Online Appendix for "Hidden Income and the Perceived Returns to Migration" by Travis Baseler

Appendix A. Details on Sample

Table A1: Comparison of Experimental Sample to County Population

	Sample	Census	Difference (S–C)	P-Value
Male Head: Age	42.9	39.2	3.7	0.00
	(13.3)	(13.8)	(0.7)	
Male Head: Education (Years)	9.00	7.97	1.0	0.00
	(3.15)	(3.43)	(0.2)	
No Male Head	0.27	0.27	-0.0	0.64
	(0.44)	(0.45)	(0.02)	
Female Head: Age	37.4	35.4	2.0	0.00
	(12.1)	(13.7)	(0.6)	
Female Head: Education (Years)	8.02	6.95	1.1	0.00
	(3.06)	(3.41)	(0.1)	
No Female Head	0.046	0.075	-0.0	0.00
	(0.21)	(0.26)	(0.010)	
# Adults in Household	2.58	2.43	0.1	0.00
	(1.07)	(1.21)	(0.05)	
# Adults Aged 18–35 in Household	1.80	1.69	0.1	0.00
	(0.89)	(0.84)	(0.04)	
Number of Observations	497	15,237	15,734	

First two columns show means (standard deviations) within sample villages and the 2009 national 10% census, respectively. Third column shows differences in means (standard errors) and the fourth column shows the p-value from a two-sided t-test of equivalence of means. Census data includes all households with at least 1 member aged 18–35 in Bungoma County (where 81% of sampled households reside). Education top-coded at 13 years and age top-coded at 79 years to match census coding.

Table A2: ULM Experiment Randomization Balance (N=497 Families)

	Control (N=249)	Treatment (N=248)	Difference (C–T)	P-Value
Demographics				
Male Head: Age	42.2	43.4	-1.2	0.31
	(12.1)	(13.5)	(1.2)	
Male Head: Education (Years)	9.22	9.03	0.2	0.48
	(2.79)	(3.16)	(0.3)	
No Male Head	0.15	0.097	0.1	0.06
	(0.36)	(0.30)	(0.03)	
Female Head: Age	37.1	37.6	-0.5	0.62
	(11.8)	(12.2)	(1.1)	
Female Head: Education (Years)	7.95	8.16	-0.2	0.44
	(3.00)	(3.01)	(0.3)	
No Female Head	0.036	0.040	-0.0	0.81
	(0.19)	(0.20)	(0.02)	
# Adults in Family	3.84	4.01	-0.2	0.41
	(2.30)	(2.37)	(0.2)	
Monthly Earnings				
Male Head: Any Non-Farm Employment	0.56	0.60	-0.0	0.44
	(0.50)	(0.49)	(0.04)	
Male Head: Earnings Last Month	44.8	50.2	-5.5	0.55
	(88.3)	(112.9)	(9.1)	
Female Head: Any Non-Farm Employment	0.36	0.36	-0.0	0.97
	(0.48)	(0.48)	(0.04)	
Female Head: Earnings Last Month	13.3	13.8	-0.5	0.88
	(40.2)	(30.4)	(3.2)	
Saved Any Money Last Month	0.40	0.41	-0.0	0.76
	(0.49)	(0.49)	(0.04)	
Amount Saved Last Month	16.0	22.2	-6.1	0.37
	(41.2)	(98.6)	(6.8)	
Migration				
Ever Migrated to Big City	0.63	0.68	-0.0	0.27
	(0.48)	(0.47)	(0.04)	
Ever Migrated to Nairobi	0.41	0.45	-0.0	0.39
	(0.49)	(0.50)	(0.04)	
Ever Migrated to Kisumu	0.076	0.097	-0.0	0.42
	(0.27)	(0.30)	(0.03)	
Ever Migrated to Eldoret	0.19	0.14	0.0	0.15
	(0.39)	(0.35)	(0.03)	
Has Migrant in Big City	0.43	0.41	0.0	0.68
	(0.50)	(0.49)	(0.04)	
Has Migrant in Nairobi	0.20	0.17	0.0	0.43
	(0.40)	(0.38)	(0.04)	
Has Migrant in Kisumu	0.024	0.032	-0.0	0.58
	(0.15)	(0.18)	(0.01)	
Has Migrant in Eldoret	0.076	0.028	0.0	0.02
	(0.27)	(0.17)	(0.02)	

First two columns show means (standard deviations) within control and treatment groups, respectively. Third column shows differences (standard errors) between treatment and control means, and the fourth column shows the p-value from a two-sided t-test of equivalence of means. Income units are USD/month.

Table A3: Selection Into Migration at Baseline (N=2,557 Individuals)

	Non-Migrant (N=1,934)	Migrant (N=623)	Difference (N–M)	P-Value
Individual Characteristics				
Age (Years)	27.3	30.2	-3.0	0.00
	(14.1)	(11.1)	(0.6)	
Male = 1	0.44	0.52	-0.1	0.00
	(0.50)	(0.50)	(0.02)	
Single = 1	0.52	0.34	0.2	0.00
	(0.50)	(0.47)	(0.02)	
Education (Years)	8.46	10.0	-1.5	0.00
	(2.92)	(2.76)	(0.1)	
Earned Money Last Month	0.25	0.47	-0.2	0.00
	(0.44)	(0.50)	(0.02)	
Earnings, Last Month	14.5	39.1	-24.6	0.00
	(40.0)	(62.6)	(2.7)	
Household Characteristics				
Male Head: Age	47.0	46.8	0.2	0.76
	(13.2)	(14.2)	(0.6)	
Male Head: Education (Years)	8.84	9.25	-0.4	0.01
	(3.19)	(3.18)	(0.1)	
Female Head: Age	41.5	42.2	-0.7	0.21
	(12.0)	(13.0)	(0.6)	
Female Head: Education (Years)	7.74	7.55	0.2	0.22
	(3.06)	(3.47)	(0.2)	
# Adults in Family	4.90	5.30	-0.4	0.00
	(2.68)	(2.83)	(0.1)	
Male Head: Any Non-Farm Employment	0.52	0.51	0.0	0.76
	(0.50)	(0.50)	(0.02)	
Male Head: Earnings Last Month	47.8	47.6	0.1	0.98
	(114.9)	(111.2)	(5.2)	
Female Head: Any Non-Farm Employment	0.35	0.31	0.0	0.07
	(0.48)	(0.46)	(0.02)	
Female Head: Earnings Last Month	13.1	11.3	1.8	0.20
	(36.6)	(28.1)	(1.4)	
Saved Any Money Last Month	0.36	0.36	-0.0	0.84
	(0.48)	(0.48)	(0.02)	
Amount Saved Last Month	18.2	17.7	0.5	0.87
	(63.8)	(69.7)	(3.2)	

First two columns show means (standard deviations) for those who have never migrated to a big city and those who have, respectively. Third column shows mean differences (standard errors) between migrants and non-migrants, and the fourth column shows the p-value from a two-sided t-test of equivalence of means. *Big City* includes Nairobi, Kisumu, Eldoret, Bungoma, Kakamega, Busia, Kitale, Nakuru, and Mombasa. Income units are USD/month.

Table A4: Migration Patterns in ULM Experimental Sample From 2017–2019

	Location in January 2017			
	Home village	Nairobi	Other Big City	Other
% Migrating Over the Following Year to:				
Nairobi	0.06	0.72	0.13	0.08
Other Big City	0.07	0.06	0.59	0.08
Town	0.07	0.05	0.06	0.19
Village	0.05	0.06	0.09	0.15
% Migrating Over the Following Two Years to:				
Nairobi	0.11	0.81	0.21	0.13
Other Big City	0.10	0.15	0.69	0.12
Town	0.11	0.12	0.10	0.26
Village	0.09	0.11	0.17	0.31
Number of Observations	1,403	115	90	321

Each observation is an individual aged 18–70 as of 2017. *Migrating over the following year* includes either living in the destination as of 3/2018, or living there temporarily at some point between 1/2017 and 3/2018. For example, 5% of individuals residing in their home village as of 1/2017 migrated to Nairobi at some point that same year, and 68% of individuals residing in Nairobi as of 1/2017 were either living in Nairobi as of 3/2018, or left Nairobi after 1/2017, returned temporarily, and were outside Nairobi as of 3/2018. *Migrating over the following two years* includes either living in the destination as of 4/2019, or living there temporarily at some point between 1/2017 and 4/2019. *Other big city* includes 5 large cities in Kenya other than Nairobi: Kisumu, Eldoret, Mombasa, Nakuru, and Kitale. Column sums can exceed 100% of a person migrates to several destinations.

