	8.81***	6.11	1770	0.03
	(2.32)	(2.58)	(2.68)	(2.65)	(2.37)	(1.72)			

Note: Table uses data from the beneficiary enterprise survey, summing values across all businesses reported. Variables such as number of employees and customers may be subject to double-counting across businesses. Outcomes are overwritten with zeros for beneficiaries who do not operate any business. All monetary values are in US Dollars. Standard errors are in parentheses, clustered at the household level.

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Table A.21: Cost-Effectiveness (benefit per $100 spent), Primary outcomes

	GiveDirectly						p-values			
	HD	Lower	Middle	Upper	Large	Combined	(a)	(b)	(c)	(d)
Employed	0.007 (0.010)	0.008 (0.012)	0.010 (0.009)	0.000 (0.008)	0.001 (0.005)	0.001 (0.005)	0.85	0.95	0.57	0.94
Productive hours	0.838 (0.471)	0.699 (0.593)	1.332 (0.489)	0.603 (0.427)	0.132 (0.244)	0.275 (0.241)	0.14	0.82	0.33	0.63
Monthly income	0.094 (0.077)	0.192 (0.092)	0.220 (0.069)	0.194 (0.059)	0.086 (0.041)	0.124 (0.038)	0.16	0.31	0.24	0.41
Productive assets	0.463 (0.107)	0.998 (0.118)	0.775 (0.102)	0.650 (0.078)	0.475 (0.055)	0.526 (0.052)	0.00	0.00	0.00	0.42
HH consumption per capita	0.016 (0.018)	0.050 (0.020)	0.054 (0.018)	0.040 (0.013)	0.042 (0.009)	0.032 (0.008)	0.37	0.12	0.67	0.31

Note: Table gives the impact per $100 spent, which is calculated by dividing the estimated ITT impacts by the cost per arm in hundreds of dollars. The standard errors in the table are similarly the ITT SEs divided by costs. Reported p-values in final three columns derived from F-tests of hypotheses that cost-benefit ratios are equal between: (a) joint test across all arms, (b) GD Lower and HD; (c) GD Lower and GD Large; and (d) GD Large and Combined arms.

Table A.22: Cost-Effectiveness (benefit per $100 spent), Secondary outcomes

| | GiveDirectly | | | | | | p-values | | | |
	HD	Lower	Middle	Upper	Large	Combined	(a)	(b)	(c)	(d)
Panel A. Beneficiary welfare										
Subjective well-being	0.058 (0.020)	0.101 (0.024)	0.107 (0.020)	0.081 (0.016)	0.066 (0.011)	0.048 (0.010)	0.09	0.08	0.12	0.17
Mental health	−0.013 (0.022)	−0.016 (0.023)	0.014 (0.019)	0.005 (0.016)	0.013 (0.011)	0.014 (0.011)	0.60	0.89	0.22	0.93
Beneficiary-specific consumption	0.045 (0.035)	0.129 (0.030)	0.125 (0.027)	0.105 (0.020)	0.053 (0.018)	0.082 (0.014)	0.00	0.01	0.01	0.11
Panel B. Household wealth										
HH net non-land wealth	−0.054 (0.120)	0.041 (0.150)	0.244 (0.089)	0.226 (0.070)	0.131 (0.049)	0.106 (0.057)	0.05	0.56	0.53	0.67
HH livestock wealth	−0.002 (0.110)	0.445 (0.123)	0.374 (0.105)	0.447 (0.075)	0.257 (0.056)	0.263 (0.053)	0.00	0.00	0.12	0.92
Savings	0.311 (0.070)	0.264 (0.080)	0.262 (0.068)	0.265 (0.051)	0.169 (0.036)	0.202 (0.032)	0.14	0.56	0.22	0.39
Debt	0.122 (0.084)	−0.024 (0.105)	−0.046 (0.088)	−0.095 (0.076)	−0.043 (0.050)	0.000 (0.045)	0.18	0.19	0.86	0.45
Panel C. Beneficiary cognitive and non-cognitive skills										
Locus of control	0.019 (0.018)	0.032 (0.021)	0.005 (0.017)	0.000 (0.014)	0.010 (0.010)	0.027 (0.009)	0.65	0.59	0.30	0.12
Aspirations	−0.002 (0.022)	0.020 (0.024)	−0.009 (0.019)	0.022 (0.015)	0.003 (0.010)	0.016 (0.009)	0.52	0.41	0.48	0.26
Big Five index	0.035 (0.020)	0.019 (0.025)	0.022 (0.019)	0.003 (0.015)	−0.009 (0.011)	0.003 (0.010)	0.17	0.55	0.25	0.35
Business knowledge	0.197 (0.022)	0.022 (0.024)	0.016 (0.019)	0.011 (0.016)	−0.003 (0.011)	0.074 (0.011)	0.00	0.00	0.29	0.00
Business attitudes	0.037 (0.020)	0.049 (0.024)	0.038 (0.018)	0.017 (0.015)	0.007 (0.011)	0.018 (0.010)	0.25	0.63	0.08	0.40

Note: Table gives the impact per $100 spent, which is calculated by dividing the estimated ITT impacts by the cost per arm in hundreds of dollars. The standard errors in the table are similarly the ITT SEs divided by costs. Reported *p*-values in final three columns derived from *F*-tests of hypotheses that cost-benefit ratios are equal between: (a) joint test across all arms, (b) GD Lower and HD; (c) GD Lower and GD Large; and (d) GD Large and Combined arms.