Table A5: Characteristics of Attriters at 1-Year Follow-Up

	Surveyed (N=485)	Attrited (N=12)	Difference (S–A)	P-Value
Demographics				
Male Head: Age	42.9	36.1	6.8	0.11
	(12.8)	(13.4)	(3.9)	
Male Head: Education (Years)	9.13	8.93	0.2	0.79
	(2.99)	(2.39)	(0.7)	
No Male Head	0.12	0.17	-0.04	0.71
	(0.33)	(0.39)	(0.1)	
Female Head: Age	37.4	34.8	2.6	0.48
	(12.0)	(12.2)	(3.6)	
Female Head: Education (Years)	8.05	8.09	-0.04	0.95
	(3.03)	(2.02)	(0.6)	
No Female Head	0.037	0.083	-0.05	0.59
	(0.19)	(0.29)	(0.08)	
# Adults in Family	3.94	3.25	0.7	0.19
	(2.35)	(1.66)	(0.5)	
Monthly Earnings				
Male Head: Any Non-Farm Employment	0.58	0.58	-0.004	0.98
	(0.49)	(0.51)	(0.2)	
Male Head: Earnings Last Month	47.9	33.1	14.8	0.23
	(102.3)	(37.5)	(11.8)	
Female Head: Any Non-Farm Employment	0.36	0.25	0.1	0.40
	(0.48)	(0.45)	(0.1)	
Female Head: Earnings Last Month	13.6	11.1	2.5	0.72
	(35.9)	(23.5)	(7.0)	
Saved Any Money Last Month	0.40	0.50	-0.10	0.53
	(0.49)	(0.52)	(0.2)	
Amount Saved Last Month	19.0	22.5	-3.5	0.83
	(76.0)	(53.5)	(15.8)	
Migration				
Ever Migrated to Big City	0.66	0.50	0.2	0.32
	(0.47)	(0.52)	(0.2)	
Ever Migrated to Nairobi	0.43	0.25	0.2	0.19
	(0.50)	(0.45)	(0.1)	
Ever Migrated to Kisumu	0.085	0.17	-0.08	0.48
	(0.28)	(0.39)	(0.1)	
Ever Migrated to Eldoret	0.17	0	0.2	0.00
	(0.38)	(0)	(0.02)	
Has Migrant in Big City	0.42	0.33	0.09	0.57
	(0.49)	(0.49)	(0.1)	
Has Migrant in Nairobi	0.19	0.083	0.1	0.24
	(0.39)	(0.29)	(0.09)	
Has Migrant in Kisumu	0.029	0	0.03	0.00
	(0.17)	(0)	(0.008)	
Has Migrant in Eldoret	0.054	0	0.05	0.00
	(0.23)	(0)	(0.01)	
Treatment Status				
Received Urban Info = 1	0.50	0.50	-0.001	0.99
	(0.50)	(0.52)	(0.2)	

First two columns show means (standard deviations) for those surveyed (directly or by proxy) at the 1-year follow-up and attriters, respectively, out of the 497 households in the ULM experimental sample. Third column shows mean differences (standard errors) between non-attriters and attriters, and the fourth column shows the p-value from a two-sided t-test of equivalence of means. *Big City* includes Nairobi, Kisumu, Eldoret, Bungoma, Kakamega, Busia, Kitale, Nakuru, and Mombasa. Income units are USD/month.

Table A6: Characteristics of Attriters at 2-Year Follow-Up

	Surveyed (N=454)	Attrited (N=43)	Difference (S–A)	P-Value
Demographics				
Male Head: Age	43.0	40.2	2.8	0.18
	(12.8)	(12.8)	(2.0)	
Male Head: Education (Years)	9.11	9.25	-0.1	0.76
	(2.99)	(2.83)	(0.5)	
No Male Head	0.12	0.16	-0.04	0.48
	(0.33)	(0.37)	(0.06)	
Female Head: Age	37.5	35.8	1.6	0.40
	(12.0)	(12.2)	(1.9)	
Female Head: Education (Years)	8.04	8.12	-0.08	0.86
	(3.03)	(2.74)	(0.4)	
No Female Head	0.035	0.070	-0.03	0.40
	(0.18)	(0.26)	(0.04)	
# Adults in Family	3.95	3.60	0.3	0.37
	(2.33)	(2.42)	(0.4)	
Monthly Earnings				
Male Head: Any Non-Farm Employment	0.59	0.51	0.07	0.36
	(0.49)	(0.51)	(0.08)	
Male Head: Earnings Last Month	48.9	33.3	15.6	0.14
	(104.3)	(59.7)	(10.3)	
Female Head: Any Non-Farm Employment	0.36	0.37	-0.01	0.89
	(0.48)	(0.49)	(0.08)	
Female Head: Earnings Last Month	13.0	19.7	-6.8	0.39
	(34.0)	(49.6)	(7.7)	
Saved Any Money Last Month	0.40	0.42	-0.02	0.85
	(0.49)	(0.50)	(0.08)	
Amount Saved Last Month	16.8	43.8	-27.1	0.41
	(44.0)	(214.1)	(32.7)	
Migration				
Ever Migrated to Big City	0.66	0.58	0.08	0.32
	(0.47)	(0.50)	(0.08)	
Ever Migrated to Nairobi	0.44	0.30	0.1	0.07
	(0.50)	(0.46)	(0.07)	
Ever Migrated to Kisumu	0.084	0.12	-0.03	0.53
	(0.28)	(0.32)	(0.05)	
Ever Migrated to Eldoret	0.17	0.16	0.002	0.97
	(0.37)	(0.37)	(0.06)	
Has Migrant in Big City	0.42	0.35	0.07	0.34
	(0.49)	(0.48)	(0.08)	
Has Migrant in Nairobi	0.19	0.14	0.05	0.36
	(0.39)	(0.35)	(0.06)	
Has Migrant in Kisumu	0.026	0.047	-0.02	0.55
	(0.16)	(0.21)	(0.03)	
Has Migrant in Eldoret	0.048	0.093	-0.04	0.34
	(0.21)	(0.29)	(0.05)	
Treatment Status				
Received Urban Info = 1	0.50	0.44	0.06	0.44
	(0.50)	(0.50)	(0.08)	

First two columns show means (standard deviations) for those surveyed (directly or by proxy) at the 2-year follow-up and attriters, respectively, out of the 497 households in the ULM experimental sample. Third column shows mean differences (standard errors) between non-attriters and attriters, and the fourth column shows the p-value from a two-sided t-test of equivalence of means. *Big City* includes Nairobi, Kisumu, Eldoret, Bungoma, Kakamega, Busia, Kitale, Nakuru, and Mombasa. Income units are USD/month.

Table A7: Characteristics of Attriters at 1-Year Phone Follow-Up

	Surveyed (N=309)	Not Surveyed (N=225)	Difference (S–N)	P-Value
Ever Migrated to Big City	0.41	0.34	0.07	0.10
	(0.49)	(0.47)	(0.04)	
Ever Migrated to Nairobi	0.16	0.15	0.01	0.71
	(0.37)	(0.35)	(0.03)	
Age (Years)	24.6	23.4	1.2	0.01
	(4.93)	(4.68)	(0.4)	
Male = 1	0.49	0.47	0.03	0.57
	(0.50)	(0.50)	(0.04)	
Single = 1	0.59	0.64	-0.05	0.24
	(0.49)	(0.48)	(0.04)	
Education (Years)	10.7	10.5	0.2	0.33
	(2.18)	(2.44)	(0.2)	
Earned Money Last Month	0.36	0.32	0.04	0.29
	(0.48)	(0.47)	(0.04)	
Earnings, Last Month	31.4	21.2	10.3	0.02
	(58.2)	(46.6)	(4.5)	
Received Urban Info = 1	0.48	0.50	-0.02	0.67
	(0.50)	(0.50)	(0.04)	

All variables measured at baseline. First two columns show means (standard deviations) for those surveyed by phone at the 1-year follow-up and those who were sampled but could not be reached, respectively, out of the 460 households in the ULM experimental sample that were surveyed at the 1-year follow-up. Third column shows mean differences (standard errors) between surveyed and non-surveyed individuals, and the fourth column shows the p-value from a two-sided t-test of equivalence of means. *Big City* includes Nairobi, Kisumu, Eldoret, Bungoma, Kakamega, Busia, Kitale, Nakuru, and Mombasa. Income units are USD/month.

Table A8: Characteristics of Attriters at 2-Year Phone Follow-Up

	Surveyed (N=192)	Not Surveyed (N=100)	Difference (S–N)	P-Value
Ever Migrated to Big City	0.52	0.39	0.1	0.04
	(0.50)	(0.49)	(0.06)	
Ever Migrated to Nairobi	0.23	0.17	0.06	0.19
	(0.42)	(0.38)	(0.05)	
Age (Years)	24.4	23.7	0.6	0.26
	(4.79)	(4.63)	(0.6)	
Male = 1	0.47	0.41	0.06	0.30
	(0.50)	(0.49)	(0.06)	
Single = 1	0.63	0.61	0.02	0.74
	(0.48)	(0.49)	(0.06)	
Education (Years)	10.8	10.5	0.2	0.50
	(2.26)	(2.65)	(0.3)	
Earned Money Last Month	0.36	0.37	-0.01	0.86
	(0.48)	(0.49)	(0.06)	
Earnings, Last Month	32.6	28.7	3.9	0.57
	(59.1)	(53.8)	(6.9)	
Received Urban Info = 1	0.49	0.51	-0.02	0.81
	(0.50)	(0.50)	(0.06)	

All variables measured at baseline. First two columns show means (standard deviations) for those surveyed by phone at the 2-year follow-up and those who were sampled but could not be reached, respectively, out of the 460 households in the ULM experimental sample that were surveyed at the 1-year follow-up. Third column shows mean differences (standard errors) between surveyed and non-surveyed individuals, and the fourth column shows the p-value from a two-sided t-test of equivalence of means. *Big City* includes Nairobi, Kisumu, Eldoret, Bungoma, Kakamega, Busia, Kitale, Nakuru, and Mombasa. Income units are USD/month.

Table A9: Summary of Attrition in the ULM Experiment

	Control	Treatment	Difference (C–T)	P-Value
1-Year Follow-Up				
Direct Household Survey	0.08	0.07	0.01	0.62
Direct or Indirect Household Survey	0.02	0.02	-0.00	0.99
Phone Survey	0.41	0.43	-0.02	0.64
2-Year Follow-Up				
Direct Household Survey	0.12	0.12	0.00	0.90
Direct or Indirect Household Survey	0.10	0.08	0.02	0.43
Phone Survey	0.34	0.35	-0.01	0.83

Each cell shows an attrition rate. Attrition rate is the number of completed surveys divided by the number of sampled units. Direct household surveys were attempted in person for all 497 households in the ULM experimental sample. Indirect household surveys were completed in person when the household could not be reached, and included only a subset of outcomes such as migration status and earnings (but not remittances, savings, expenditure, or subjective well-being). Phone surveys were attempted for individuals with phone numbers aged 18–35 who are not household heads at the 1-year follow-up, and individuals with phone numbers aged 18–35 who are not household heads and were currently urban migrants at the 2-year follow-up. P-values computed from a two-sided t-test of equivalence of means.

Table A10: Correlates of Hidden Income Predictors

	Expected Remittance Share	Migrant Can't Share Remit Burden = 1	Villager Socially Close to Migrant's Family = 1
Villager Characteristics			
Lives at Migrant's Origin Household = 1			0.123
Education (Years)			
Age (Years)			0.004
Female = 1			
Married = 1			
Has Migrated to Big City = 1			
Has Migrated to Nairobi = 1			
Employed = 1			
Earnings Last Month (USD)			
Migrant's Remittances to Origin Household (USD/month)		-0.017	
Migrant Characteristics			
Education (Years)			
Age (Years)			
Female = 1			
Married = 1			
Lives in Big City			
Lives in Medium City			
Years in Current City			
Commute Time Between Residence and Job (Minutes)			
Number of Job Changes in Past Year			
Employed = 1			
Uses Improved Toilet = 1			
Uses Improved Water Source = 1			
Uses Improved Fuel Source = 1			
Recent Experienced Safety Issue in City = 1			
Recently Injured = 1			
Recently Had Financial Emergency = 1			
Speaks with Origin Household Frequently = 1			
Number of Observations	510	510	510

Each observation is a migrant-villager pair (villagers include parents, neighbors, and friends who reside in the origin village). Currency units are USD/month. Each column shows estimates from a post-LASSO regression (Belloni and Chernozhukov, 2013) of a hidden income predictor on a set of 40 controls (occupation fixed effects and treatment and survey-round dummies not shown). Lasso penalty loadings account for two-way clustering at the migrant and villager level.

Appendix B. Details on Experimental Design

Figure B1: Information Sheets (Translated)

KISUMU

The average worker in Kisumu earned two **2** **times as much as the average worker in Bungoma Town**

Men in Kisumu earned two 2 times as much as men in Bungoma Town

Women in Kisumu earned four 4 times as much as women in Bungoma Town

Workers without primary education in Kisumu earned two and a half 2.5 times as much as workers without primary education in Bungoma Town

MOST COMMON JOBS FOR MIGRANTS IN KISUMU

1. Farm hands
2. Cooks, waiters, and bartenders
3. Street vendors

Migrants in these types of jobs earned
1.5 times as much
in Kisumu as in Bungoma Town

For every 100 migrants in Kisumu:
- 80 had jobs within the past week
- 55 were employed in the formal sector within the past week

Food is more expensive in Kisumu. It costs 22% more than in Bungoma Town to buy the same amount of food

ELDORET

The average worker in Eldoret earned two and a half **2.5** **times as much as the average worker in Bungoma Town**

Men in Eldoret earned two **2** times as much as men in Bungoma Town

Women in Eldoret earned three **3** times as much as women in Bungoma Town

Workers without primary education in Eldoret earned three and a half **3.5** times as much as workers without primary education in Bungoma Town

MOST COMMON JOBS FOR MIGRANTS IN ELDORET

1. Shop assistants and demonstrators
2. Sales and services workers
3. Housekeepers, cooks, caterers, and waiters

Migrants in these types of jobs earned
1.5 times as much
in Eldoret as in Bungoma Town

For every 100 migrants in Eldoret:
- 68 had jobs within the past week
- 53 were employed in the formal sector within the past week

Food is more expensive in Eldoret. It costs 28% more than in Bungoma Town to buy the same amount of food

Figure B2: Information Script (Translated)

Script for Nairobi Sheet:

I would now like to tell you about the findings from our research on jobs in different Kenyan cities. We have been looking specifically at Nairobi, Kisumu, and Eldoret. I'm going to tell you information on what types of jobs people typically obtain and how much they earn. The goal is for this information to help you make the best possible decisions about where to find the highest paying jobs. However, the best data available is from 2006, so please keep in mind that conditions may have changed since then. Also please keep in mind that the information I give you will be correct for most people, but some people will have better results and some people will have worse results.

Here is a summary of our findings on Nairobi. I'll leave these pages with you after the survey, so you don't need to remember any of the numbers right now. I'm going to go through it and explain it to you. Stop me at any point if something doesn't make sense.

The average worker in Nairobi earned 4 times as much as the average worker in Bungoma Town each month. This includes wages from jobs as well as profits from businesses. That's like 400 shillings instead of 100 shillings.

These numbers are slightly different for men and for women. Men in Nairobi earned 3 times as much as men in Bungoma Town. Women in Nairobi earned 6 times as much as women in Bungoma Town.

However, many people in Nairobi have more job experience and education than people in Bungoma Town. So we wanted to find out whether even people without very much education were earning more money in Nairobi. What we found is that people who did not graduate from primary school earned 4 and a half times as much in Nairobi as in Bungoma Town.

As I mentioned, we also did research on the types of jobs available in Nairobi. We focused only on migrants, that is, on people who had moved to Nairobi from a different province in Kenya within the last 5 years. We found that the 3 most common types of jobs that migrants had were: first, cleaners, launderers, and domestic workers; second, messengers, porters, and watchmen; and third, street vendors. Migrants who worked in these types of jobs earned 1 and a half as much as people working the same types of jobs in Bungoma Town. That's like 150 shillings instead of 100.

We also wanted to find out how many migrants were able to find employment after they moved to Nairobi. What we found is that, for migrant adults who were not students, 70% had some type of work within the last week, including 50% who had a formal sector job. That means that for every 100 migrants in Nairobi, 70 had earned money from working in the past week, and 50 of those earned that money in a formal sector job.

Although people in Nairobi earn more money, they also have to spend more because things are more expensive there. We wanted to find out exactly how much more people there have to spend on food. What we found is that, to buy the same amount of food that a typical household in Bungoma Town buys, a household in Nairobi would have to spend 58% more. So, for example, they would have to spend 1580 Ksh to buy the same food that a family in Bungoma Town would only spend 1000 shillings on.

Script for Kisumu Sheet:

We also did research on Kisumu. The average worker in Kisumu earned 2 times as much as the average worker in Bungoma Town each month. This includes wages from jobs as well as profits from businesses. That's like 200 shillings instead of 100 shillings.

Men in Kisumu earned 2 times as much as men in Bungoma Town. Women in Kisumu earned 4 times as much as women in Bungoma Town.

Looking only at people who did not graduate from primary school, they earned 2 and a half times as much in Kisumu as in Bungoma Town.

The 3 most common types of jobs that migrants had were: first, farm hands; second, cooks, waiters, and bartenders; and third, street vendors. Migrants who worked in these types of jobs earned 1 and a half times as much as people working the same types of jobs in Bungoma Town. That's like 150 shillings instead of 100.

What we found is that, for migrant adults who were not students, 80% had some type of work within the last week, including 55% who had a formal sector job. That means that for every 100 migrants in Kisumu, 80 had earned money from working in the past week, and 55 of those earned that money in a formal sector job.

People in Kisumu also have to spend more on food. To buy the same amount of food that a typical household in Bungoma Town buys, a household in Kisumu would have to spend 22% more. So, for example, they would have to spend 1220 Ksh to buy the same food that a family in Bungoma Town would only spend 1000 shillings on.