Table A.23: Program impacts on household-to-household transfers

| | | GiveDirectly | | | | | Control | | | p-values | | |
	HD	Lower	Middle	Upper	Large	Combined	Mean	Obs.	R^2	(a)	(b)	(c)
HH loans made	0.11	0.90**	0.45	1.41***	0.68*	1.24***	2.24	1705	0.15	0.10	0.18	0.27
	(0.30)	(0.44)	(0.44)	(0.45)	(0.42)	(0.43)						
	[0.31]	[0.05]	[0.19]	[0.00]	[0.09]	[0.01]						
HH gifts made	−0.33	1.75***	2.67***	2.62***	3.11***	2.46***	4.90	1704	0.17	0.00	0.60	0.33
	(0.36)	(0.57)	(0.55)	(0.59)	(0.53)	(0.50)						
	[0.19]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]						
HH gifts made	0.39	0.68*	1.87***	0.56	0.32	0.81*	3.41	1675	0.15	0.63	0.20	0.36
	(0.32)	(0.42)	(0.48)	(0.47)	(0.44)	(0.45)						
	[0.15]	[0.09]	[0.00]	[0.15]	[0.20]	[0.08]						

Note: Regressions include but do not report the lagged dependent variable, fixed effects for randomization blocks, and a set of LASSO-selected baseline covariates, and are weighted to reflect intensive tracking. Standard errors are (in soft brackets) are clustered at the household level to reflect the design effect, and p-values corrected for False Discovery Rates across all the outcomes in the table are presented in hard brackets. Stars on coefficient estimates are derived from the FDR-corrected p-values, *=10%, **=5%, and ***=1% significance. Reported p-values in final three columns derived from F-tests of hypotheses that cost-benefit ratios are equal between: (a) GD Lower and HD; (b) GD Lower and GD Large; and (c) GD Large and Combined treatments.

Figure A.1: Project timeline
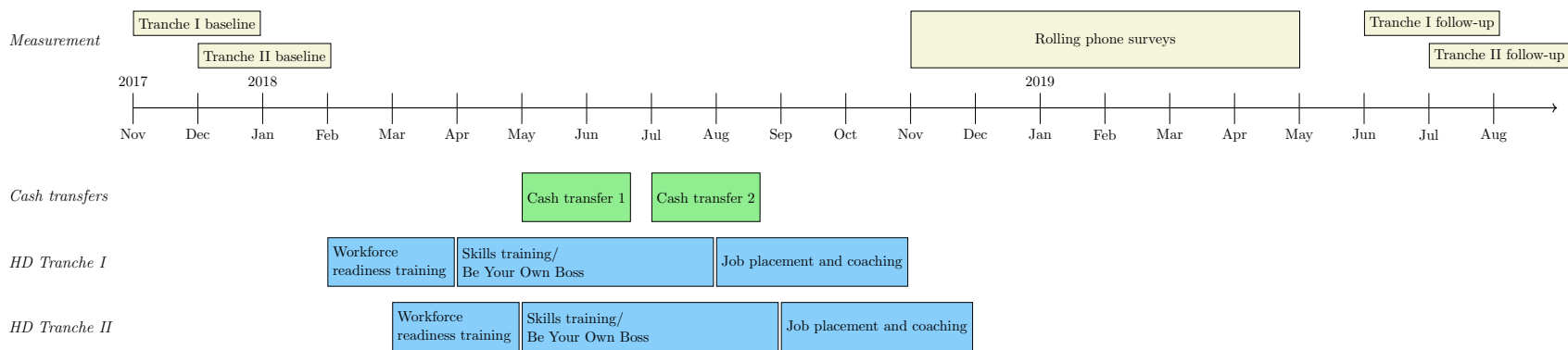
Figure A.2: CDF of Savings Stocks (IHS)
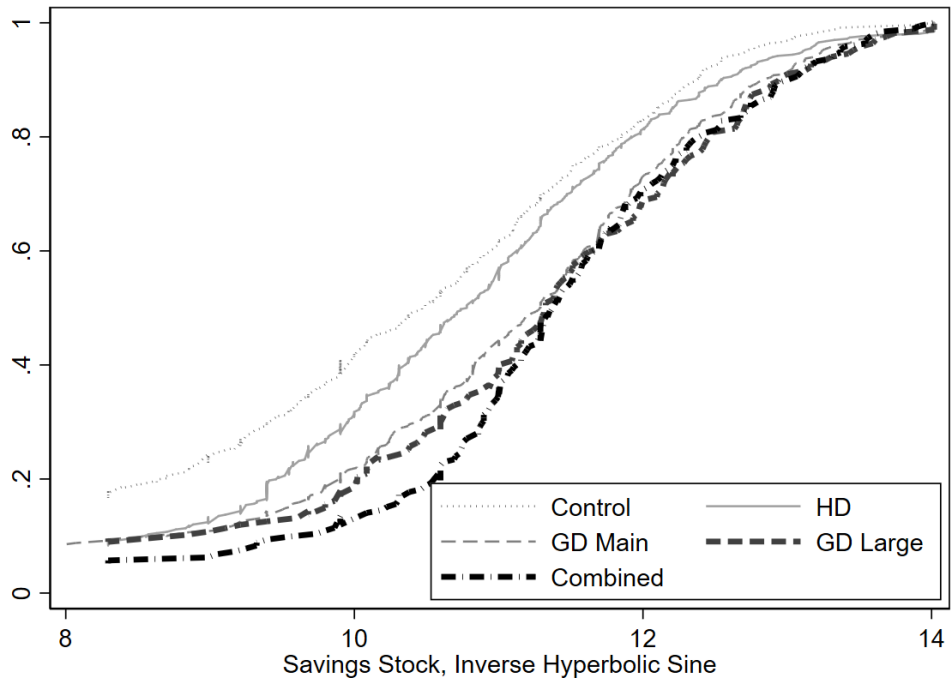
Figure A.3: CDF of Productive Hours
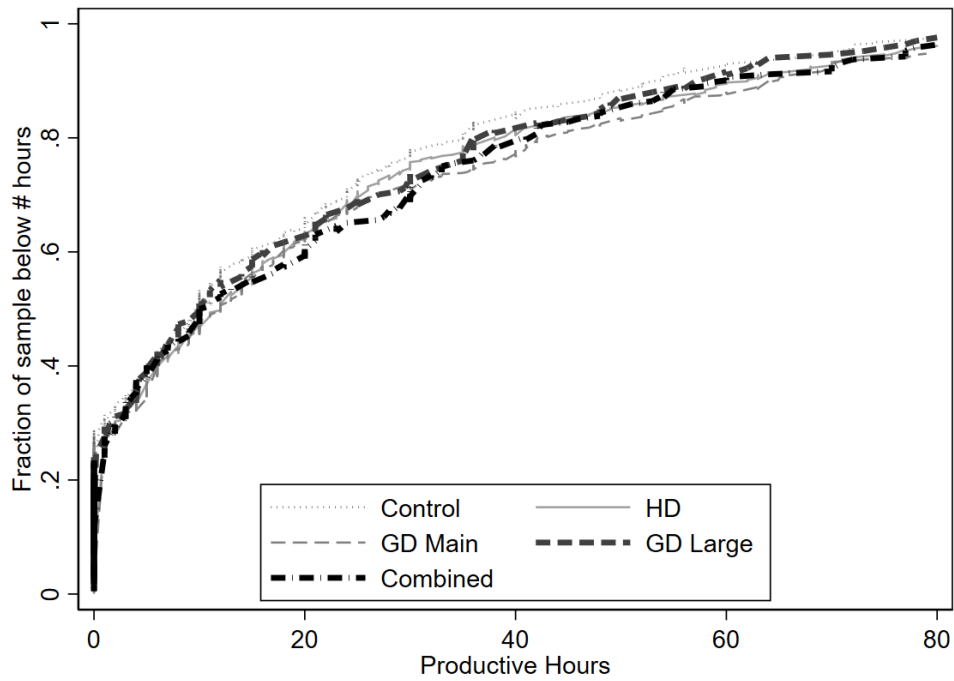
Figure A.4: Non-Ag Wage Employment, varying hours threshhold