Script for Eldoret Sheet:

The last city we researched was Eldoret. The average worker in Eldoret earned 2 and a half times as much as the average worker in Bungoma Town each month. This includes wages from jobs as well as profits from businesses. That's like 250 shillings instead of 100 shillings.

Men in Eldoret earned 2 times as much as men in Bungoma Town. Women in Eldoret earned 3 times as much as women in Bungoma Town.

Looking only at people who did not graduate from primary school, they earned 3 and a half times as much in Eldoret as in Bungoma Town.

The 3 most common types of jobs that migrants had were: first, shop assistants and demonstrators; second, sales and services workers; and third, housekeepers, cooks, waiters, and bartenders. Migrants who worked in these types of jobs earned 1 and a half times as much as people working the same types of jobs in Bungoma Town. That's like 150 shillings instead of 100.

What we found is that, for migrant adults who were not students, 68% had some type of work within the last week, including 53% who had a formal sector job. That means that for every 100 migrants in Eldoret, 68 had earned money from working in the past week, and 53 of those earned that money in a formal sector job.

People in Eldoret also have to spend more on food. To buy the same amount of food that a typical household in Bungoma Town buys, a household in Eldoret would have to spend 28% more. So, for example, they would have to spend 1280 Ksh to buy the same food that a family in Bungoma Town would only spend 1000 shillings on.

Measurement of Statistics for Information Treatments

The information sheets provided in the ULM experiment contained statistics in three categories: earnings, employment, and prices. Earnings and price statistics were expressed in ratios relative to Bungoma Town, the urban center nearest to households in the sample.

Earnings. Earnings are measured as mean net non-farm income, including wages earned from formal work and casual labor (measured at the individual level) and per-capita earnings from household enterprises, and transfers. That is, to measure average income in city c using data from a sample of N_c individuals i living in households h of size N_h, I computed among adults aged 18–70 living in city c:

$$\text{Income}_c = \frac{1}{N_c} \sum_i \left(W_i + \frac{1}{N_h}(E_h + T_h) \right)$$

where,

$W_i =$ Individual earnings from formal work and casual labor

$E_h =$ Household earnings from enterprises

$T_h =$ Total household-level inbound transfers from governments, NGOs, remittances

Employment. The employment rate for migrants who had arrived in city c within the past five years is measured as the share of the population aged 18–70, excluding full time students, who earned money from work in the week prior to the interview. This includes

money earned in the formal and informal sector.

A migrant is coded as employed in the formal sector if their primary occupation was at a firm, and as employed in the informal sector if their primary occupation was at a family-owned business or casual labor.

Prices. To inform respondents about price differences across cities, I calculated prices of a fixed basket of goods for each city. The fixed basket was the average household-level monthly food consumption in Bungoma. This price index is the cross-city analog of the Laspeyres index. Specifically, to obtain the price ratio $Ratio_{DB}$ between a destination (denoted by D) and Bungoma (denoted by B), using data on consumption quantities x and unit prices p of items j in households h, I measured:

$$\text{Ratio}_{DB} = \frac{\sum_j p_j^D x_j^B}{\sum_j p_j^B x_j^B}$$

where,

$$p_j^c = \frac{\sum_{h \in B} p_{jh}^c x_{jh}^c}{\sum_{h \in c} x_{jh}^c}$$

and,

$$\text{and } x_j^c = \sum_{h \in c} x_{jh}^c$$

for $c \in \{D, B\}$.

The information shared in the MR experiment was computed from data collected during the 6-month follow-up survey with household heads and phone surveys with migrants. The true and perceived remittance shares are computed respectively as

$$RemitShare = \frac{\frac{1}{N}\sum_i R_i}{\frac{1}{N}\sum_i Y_i} \quad ; \quad PerceivedShare = \frac{\frac{1}{N}\sum_i R_i}{\frac{1}{N}\sum_i \widehat{Y}_i}$$

where R_i is remittances from the migrant to the origin household from January–July 2017,[1] Y_i is the migrant's self-reported income over the same time period, $\widehat{Y}_i$ is the migrant's income as reported by the household head over the same time period, and i indexes over migrants who were in Nairobi during that time (who may or may not have returned home by the time of the survey). I estimate $RemitShare = 0.04$ and $PerceivedShare = 0.11$.[2]

[1] Remittances are any cash sent from the migrant to the origin family over the reference period including estimated cash values of in-kind transfers.

[2] An alternative method to compute *RemitShare* would be to take the average share across individuals.

Measurement of Perceived Income

To measure beliefs about incomes in Kenyan cities, shown in Figure 1, respondents were asked two questions about a typical person's earnings in the city, and about how many months out of a typical year they were employed. The questions were, "Now, I would like you to think about people living in $CITY. Think not just about people you might know personally, but all people in $CITY. How much do you think they earn in a typical week, month, or year?" and "On average, for how many months out of a year do you think people in $CITY are able to find employment?". I compute perceived income as the product of the two answers, after converting weekly or yearly income to monthly income and dividing the the number of months employed by 12 to produce a share.

To measure beliefs about food prices, respondents were asked, "If your whole household lived in $CITY, how much do you think you would have to spend to buy the same amount of food that your household ate in the past week (7 days)?".

KIHBS Sampling Details

The Kenya Integrated Household Budget Survey (KIHBS) sample contains 13,430 households in 1,343 clusters. Clusters were chosen from an 1,800-cluster master sample based on the 1999 Population and Housing Census. The master sample was constructed from 136 strata (the urban and rural sections of each of Kenya's 69 districts, except in Nairobi and Mombasa, which are wholly urban). The clusters were selected from the master sample with equal probability within each stratum.[3] In each cluster, 10 households (and a further five for replacing households that could not be interviewed) were randomly picked. A total of 13,430 households (8,610 rural and 4,820 urban) spread over all districts in Kenya were interviewed between May 2005 and May 2006.

This method gives $RemitShare = 0.033$ and $PerceivedShare = 0.07$.

[3]Six exceptions were made for the districts that contain urban areas qualified as municipalities. In these districts, the urban part of the sample was further stratified into six groups (five socio-economic classes in the municipality itself and other urban areas in the district).

Appendix C. Details on Bayesian Learning Model

I present here the technical details of the model in Section 4. Recall the migrant's problem:

$$\max_s U(s) = y - \frac{1}{2}\phi(y-s)^2 - (1-\alpha)\kappa s. \tag{1}$$

Model Setup

Let the migrant's income be drawn each period t from a normal distribution F with mean μ and variance σ^2. The origin family knows σ^2 but not μ, and has prior beliefs over μ given by $N(\widehat{\mu}_0, \sigma_0^2)$, with the hatted notation denoting beliefs. The family's prior belief that its migrant is honest is $\widehat{\alpha}_0 \in [0,1]$. Let $\widehat{\mu}_t$, σ_t, and $\widehat{\alpha}_t$ for $t = 1, ..., T$ denote the series of posterior beliefs for average income in the city, the standard deviation of those beliefs, and the probability that the migrant is honest, respectively. Each period the family receives an income report s_t from the migrant. It updates its belief about μ using the expected value of y_t given s_t and its prior belief about α. It then updates its belief about α using Bayes' rule. I abstract from intertemporal strategic considerations by assuming that κ and ϕ are exogenous and that the migrant optimizes his objective function period-by-period. For the remaining discussion, I assume that the migrant is strategic ($\alpha = 0$).

In short, the model proceeds in four steps each period:

1. The migrant draws an income y_t from F.
2. The migrant decides on an income report s_t to send to his family by solving (1) taking y_t, ϕ, κ, and α as given.
3. The family computes σ_t and $\widehat{\mu}_t$ taking $\widehat{\alpha}_{t-1}$, $\widehat{\mu}_{t-1}$, σ_{t-1}, and σ as given.
4. The family computes $\widehat{\alpha}_t$ taking $\widehat{\mu}_t$, σ, and $\widehat{\alpha}_{t-1}$ as given.

Intertemporal Dynamics of Beliefs

Let $\Delta_t \equiv \frac{\widehat{\alpha}_t}{\widehat{\alpha}_{t-1}}$. Then

$$\Delta_t = \frac{\widehat{f}(s_t)}{\widehat{f}(s_t)\widehat{\alpha}_{t-1} + \widehat{f}(s_t + \kappa/\phi)(1-\widehat{\alpha}_{t-1})}$$

and so,

$$\begin{aligned} Pr(\Delta_t > 1) =& Pr\left(\widehat{f}(s_t) > \widehat{f}(s_t + \kappa/\phi)\right) \\ =& Pr\left(s_t > \widehat{\mu}_t - \frac{\kappa}{2\phi}\right) = 1 - \Phi\left(\widehat{\mu}_{t-1} - \frac{\kappa}{2\phi} + \frac{\widehat{\sigma}_{t-1}^2}{\sigma^2}\left(\frac{\kappa}{2\phi} - \frac{\kappa}{\phi}\widehat{\alpha}_{t-1}\right)\right) \end{aligned}$$

where $\Phi(.)$ is the cumulative distribution function of $N(\mu-(1-\alpha)\kappa/\phi,\sigma^2)$, and the second to last step follows from the monotonicity of $\widehat{f}(s_t)$ in $|s_t-\widehat{\mu}_t|$. It is clear that $Pr(\Delta_t>1)$ is strictly increasing in $\widehat{\alpha}_{t-1}$ everywhere.

Figure C1: Phase Diagrams of Beliefs About the Migrant's Type α

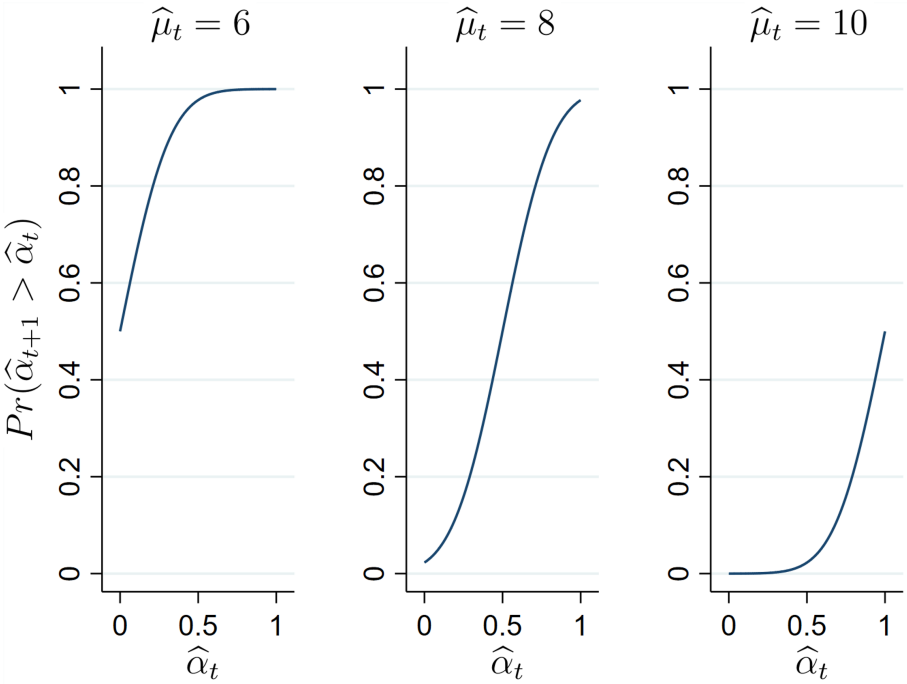


Figure C1 shows phase diagrams for $\widehat{\alpha}_t$. The family's beliefs form a path-dependent system that is self-reinforcing: an increase (decrease) in $\widehat{\alpha}_t$ makes future increases in $\widehat{\alpha}_t$ more (less) likely.[4] As a result, beliefs tend toward one of the two boundaries at which the origin family is certain of its migrant's type. Which outcome is realized depends on initial conditions and chance fluctuations near the beginning of the process. This problem is closely related to a class of self-reinforcing random processes including technological lock-in (Arthur, Ermoliev and Kaniovski, 1987; Arthur, 1989) and Pólya urns (Hill, Lane and Sudderth, 1980; Pemantle, 2007). Given convergence of $\widehat{\alpha}_t$ to 0 or 1, the problem simplifies into a simple Bayesian learning process in which the family is receiving signals from a distribution $N(\mu,\sigma^2)$ or $N(\mu-\kappa/\phi,\sigma^2)$ respectively. As such, beliefs $\widehat{\mu}_t$ will converge

[4]This operates through two channels. First (within period), a high $\widehat{\alpha}_{t-1}$ decreases the expected value of the migrant's income given his report, leading $\widehat{\mu}_t$ to fall, which makes the report s_t appear more truthful that period (this generates the upward slopes in Figure C1). Second (across periods), the fall in $\widehat{\mu}_t$ makes reports s_{t+1} appear more truthful the following period for all values of $\widehat{\alpha}_t$ (this generates the shift across panels in Figure C1).

to the truth μ if and only if the family recognizes that its migrant is strategic. Otherwise, beliefs converge to the average lie, $\mu - \kappa/\phi$.

Simulations (Figure 3)

This section presents the methodology behind the simulations shown in Figure 3 of the main paper. I fix exogenous parameters at $\mu = 10$, $\sigma = 1$, $\kappa = 0.4$, $\phi = 0.1$, $\alpha = 0$, and $\widehat{\sigma}_0 = 1$. For each simulation, I:

1. Draw the migrant's income y_t from $N(\mu, \sigma^2)$.

2. Assume the migrant is strategic ($\alpha = 0$) and compute the optimal income report $s = y - \kappa/\phi = y - 4$.

3. Compute the family's posterior beliefs about urban income using $\bar{y}_t$, the expected value of y given $\widehat{\alpha}_{t-1}$ and s_t[5]:

$$\bar{y}_t = \widehat{\alpha}_{t-1} \times s_t + (1 - \widehat{\alpha}_{t-1}) \times (s_t + \kappa/\phi)$$
$$\widehat{\sigma}_t = \left(\sigma^{-2} + \widehat{\sigma}_{t-1}^{-2}\right)^{-0.5}$$
$$\widehat{\mu}_t = \widehat{\sigma}_t^2 \left(\widehat{\mu}_{t-1}\widehat{\sigma}_{t-1}^{-2} + \bar{y}_t\sigma^{-2}\right).$$

4. Compute the family's posterior belief that the migrant is honest, $\widehat{\alpha}_t$, using Bayes' rule and taking $\widehat{\mu}_t$, $\widehat{\sigma}_t$, and $\widehat{\alpha}_{t-1}$ as given:

$$\widehat{\alpha}_t \equiv Pr(\alpha = 1 | s_t, \widehat{\mu}_t, \widehat{\sigma}_t, \widehat{\alpha}_{t-1}, \sigma) = \frac{\widehat{f}(s_t)\widehat{\alpha}_{t-1}}{\widehat{f}(s_t)\widehat{\alpha}_{t-1} + \widehat{f}(s_t + \kappa/\phi)(1 - \widehat{\alpha}_{t-1})},$$

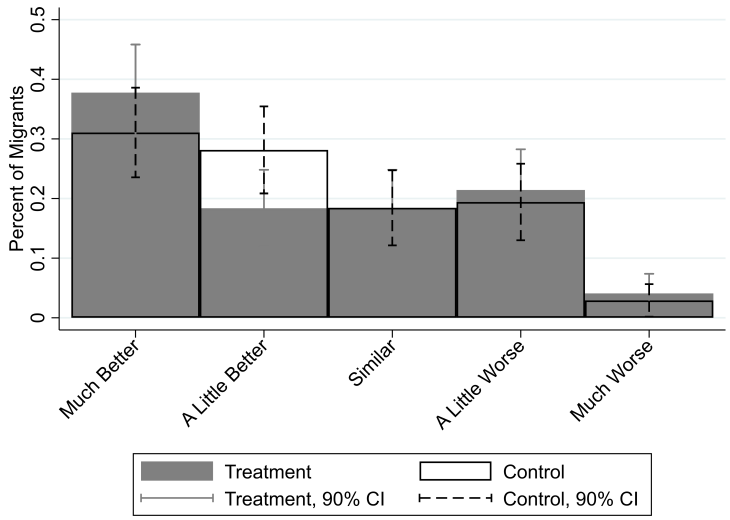
where $\widehat{f}(.)$ is the density function corresponding to $N(\widehat{\mu}_t, \sigma^2)$. In this last step, recall that any report s can be rationalized by only 2 states: an honest migrant earning s, or a strategic migrant earning $s + \kappa/\phi$.

I repeat this process 100 times for different values of $\widehat{\mu}_0$ and $\widehat{\alpha}_0$. I hold the time series of realized incomes y_t constant across each simulation for comparability.

[5]Note that $Var(\bar{y}_t) = \widehat{\alpha}_{t-1}^2 Var(y) + (1 - \widehat{\alpha}_{t-1})^2 Var(y) + 2\widehat{\alpha}_{t-1}(1 - \widehat{\alpha}_{t-1})Cov(y,y) = \sigma^2$.

Appendix D. Other Treatment Effects

Figure D1: Migrant Quality of Life in the Destination



Data from migrant surveys at 1-year follow-up. Migrants (current and previous) were asked "Is living and working in city better, worse, or about the same as in home village? Think about working conditions, housing conditions, access to school, healthcare, food, your social community, and so on."