Rates calculated in 5 hr increments from 5 (left) to 40 hrs/wk (right)
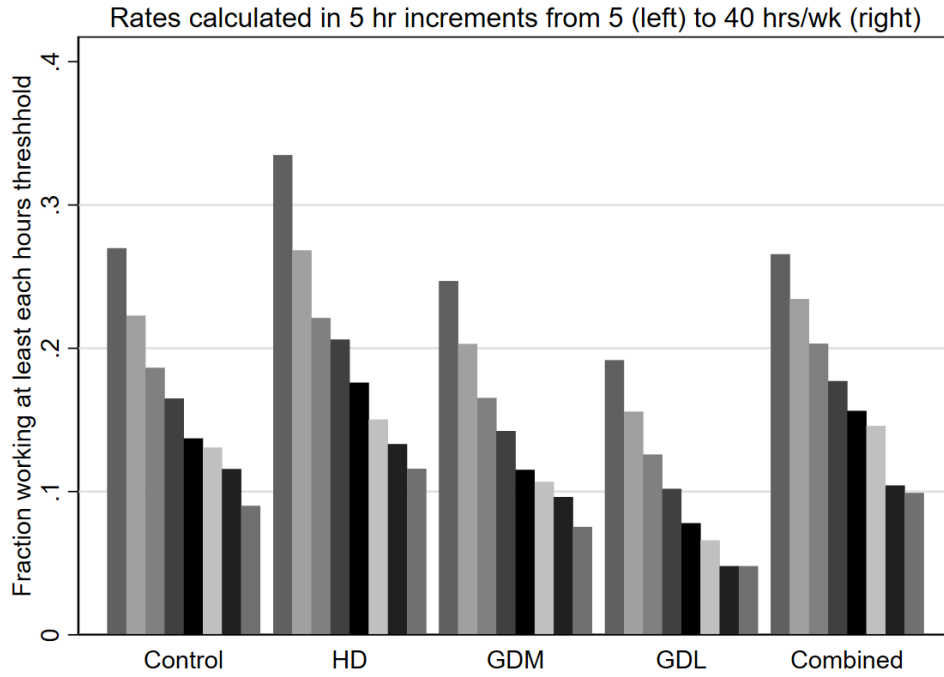
Figure A.5: Non-Ag Self Employment, varying hours thresholds

Rates calculated in 5 hr increments from 5 (left) to 40 hrs/wk (right)
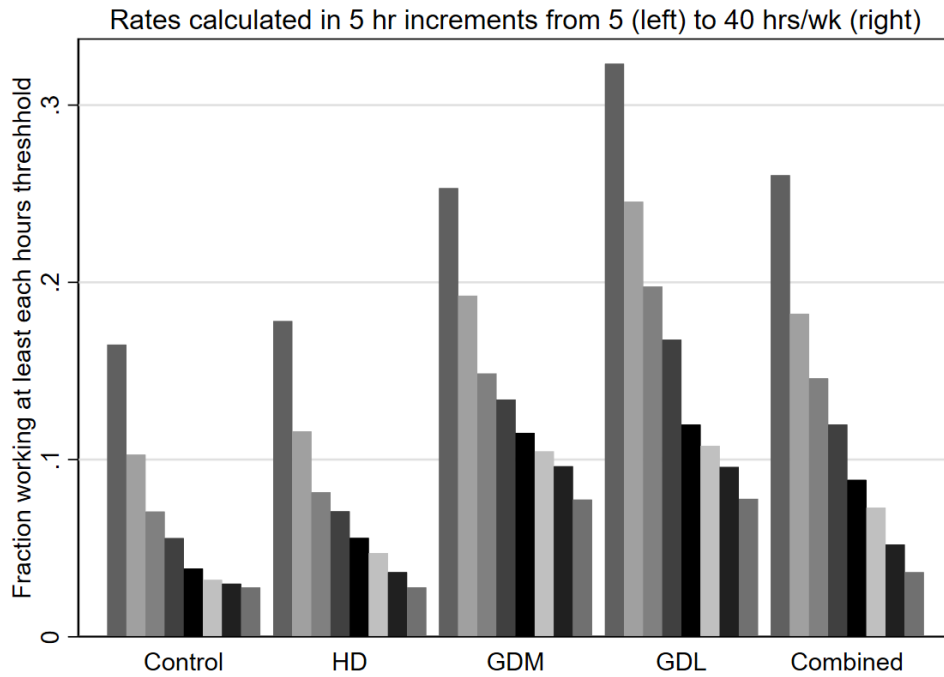
Figure A.6: Ag Wage Employment, varying hours thresholds