Table D1: ULM Treatment Effect Heterogeneity on Migration to Nairobi

	ITT Effect Over 1 Year			ITT Effect Over 2 Years		
	Below Mean	Above Mean	P-Value	Below Mean	Above Mean	P-Value
Demographics						
Male Head: Age	0.11	0.15	0.67	0.19	0.18	0.93
	(0.07)	(0.08)		(0.08)	(0.1)	
Male Head: Education (Years)	0.094	0.19	0.39	0.18	0.17	0.95
	(0.07)	(0.08)		(0.1)	(0.1)	
No Male Head	0.15	0.067	0.70	0.18	0.23	0.88
	(0.05)	(0.2)		(0.08)	(0.3)	
Female Head: Age	0.12	0.14	0.86	0.22	0.12	0.51
	(0.06)	(0.09)		(0.08)	(0.1)	
Female Head: Education (Years)	0.11	0.19	0.47	0.22	0.11	0.49
	(0.07)	(0.08)		(0.10)	(0.1)	
No Female Head	0.14	-0.10	0.56	0.20	-0.25	0.46
	(0.05)	(0.4)		(0.08)	(0.6)	
# Adults in Family	0.12	0.13	0.93	0.22	0.085	0.37
	(0.06)	(0.10)		(0.08)	(0.1)	
Monthly Earnings						
Male Head: Any Non-Farm Employment	0.14	0.14	0.99	0.22	0.16	0.68
	(0.10)	(0.06)		(0.1)	(0.09)	
Male Head: Earnings Last Month	0.11	0.19	0.50	0.19	0.15	0.81
	(0.06)	(0.1)		(0.09)	(0.2)	
Female Head: Any Non-Farm Employment	0.12	0.15	0.81	0.16	0.22	0.70
	(0.07)	(0.09)		(0.10)	(0.1)	
Female Head: Earnings Last Month	0.13	0.16	0.78	0.13	0.34	0.25
	(0.06)	(0.1)		(0.09)	(0.2)	
Saved Any Money Last Month	0.17	0.086	0.43	0.19	0.17	0.90
	(0.07)	(0.07)		(0.1)	(0.1)	
Amount Saved Last Month	0.15	0.051	0.41	0.18	0.18	0.99
	(0.06)	(0.1)		(0.09)	(0.2)	
Migration						
Ever Migrated to Big City	0.049	0.16	0.22	0.15	0.17	0.88
	(0.05)	(0.07)		(0.10)	(0.1)	
Ever Migrated to Nairobi	0.10	0.15	0.64	0.16	0.17	0.96
	(0.04)	(0.1)		(0.07)	(0.1)	
Ever Migrated to Kisumu	0.11	0.39	0.15	0.17	0.29	0.64
	(0.06)	(0.2)		(0.08)	(0.3)	
Ever Migrated to Eldoret	0.12	0.21	0.58	0.21	0.076	0.57
	(0.06)	(0.1)		(0.08)	(0.2)	
Has Migrant in Big City	0.066	0.24	0.13	0.20	0.17	0.82
	(0.05)	(0.10)		(0.08)	(0.1)	
Has Migrant in Nairobi	0.13	0.25	0.49	0.19	0.25	0.79
	(0.05)	(0.2)		(0.07)	(0.2)	
Has Migrant in Kisumu	0.12	0.46	0.26	0.18	0.26	0.85
	(0.05)	(0.3)		(0.08)	(0.5)	
Has Migrant in Eldoret	0.15	-0.14	0.25	0.22	-0.40	0.11
	(0.05)	(0.3)		(0.08)	(0.4)	

Outcome is the number of migrants traveling to Nairobi over the 1 or 2 years following the ULM experiment. Treatment effects are estimated within subgroups using a regression of an outcome on a treatment dummy, a subgroup indicator dummy, and an interaction term. Subgroups are defined by a split around the mean value (for example, the treatment effect on the number of migrants traveling to Nairobi over 1 year for households with an above-average male head age is 0.15). P-values taken from a two-sided t-test of equivalence of means. Robust standard errors in parentheses. *Big City* includes Nairobi, Kisumu, Eldoret, Nakuru, Mombasa, Kitale, Kakamega, Bungoma, and Mumias.

Table D2: ULM Information Treatment Effects on Migration to Other Destinations

	1 Year		2 Years	
	ITT	Ctrl. Mean	ITT	Ctrl. Mean
# moving to Bungoma Town	-0.00	0.16	-0.02	0.33
	(0.04)		(0.06)	
	[0.93]		[0.70]	
# Moving to Kakamega Town	-0.05	0.09	-0.12	0.23
	(0.03)		(0.04)	
	[0.06]		[0.01]	
# Moving to Busia Town	0.04	0.03	-0.00	0.13
	(0.03)		(0.04)	
	[0.14]		[0.95]	
# Moving to Kitale	0.02	0.05	-0.07	0.19
	(0.05)		(0.04)	
	[0.67]		[0.07]	
# Moving to Nakuru	0.00	0.05	-0.04	0.16
	(0.02)		(0.04)	
	[0.99]		[0.30]	
# Moving to Mombasa	0.02	0.03	-0.02	0.16
	(0.02)		(0.04)	
	[0.29]		[0.52]	
# Moving to Other City	-0.02	0.52	0.01	0.75
	(0.07)		(0.09)	
	[0.73]		[0.89]	
# Moving to Rural Destination	-0.00	0.12	-0.07	0.28
	(0.05)		(0.05)	
	[0.94]		[0.18]	
Number of Observations	485		454	

An observation is a family (origin household + migrants). An outcome is the number of family members who migrated from the information treatment to the 1 or 2-year follow-up survey. Each cell shows a regression of an outcome on an indicator for assignment to the ULM information treatment group. *Other city* excludes Nairobi, Kisumu, Eldoret, Bungoma, Kakamega, Busia, Kitale, Nakuru, and Mombasa. Results are estimated through post-double LASSO regression (Belloni, Chernozhukov and Hansen, 2014). Robust standard errors in parentheses; two-sided p-values testing a zero treatment effect in brackets.

Table D3: ULM Treatment Effects on Perceived Encome for Existing Migrants

	(1) Reported Migrant Income, Feb 2018	(2) Reported Migrant Income, Feb 2018	(3) Reported Migrant Income, 2017	(4) Reported Migrant Income, 2017
Received Urban Info = 1	0.87	0.87	22.4	22.4
	(12.4)	(12.2)	(137.8)	(136.4)
	[0.94]	[0.94]	[0.87]	[0.87]
Dep. Var. Mean in Control	51.4	51.4	539.7	539.7
Demographic Controls?	N	Y	N	Y
Number of Observations	164	164	164	164

Each observation is a migrant who lived in a treated ULM city (Nairobi, Kisumu, or Eldoret) prior to the ULM experiment. Income units are USD/month as reported by household head. Income includes formal wages, casual labor, and business profits. Results in Columns (2) and (4) are estimated through post-double LASSO regression (Belloni, Chernozhukov and Hansen, 2014) with individual-level pre-treatment controls. All regressions control for baseline income. Standard errors in parentheses are clustered at the family level; two-sided p-values testing a zero treatment effect are in brackets.

Table D4: ULM Treatment Effects on Quality of Life (Household Head Reports)

	(1) Major Dispute b/t Head and Migrant in Past Year	(2) Individual Is Happy Most of the Time	(3) Individual Is Happy Most of the Time
Received Urban Info = 1	-0.006	0.04	-0.005
	(0.029)	(0.033)	(0.051)
	[0.83]	[0.28]	[0.92]
Sample	Migrants	All	Migrants
Dep. Var. Mean in Control	0.11	0.58	0.63
Number of Observations	608	2,258	608

Each observation is an individual. Data are taken from surveys with household heads in April 2019. Columns (2) and (3) ask how often each individual in their family was happy during March 2019. Column (3) restricts the sample to individuals who are migrants as of March 2019. Results are estimated through post-double LASSO regression (Belloni, Chernozhukov and Hansen, 2014). Standard errors in parentheses are clustered at the family level; two-sided p-values testing a zero treatment effect in brackets.

Table D5: ULM Treatment Effects on Other Beliefs About Migration

	(1) Expected Time to Find a Job in Nairobi (Weeks)	(2) Estimated Cost of Trip to Nairobi	(3) Range of Expected Income in Nairobi	(4) Confidence (10-Point) in Potential Income in Nairobi
Received Urban Info = 1	-1.1	5.9	9.9	-0.06
	(0.94)	(7.13)	(13.3)	(0.28)
	[0.25]	[0.41]	[0.46]	[0.83]
Dep. Var. Mean in Control	9.10	99.3	115.4	6.48
Number of Observations	497	497	458	460

An observation is an origin household. Currency units are USD/month. ITT results estimated from a regression of an outcome on an indicator for assignment to the ULM information treatment group. Expected time to find a job and estimated cost of trip are measured during baseline surveys immediately after ULM information provision. Range of expected income and confidence in expected income are measured only during the 1-year follow up. *Don't Know* is coded as missing. Results are estimated through post-double LASSO regression (as in Belloni, Chernozhukov, and Hansen 2014). Robust standard errors in parentheses; two-sided p-values testing a zero treatment effect are in brackets.