Rates calculated in 5 hr increments from 5 (left) to 40 hrs/wk (right)
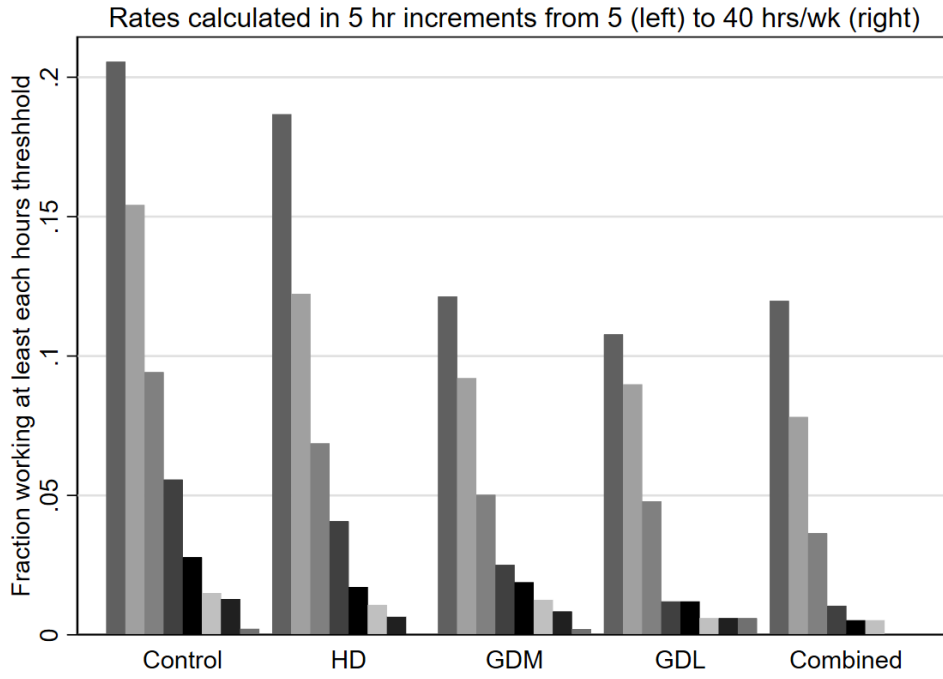
Figure A.7: Ag Self Employment, varying hours thresholds

Rates calculated in 5 hr increments from 5 (left) to 40 hrs/wk (right)
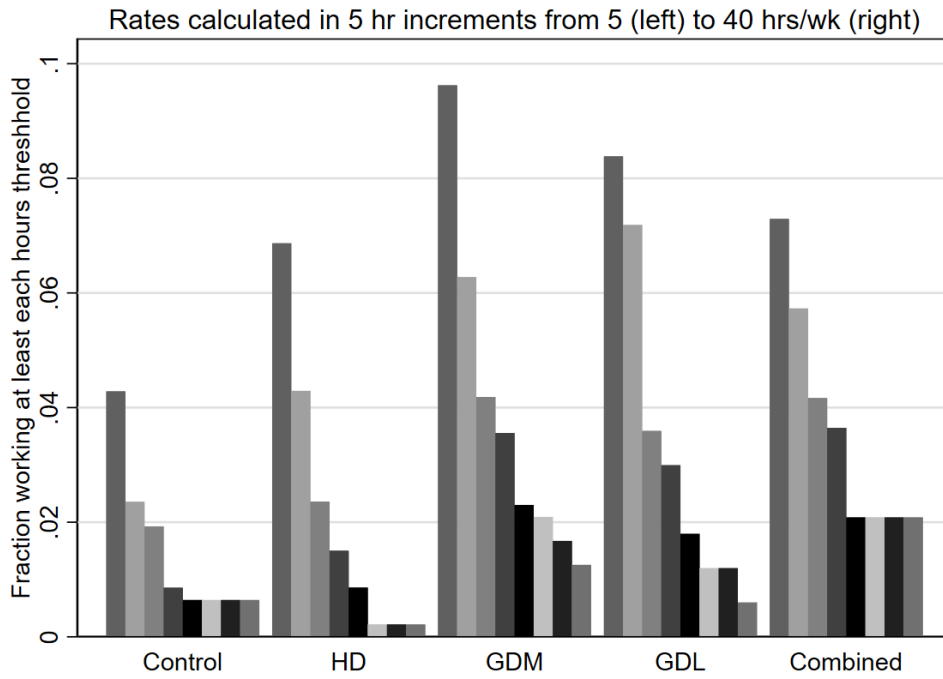
Figure A.8: Ag processing or trading Employment, varying hours thresholds
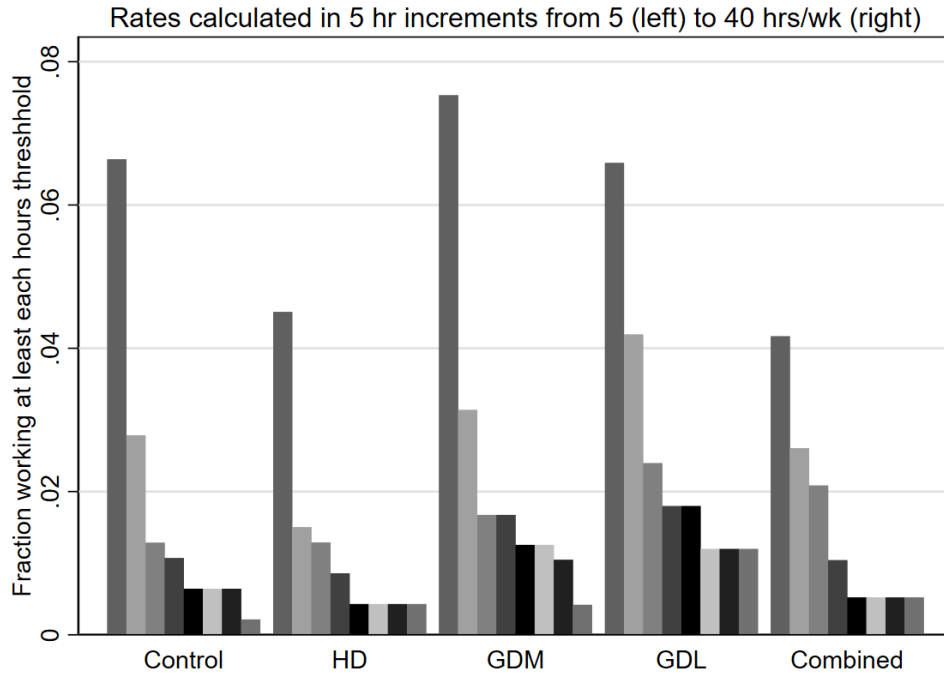
Figure A.9: Rolling Phone Survey: Monthly impacts on Productive Hours
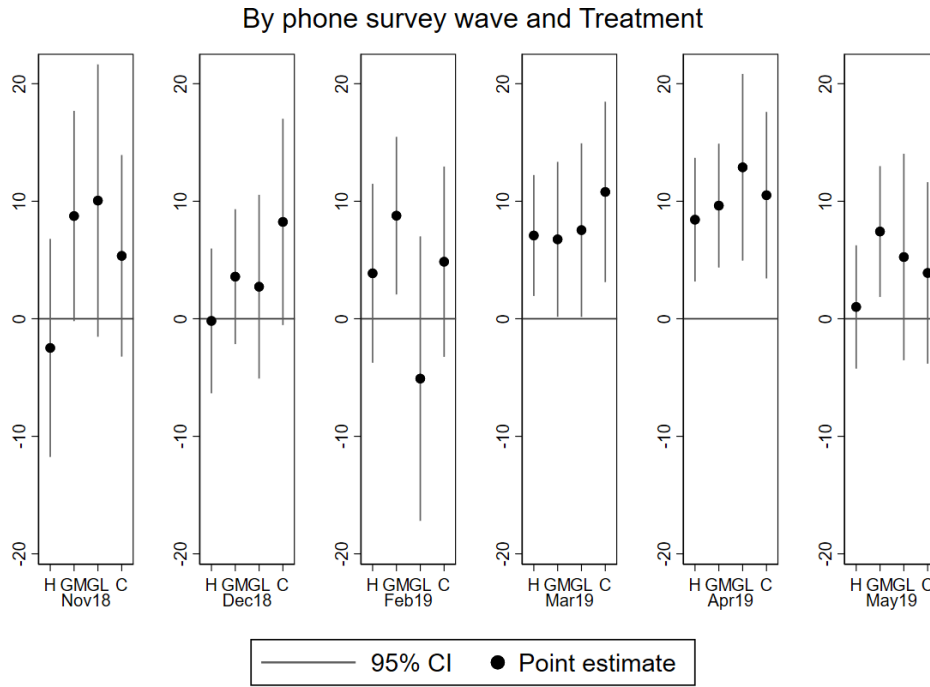
Figure A.10: Rolling Phone Survey: Monthly impacts on Apprenticeship Hours
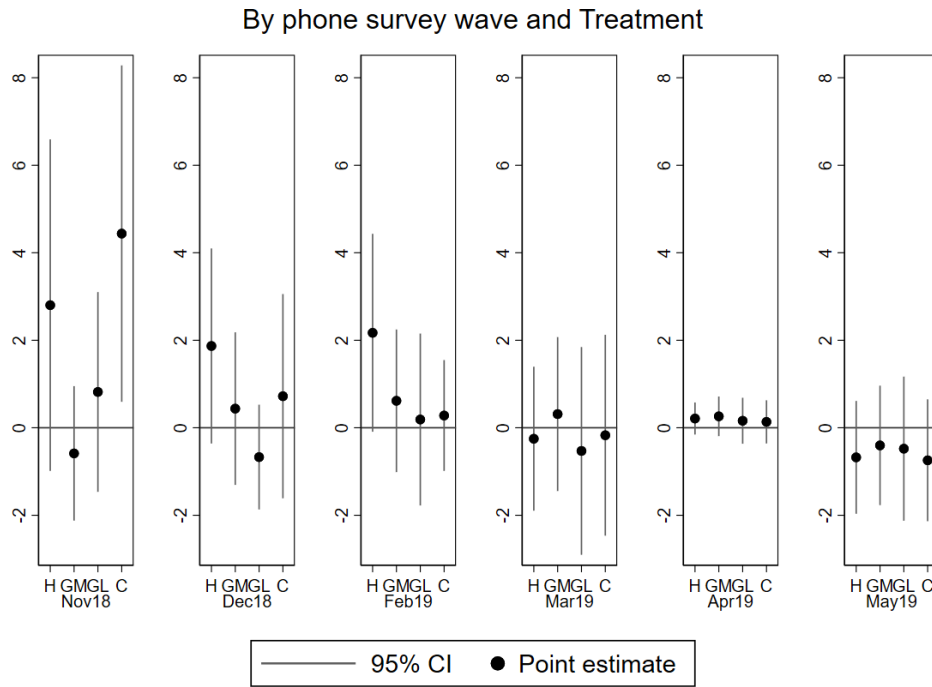
Figure A.11: Cost Equivalence on Secondary Outcomes
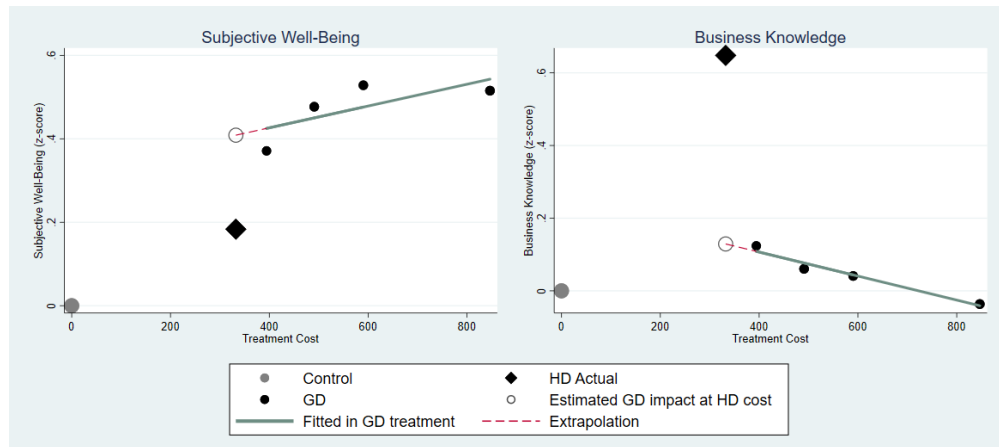
Figure A.12: Village-Level Treatment Saturations
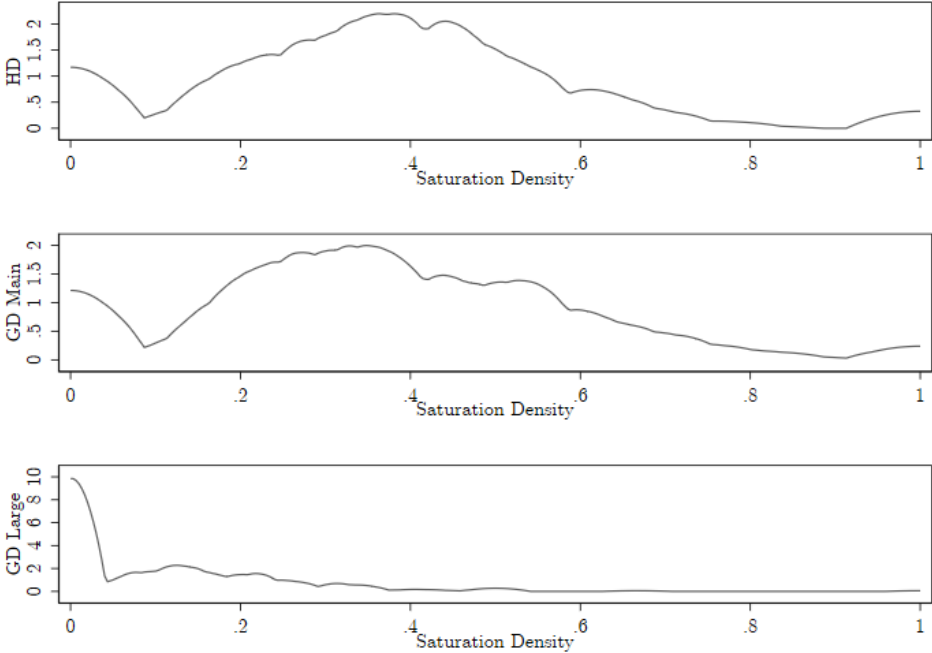
ONLINE APPENDICES