Results from Migrant Remittances (MR) Experiment Pilot

This section shows results from a pilot of the MR experiment conducted on a subset of households at the 1-year follow-up survey in March 2018. The sample is small, but contains richer data than the main MR experiment. For details on the experimental design, see Section 5.2.1 of the main paper. In the pilot sample, there was no pure control group. Results are largely consistent with those of the larger MR experiment, but noisier. Treated household heads update downward on the share of income a new migrant from their household would remit from Nairobi (coeff. $= -0.06$ on a base of 0.34; p-val < 0.01). Nevertheless, household heads guess that someone from their household is more likely to migrate to Nairobi within the next year (coeff. $= 0.073$ on a base of 0.22; p-val $= 0.12$). Follow-up surveys conducted one year later confirm that migration to Nairobi increased (coeff. $= 0.08$ on a base of 0.15; p-val $= 0.08$).

Table D6: MR Treatment Effects (Pilot Sample)

	ITT	Control Mean	N
Beliefs About Nairobi			
Perceived Migrant Income	12.8	177.0	339
	(11.6)		
	[0.27]		
Potential Own Income	1.32	117.6	339
	(9.66)		
	[0.89]		
Income Share Their Migrant Would Remit	-0.062	0.34	326
	(0.016)		
	[0.00]		
Nairobi Migration Outcomes			
Plans to Migrate in 2018	0.073	0.22	339
	(0.047)		
	[0.12]		
Number of Migrants in 2018	0.084	0.15	317
	(0.048)		
	[0.08]		
Plans to Migrate in 2019	0.077	0.28	311
	(0.053)		
	[0.14]		

Each observation is a family. Income units are USD/month per worker. *Perceived Migrant Income* is the respondent's belief about mean earnings for migrants living in Nairobi. *Potential Own Income* is how much a hypothetical migrant from their household could earn in Nairobi. The top four outcomes were measured in March 2018; the bottom two outcomes were measured in April 2019. Results are estimated through post-double LASSO regression (Belloni, Chernozhukov and Hansen, 2014). Robust standard errors in parentheses; two-sided p-values testing a zero treatment effect in brackets.

Main Results Without Control Variables

Table D7: ULM Information Changes Beliefs About Nairobi (No Controls).

	(1) Would Migrate to (City)	(2) Potential Own Income in (City)	(3) Would Work in Treated Job in (City)
Nairobi			
Received Urban Info = 1	0.091	22.4	0.11
	(0.044)	(12.6)	(0.045)
	[0.04]	[0.08]	[0.02]
Dep. Var. Mean in Control	0.54	125.5	0.45
Number of Observations	497	494	497
Kisumu			
Received Urban Info = 1	-0.020	0.79	0.074
	(0.016)	(10.4)	(0.043)
	[0.22]	[0.94]	[0.09]
Dep. Var. Mean in Control	0.044	113.0	0.34
Number of Observations	497	494	497
Eldoret			
Received Urban Info = 1	0.041	2.27	0.14
	(0.035)	(10.2)	(0.039)
	[0.24]	[0.82]	[0.00]
Dep. Var. Mean in Control	0.16	113.3	0.20
Number of Observations	497	494	497

Each observation is a household. Income units are USD/month per worker. *Would work in treated job* is a dummy = 1 when the household reports that their migrant would find one of jobs mentioned in the treatment. Robust standard errors in parentheses; two-sided p-values testing a zero treatment effect in brackets.

Table D8: ULM Information Increases Migration to Nairobi (No Controls).

	Cumulative Effect				Status in Reference Month			
	1 Year		2 Years		1 Year		2 Years	
	ITT	Ctrl. Mean	ITT	Ctrl. Mean	ITT	Ctrl. Mean	ITT	Ctrl. Mean
Overall Outcomes								
# Moving Outside County	0.04	0.81	0.14	1.25	0.07	0.46	0.11	0.49
	(0.09)		(0.12)		(0.07)		(0.08)	
	[0.67]		[0.22]		[0.29]		[0.15]	
# Employed Anywhere	0.16	2.07	0.21	2.84	0.16	1.74	0.12	1.96
	(0.14)		(0.17)		(0.13)		(0.14)	
	[0.23]		[0.21]		[0.20]		[0.40]	
# Employed in Non-Agriculture	0.22	1.19	0.27	1.77	0.25	0.93	0.12	1.46
	(0.11)		(0.14)		(0.10)		(0.12)	
	[0.05]		[0.05]		[0.01]		[0.31]	
Specific Destination Outcomes								
# Moving to Nairobi	0.13	0.22	0.18	0.48	0.08	0.10	0.09	0.17
	(0.05)		(0.08)		(0.04)		(0.05)	
	[0.01]		[0.02]		[0.03]		[0.05]	
# Moving to Kisumu	-0.01	0.07	-0.03	0.16	-0.01	0.03	-0.00	0.03
	(0.02)		(0.04)		(0.01)		(0.01)	
	[0.57]		[0.44]		[0.36]		[0.74]	
# Moving to Eldoret	-0.02	0.10	-0.07	0.25	-0.02	0.05	0.00	0.02
	(0.03)		(0.05)		(0.02)		(0.01)	
	[0.43]		[0.12]		[0.13]		[0.76]	
# Employed in Nairobi	0.07	0.08	0.18	0.22	0.05	0.05	0.13	0.13
	(0.03)		(0.05)		(0.02)		(0.04)	
	[0.02]		[0.00]		[0.03]		[0.00]	
# Employed in Kisumu	0.01	0.02	0.02	0.03	0.00	0.01	-0.00	0.01
	(0.01)		(0.02)		(0.01)		(0.01)	
	[0.56]		[0.36]		[1.00]		[0.98]	
# Employed in Eldoret	-0.01	0.03	-0.00	0.05	-0.01	0.02	0.00	0.00
	(0.01)		(0.02)		(0.01)		(.)	
	[0.36]		[0.97]		[0.26]		[.]	
Number of Observations	485		454		485		454	

An observation is a family (origin household + migrants). An outcome is the number of family members who migrated or found employment. Each cell shows a regression of an outcome on an indicator for assignment to the ULM information treatment group. Migration and employment outcomes for specific destinations refer to new migration after the ULM treatment in January 2017. *Cumulative effect* refers to the time interval from the information treatment to the 1 or 2-year follow-up survey (e.g., treated families sent 0.13 more migrants to Nairobi over the year following information provision). *Status in reference month* refers to migration or employment status in the months of February 2018 or March 2019 for the 1 and 2-year follow-ups respectively (e.g., treated families had 0.08 more new migrants living in Nairobi as of February 2018). Robust standard errors in parentheses; two-sided p-values testing a zero treatment effect in brackets.

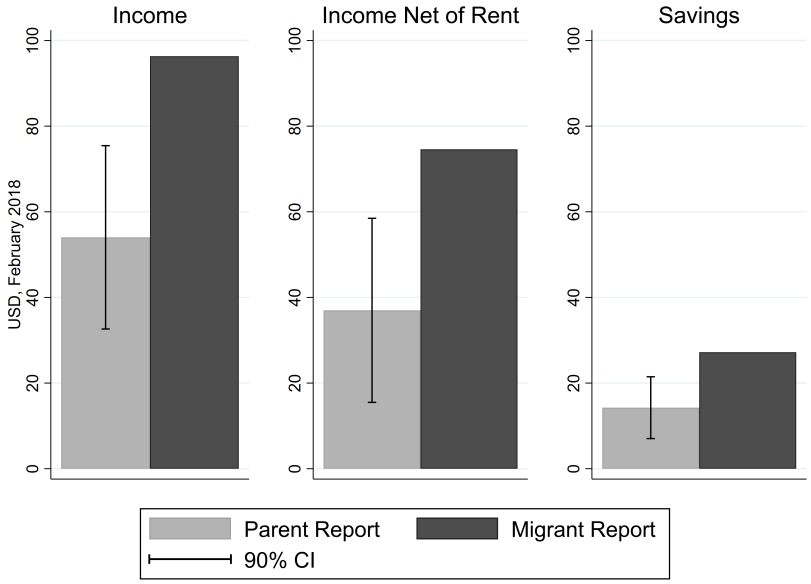
Table D9: ULM Information Increases Total Reported Income and Financial Well-Being (No Controls).

	ITT	Control Mean	N
Total income	32.7	140.0	939
	(10.4)		
	[0.00]		
Income Earned in Nairobi	31.9	20.5	939
	(16.21)		
	[0.05]		
Remittances to Origin Household	2.62	10.0	896
	(2.10)		
	[0.21]		
Savings	2.64	12.4	896
	(2.03)		
	[0.20]		
Food Expenditure	3.27	35.8	896
	(1.72)		
	[0.06]		
Reports Healthy Finances = 1	0.091	0.55	896
	(0.03)		
	[0.01]		
Mental Health (MHI-5) Index at Origin	0.24	0	435
	(0.10)		
	[0.01]		

Currency units are USD/month. An observation is a family (origin household + migrants) in a post-treatment year. Income and remittances are measured at the individual level and aggregated up to the family level. Savings and food expenditure are measured for the total origin household and added to migrant values. *Reports healthy finances* is a dummy = 1 if the origin household head reports not being concerned about the household's financial situation. *Mental health index* is a standardized measure of mental health of the origin household head and is only measured in the 2019 follow-up survey. Data collected from household surveys and phone surveys of individual household members. Income and migration data collected from neighbors at the origin for 43 households which could not be located during follow-up. ITT results estimated from a regression of an outcome on an indicator for assignment to the ULM information treatment group, the pre-treatment value of the outcome, and a time fixed effect. Standard errors in parentheses are clustered at the family level; two-sided p-values testing a zero treatment effect are in brackets.