Appendix B Outcome definitions

Appendix B.1 Defining Primary outcomes

For each of the outcomes defined below, we provide a definition, followed by an explanation of how that measure will be constructed from survey data. Survey questions either begin with a 'B-' for the beneficiary instrument or a 'H-' for the household instrument, followed by the two-digit section number, followed by 'q' and the question number. These refer to the beneficiary and household instruments, respectively.[30]

There are five primary outcomes:

1. *Employment status.* A binary indicator variable taking a value of one if the beneficiary spent 10 hours or more in the prior week working in a wage job or as primary operator of a microenterprise. The 1 week recall is per ILO definition. Defined as 'Yes' if beneficiary spent 10 hours or more on any of the following activities:

   - Processing or trading of agricultural goods (`B02qagroprocesshrs`)
   - Agricultural (off farm) wage labor (`B02qfarmhours`)
   - Non-agricultural wage labor (`B02qnoagrichrs`)
   - Non-agricultural microenterprise (`B02qenterphrs`)
   - Microenterprise or other self employment (`B02qsemployhrs`).

2. *Off-own-farm productive time use.* Defined as the number of productive hours over the past 7 days. Sum of hours from questions:

   - Processing or trading of agricultural goods (`B02qagroprocesshrs`)
   - Agricultural (off farm) wage labor (`B02qfarmhours`)
   - Non-agricultural wage labor (`B02qnoagrichrs`)
   - Non-agricultural microenterprise (`B02qenterphrs`)
   - Microenterprise or other self employment (`B02qsemployhrs`)
   - Apprenticeship (`B02qapprenticehrs`)

3. *Beneficiary's (monthly) income.* Defined as the sum of the following monthly recall questions:

   - Agricultural own-farm income (`B02qagricearn`)
   - Agricultural wage income (`B02qfarmwage`)
   - Non-agricultural wage income (`B02qnoagricwage`)
   - Microenterprise profits (`B02qenterpwage` + `B02qsemploywage`);

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[30]In the electronic survey instrument, all variables begin with an 'm' prefix, but this notation does not guarantee uniqueness across instruments. Consequently for the purposes of this PAP we adopt the 'B-' and 'H-' convention above.

- Livestock rearing income (`B02qlivestockwage`)

- Agricultural processing and trading income (`B02qagroprocessearn`)

- Apprenticeship income (`B02qapprenticewage`)

This outcome will be winsorized at the 1st and 99th percentile, and we will take the inverse hyperbolic sine transformation of this as the primary measure.

4. *Productive assets* under beneficiary control. (Sum of asset values from beneficiary enterprise module that are reported as used in the beneficiary's business, Section `B05`: tools, machinery, furniture, inventories, and other physical assets.) This outcome will be winsorized at the 1st and 99th percentile, and we will take the inverse hyperbolic sine transformation of this as the primary measure.

5. *Household consumption* per capita. Sum of monthly purchase values of Section `H10`, divided by adult-equivalent household members. This outcome will be winsorized at the 1st and 99th percentile, and we will take the inverse hyperbolic sine transformation of this as the primary measure.

The first three of these primary outcomes provide direct measures of the extent to which a study participant is productively employed: their formal (non-farm) employment categorization, their productive time use, and their earnings. To the extent that these measures are potentially seasonal in nature, one might worry that interventions could differentially affect the sectoral composition of employment, and that differential seasonality across these would tip the scales in favor of one or the other mode of intervention. More broadly, income may be more fully measured in one sector relative to another. Such concerns are partly addressed by the inclusion of household consumption as a primary outcome: to the extent that beneficiaries smooth consumption, household consumption will be less susceptible to such concerns. In addition, we will include as a robustness check an analysis of impacts on a rolling panel of employment status measures, collected over the six months prior to the endline.

One potential challenge for the analysis of monetary outcomes (income, assets, and consumption) is that, if treatments induce migration, they may cause subjects to face different prices. Such differences in prices could cause the study to over- (or under-)state the the real value of estimated impacts. On the other hand, deflating values to control-group prices is not straightforward, for at least two reasons: study subjects may alter the *quality* of products purchased in ways not captured by the study, therefore giving the appearance of price impacts; and study subjects may earn incomes in more expensive locations but intend for part of that income may be consumed—by the subject themselves, or by family members to which they remit income—in their place of origin. To address these concerns, we will report as a robustness check an analysis of primary outcomes (3)–(5) that uses control-group prices to deflate these values. This will be particularly important to the interpretation of the study results if treatments have effects on migration.

Appendix B.2 Defining Secondary outcomes

We propose to analyze three families of secondary outcome: one which speaks to alternative measures of beneficiary welfare; a second that speaks to wealth effects that may indicate likely long-term benefits; and a third family that highlights key mechanisms of interest.

1. **Alternative measures of beneficiary welfare**

   Within this family, we consider the following alternative measures of beneficiary well-being:

   (a) Subjective well being: Index of responses to `B10_swb_happiness` and `B10_swb_lifesatisfaction`, constructed as the average of z-scores.

   (b) Mental health: Index of section `B11` responses. Z-score of the simple average across all questions for each beneficiary.

   (c) Beneficiary-specific consumption expenditures (sum of values from Section B08). This outcome will be winsorized at the 1st and 99th percentile, and we will take the inverse hyperbolic sine transformation of this as the primary measure.

2. **Household net wealth, and its components**

   Like productive assets, the accumulation and protection of household wealth. Conditional on this, households' access to borrowing opportunities—viewed as a measure of their financial access—may be a mechanism through which the interventions studied are multiplied. Given this welfare ambiguity, we propose to analyze both total household net (non-land) wealth, as well as stocks of savings and debt, taken individually.

   (a) Household net non-land wealth. Sum of values of household assets (`H12`), plus savings value (`H06`), value of loans outstanding that are expected to be repaid (`H08`), less debt value (`H07`). This outcome will be winsorized at the 1st and 99th percentile, and we will take the inverse hyperbolic sine transformation of this as the primary measure.

   (b) Total value of all livestock wealth. Sum of values of household livestock assets (`H12`). Specifically, summing over values derived from `H12_oxen` through `H12_ducks` in the household instrument. This outcome will be winsorized at the 1st and 99th percentiles, and we will take the inverse hyperbolic sine transformation of this as the primary measure.

   (c) Stock of savings. Beneficiary stock of savings, sum of values in `B06`. Plus household stock of savings from analogous questions (`H06`). This outcome will be winsorized at the 1st and 99th percentile, and we will take the inverse hyperbolic sine transformation of this as the primary measure.

   (d) Stock of debt. Beneficiary sum of borrowed amounts from all (formal and informal) sources (`B07`), plus household borrowings from analogous questions (`H07`). This outcome will be winsorized at the 1st and 99th percentile, and we will take the inverse hyperbolic sine transformation of this as the primary measure.

3. **Cognitive and non-cognitive skills**

   A specific feature of the theory of change that motivates EDC's curriculum is that a focus not just on specific skills, but on non-cognitive attitudes and attitudes, may make that intervention more likely to have persistent effects. At the same time, cash transfers may also change, inter alia, beneficiaries' sense of control and aspirations. To test these mechanisms, we define the following family of secondary outcomes:

   (a) Locus of control: Index of responses to `B09`. Z-score of the simple average across all questions for each beneficiary.

   (b) Aspirations: Index of responses to `B13`. Z-score of the simple average across all questions for each beneficiary.

   (c) Conscientiousness, agreeableness, and emotional stability from BFI (Section `B12`). Each index is the Z-score of the simple average of the questions related to the corresponding dimension. Following EDC's analysis of Akaze Kanoze employers,[31] we will examine program impacts on the three most highly-rated components of the Big-Five Index from employers' perspective: conscientiousness, agreeableness, and emotional stability.

   (d) Business knowledge. Index of `B14`. Z-score of the simple average across all questions for each beneficiary.

   (e) Business attitudes. Index of `B15`. Z-score of the simple average across all questions for each beneficiary.

Appendix C   Selection of Control Variables

In our pre-analysis plan, we state that control variables for the primary specification "will be selected on the basis of their ability to predict the primary outcomes". In doing so, we seek to build on recent developments that balance the challenge of using baseline data to select variables that will reduce residual variance in equation (1) with the danger that researcher freedom in the selection of control variables can lead to p-hacking, in which right-hand-side variables are selected specifically on the basis of the statistical significance of the coefficient of interest (Card and Krueger, 1995; Casey et al., 2012), thereby invalidating inference.

   To balance these concerns, we adapt the *post-double-selection* approach set forth in Belloni et al. (2014b, henceforth BCH). BCH advocate a two-step procedure in which, first, Lasso is used to automate the selection of control variables, and second, the post-Lasso estimator (Belloni et al., 2012) is used to estimate the coefficients of primary interest in Equation (1), effectively using Lasso as a model selection device but *not* imposing the shrunken coefficients that results from the Lasso estimates directly. Belloni et al. (2014b) demonstrate that this approach not only reduces bias in estimated treatment effects better than alternative approaches—less a concern given the successful

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[31]Povec Pagel, Olaru, Alcid, and Beauvy-Sany, 2017, "Identifying cross-cutting non-cognitive skills for positive youth development", Final report, Education Development Center, Inc.

randomization in our experiment—but that it may improve power while retaining uniformly valid inference.

In the first stage, model selection is undertaken by retaining control variables from the union of those chosen either as predictive of the treatment assignment or of the outcome. This model selection stage can be undertaken after residualizing to account for a set of control variables that the authors have a priori determined below in the model, as in Belloni et al. (2014a). In our case, we retain block fixed effects, lagged values of the outcome, and lagged values of (the inverse hyperbolic sine of) household wealth in all specifications, per our pre-analysis plan.