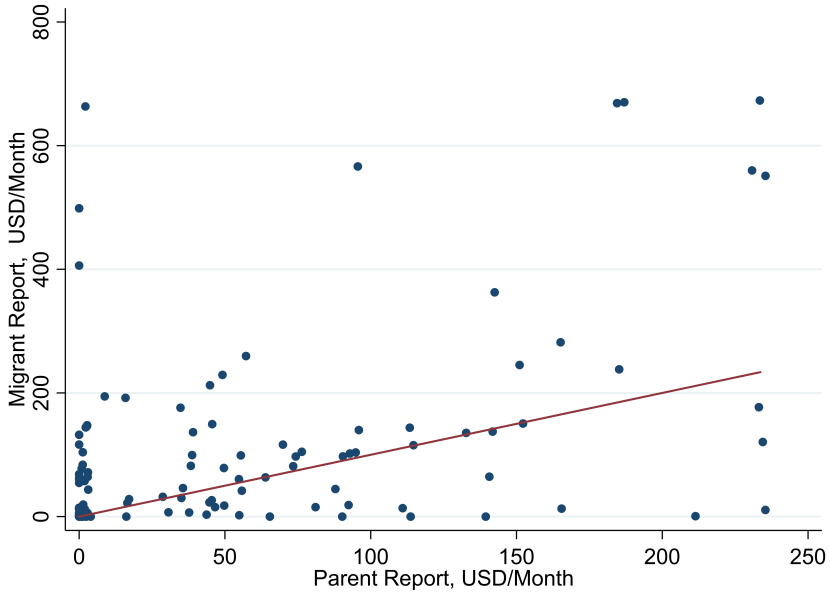
Appendix E. Additional Information on Perception Gaps

Figure E1: Migrants' Parents Underestimate Their Incomes Net of Rent, and Savings



Data from household and migrant surveys in 2018. *Parent* is the head of the migrant's origin household. All respondents are asked to report the migrant's income, rent, and savings in a reference month. Earnings include wages from formal and casual labor, and profits from businesses owned by the worker, but exclude farming income. Confidence intervals are shown for the difference between reported income and true values.

Figure E2: Scatter-Plot of Migrant and Parent Reports of Migrants' Earnings



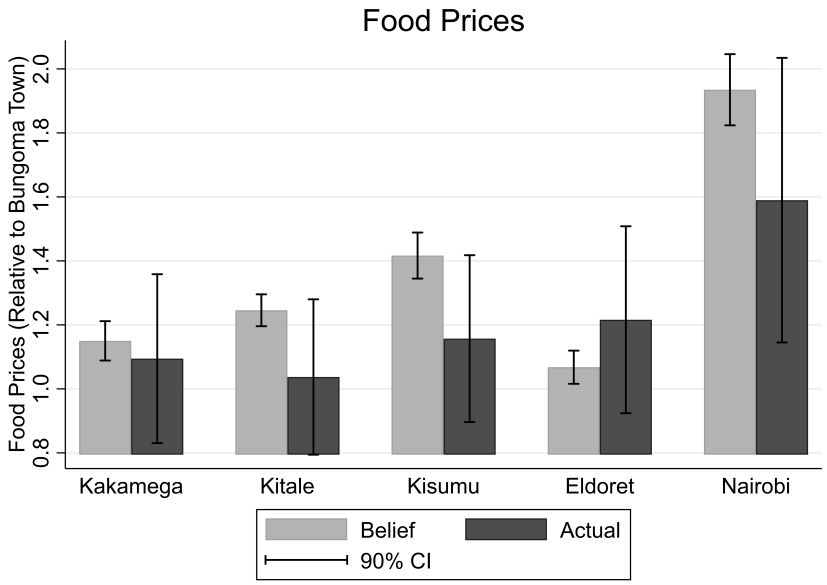
See Figure 2 notes for information on sample. Each dot is a parent-migrant pair reporting the migrant's income in February, 2018 with a 3% jitter. Red line shows the 45 line. 45% of parents report an income strictly lower than the migrant's report. 40% under-report by at least 25%, whereas only 17% over-report by at least 25%.

Table E1: Share of Households Under- and Overestimating Incomes, by City

	Share Underestimating	Share Overestimating	N
Kakamega Town	0.37	0.59	216
Kitale	0.50	0.16	215
Kisumu	0.44	0.16	215
Eldoret	0.70	0.06	218
Nairobi	0.59	0.06	215

See Figure 1 notes for information on sample. *Share underestimating* is the share of households who believe that the income gap between each city and Bungoma Town is less than half of the true gap (for example, 50% of households believe that Kitale incomes are 1.3 times as high as Bungoma Town incomes or less, when the true gap is 1.6). *Share overestimating* is the share of households who believe that the income gap between each city and Bungoma Town is more than double the true gap.

Figure E3: Perceived and True Food Prices Across Kenya



Reported beliefs about food prices across cities taken from household surveys. Actual prices are taken from KIHBS microdata (see Appendix B for measurement details).

Table E2: Perception Gaps for Urban Amenities

	Migrant Report	Origin Belief	P-Value	N
Positive Amenities				
Has Improved Toilet	0.57	0.42	0.01	91
Has Improved Main Water Source	0.85	0.91	0.22	102
Has Improved Main Fuel Source	0.73	0.48	0.00	104
Negative Amenities				
Neighborhood Safety Issue, Last Month	0.16	0.09	0.12	105
Was Sick or Injured, Last Month	0.24	0.26	0.73	109
Days Missed Work From Sickness/Injury	1.15	2.40	0.03	109

Data from surveys of migrants living in a city as of March 2018. First column shows the mean incidence of each urban amenity using data from migrant reports. Second column shows the mean belief about the incidence of each urban amenity using data from matched origin household surveys. Third column shows the p-value from a two-sided paired t-test of equivalence of means. Robust standard errors in parentheses. *Has improved toilet* is a dummy = 1 if the migrant has a flush toilet or VIP latrine. *Has improved water source* is a dummy = 1 if the migrant obtains most of their water from a pipe, borehole with pump, or protected spring/well. *Has improved main fuel source* is a dummy = 1 if the migrant's main household fuel source is gas/LPG, electricity, or paraffin. *Don't Know*s from origin respondents are coded as missing.

Appendix F. How Much Does Misinformation Explain Aggregate Income Gaps?

To what extent is the agricultural productivity gap explained by underestimation of urban incomes in rural areas? I calibrate a simple two-sector neoclassical model using results from the ULM information experiment. The model predicts that improving information would decrease the adjusted agricultural productivity gap (APG) in Kenya from 2 to 1.87. This represents 21% of the distance between the adjusted APG in Kenya and that in the United States. To the extent that the ULM experiment could not completely remove information frictions, this exercise will of course underestimate their importance. On the other hand, congestion effects may reduce the gains from migration.

Consider an economy with Cobb-Douglas production functions, following the notation of Gollin, Lagakos and Waugh (2014). Labor markets are competitive within each sector, but there is imperfect mobility across sectors. Production functions are given by:

$$Y_a = A_a L_a^{\theta} \bar{K}_a^{1-\theta} \qquad \text{and} \qquad Y_n = A_n L_n^{\theta} \bar{K}_n^{1-\theta},$$

where subscripts a and n denote agriculture and non-agriculture, and Y, L, and $\bar{K}$ are output, labor, and a fixed supply of capital/land. Lower-case variables denote per-capita values. The agricultural productivity gap is defined as:

$$APG \equiv \frac{Y_n/L_n}{p_a Y_a/L_a}. \tag{2}$$

Normalizing the population to 1 and denoting the improved-information equilibrium with primes, we have:

$$L_a + L_n \equiv 1 \qquad \text{and} \qquad L'_a + L'_n = 1. \tag{3}$$

With exogenous prices (as, for example, in an open economy with both goods being traded on world markets), we can combine Equations 2 and 3 to obtain:

$$\frac{APG'}{APG} = \left(\frac{L_n}{L'_n} \times \frac{L'_a}{L_a} \right)^{1-\theta}.$$

The ULM experiment induced 0.2 transitions into non-agriculture per family over two years, representing 7.6% of the average number of rural household members aged 18–65.

Taking $L_a = 0.631$ and $\theta = 0.66$ from Gollin, Lagakos and Waugh (2014), I obtain:

$$\frac{APG'}{APG} = 0.934,$$

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