We modify the BCH approach for application to a randomized experiment in three ways. First, again following (Jones et al., 2019), for each outcome we choose the Lasso penalty parameter that minimizes the 10-fold cross-validated mean squared error. Second, to ensure that chance differences in the leverage of observations across different covariate sets do not lead to different conclusions about the (relative) impacts of treatment across different outcomes (Young, 2019), we take the union of covariate sets selected to be predictive of the five primary outcomes of the study, and use these as controls for all outcomes. And third, we modify the heteroskedasticity-robust Lasso estimator of Belloni et al. (2012) to incorporate sampling weights consistent with our design.[32]

The set of *potential* covariates is determined as follows:

- Baseline values of all primary outcomes, including the individual components of the employment status, productive time use, monthly income variables outlined in Section 2.8;

- Baseline values of all secondary outcomes,

- Baseline values of all dimensions of heterogeneity pre-specified in Section 3.4.

- The number of study participants (in any arm of the study) in an individual's village, which is defined as the measure of network 'degree' for each individual in the spillover analysis of Section 3.5.

All variables are normalized prior to inclusion in the selection routine, to have mean zero and variance of one in the baseline sample. We include squares of all continuous variables and all pairwise interactions among the potential covariates above, and between the potential covariates above and the set of variables that force the routine to include without penalty To ensure that sample size is not affected by the choice of covariates, we impute values of zero for all variables in the *potential* covariate list, and for each potential covariate we include an indicator for whether such an imputation was undertaken among the list of potential covariates to be fed into the BCH first-stage selection procedure.

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[32]Specifically, we up-weight observations in our 'intensive tracking' endline sample by the inverse of the fraction of not-initially-reached individuals in the follow-up survey who were then assigned to intensive tracking.

Appendix D Administrative Information

Appendix D.1 Funding

All research funding for this project was provided by USAID.

Appendix D.2 Details of Study Participant Selection

To meet the Huguka Dukore eligiblity criteria, participating youth must meet the following criteria:

- 6-12 years of basic education (inclusive).

- Age 16-30 at enrollment.

- Drawn from Ubudehe poverty groups 1 and 2, per GiveDirectly's remit from the Rwandan Government to treat only the poorest households with cash transfers.

Additionally, HD in its outreach specifically targeted the following criteria for inclusion, meaning that such youth will be specially recruited to participate:

- Out of school for three consecutive years

- Income of less than $1.75 per day

- Youth exhibiting some form of disability (that can be accommodated in HD programming)

- Women.

- Youth who have not benefited from related interventions in the past.

Hard eligibility criteria and targeted characteristics were provided to local government leaders, who provided lists of potential candidates to EDC. Those candidates were then invited to the information session and formally screened for eligibility.

All listing and determination of eligibility were conducted by EDC via an 'over-subscription' process. Under this protocol, EDC enrolled more eligible individuals than they were able to treat with HD, in order to generate the samples for the alternate (household grants) arm and the control. In the end we recruited 1848 study youth from approximately 250 villages in our 13 sectors, for an average of roughly 7.4 study individuals per village.

Below, we characterize the process for (over)subscription, which delivered the sample of individuals for the baseline.

1. **Sector-level meeting** to discuss HD with local leaders that introduced the study. In this meeting, sector officials were fully informed about the scope of the study, emphasizing the separateness of the two interventions and implementers.

2. **Announcement to the community** in public places (churches, community halls) or a meeting to engage potential beneficiaries. At this point only the HD program wsa described to beneficiaries, and with only general language about the household grants arm. Guiding language: *"We are pleased to be able to bring programming to this community that seeks to improve the livelihoods of vulnerable youth. To this end, we are requesting the names and contact details of youth meeting the following criteria: ¡insert eligibility criteria here¿. Participating youth should be willing and interested to join an employment skills program, called HD, that will provide training and work experience to participants."*

3. **Screening of youth** by the selection committee which produced the final list of potential beneficiaries that was passed to local implementing partners (IPs).

4. **Invitation of potential beneficiaries to an orientation meeting**. The language of this invitation reflected the fact that potential beneficiaries were not guaranteed places in HD, and might be randomly allocated to a different program or the control. Guiding language for official communication: *"We have determined that you are eligible for the Huguka Dukore program. There may be more eligible individuals than Huguka Dukore will treat this year, so you are not yet guaranteed a place, though some of those not treated by Huguka Dukore will be supported by another NGO. To find out more about the Huguka Dukore program and to take the next step toward this opportunity, please attend an orientation meeting at XXX on YYY date."*

5. **Orientation and awareness meeting** with selected youth by local IPs at which they are given further explanation about the program. In HD's other districts, these orientation meetings convey information about the scope of that program, under a presumption that those who participate in the orientation meeting can have a place in HD should they choose to take it up.

6. **Description of the lottery for program assignment.** The lottery is described during this meeting with reference to another intervention providing livelihoods assistance that will also be determined by the lottery. Guiding language: *"Today you have learned more about the Huguka Dukore program. This is one of two programs that are being delivered by distinct NGOs, in coordination with Sector and District officials, both of which seek to improve livelihoods for vulnerable youth. If you decide that you are interested in participating in one of these programs, there is one more step in the selection process. To participate, you must attest that you have the time and interest required to participate in Huguka Dukore. Your name will then be entered into a pool of applicants. There will be a public meeting in which a lottery will be used to determine which of these applicants receives a place in HD. You may attend this meeting if you wish, but you do not have to do so in order to gain a place. Not all whose names are entered into the lottery will be placed in HD. Some of those who participate in the lottery will be passed to a second NGO, which provides assistance to individuals seeking*

to improve their livelihoods. Those who receive a place in either program will be contacted directly by the relevant organization after the lottery. To gain access to either program, you must participate in this lottery. If you are willing to participate, please provide your name and contact details in writing. Prior to the lottery, you may be contacted by an independent research organization called Innovations for Poverty Action, who are conducting a survey of potential beneficiaries. You do not have to participate in this survey in order to gain access to our program, and participation will not affect your chances of enrollment. However, we would be grateful for your willingness to participate in an interview with IPA, which will help us to understand the design and impacts of our work.

7. **Registration for the lottery assignment.** To correctly reflect the lottery process to participants, they were told when asked to enroll in the study that it is "a lottery in which you will have a chance of receiving HD, a chance of receiving assistance from a different organization that gives household grants, and a chance that you do not receive either program." Individuals who do not choose to register for the study will not be excluded from receiving HD if they are eligible & choose to participate.