Motivating safer driving: results from two RCTs and a scale-up in Kenya

James Habyarimana and William Jack
Georgetown University

Georgetown University Initiative
guide
on Innovation, Development and Evaluation

IGC Growth Week
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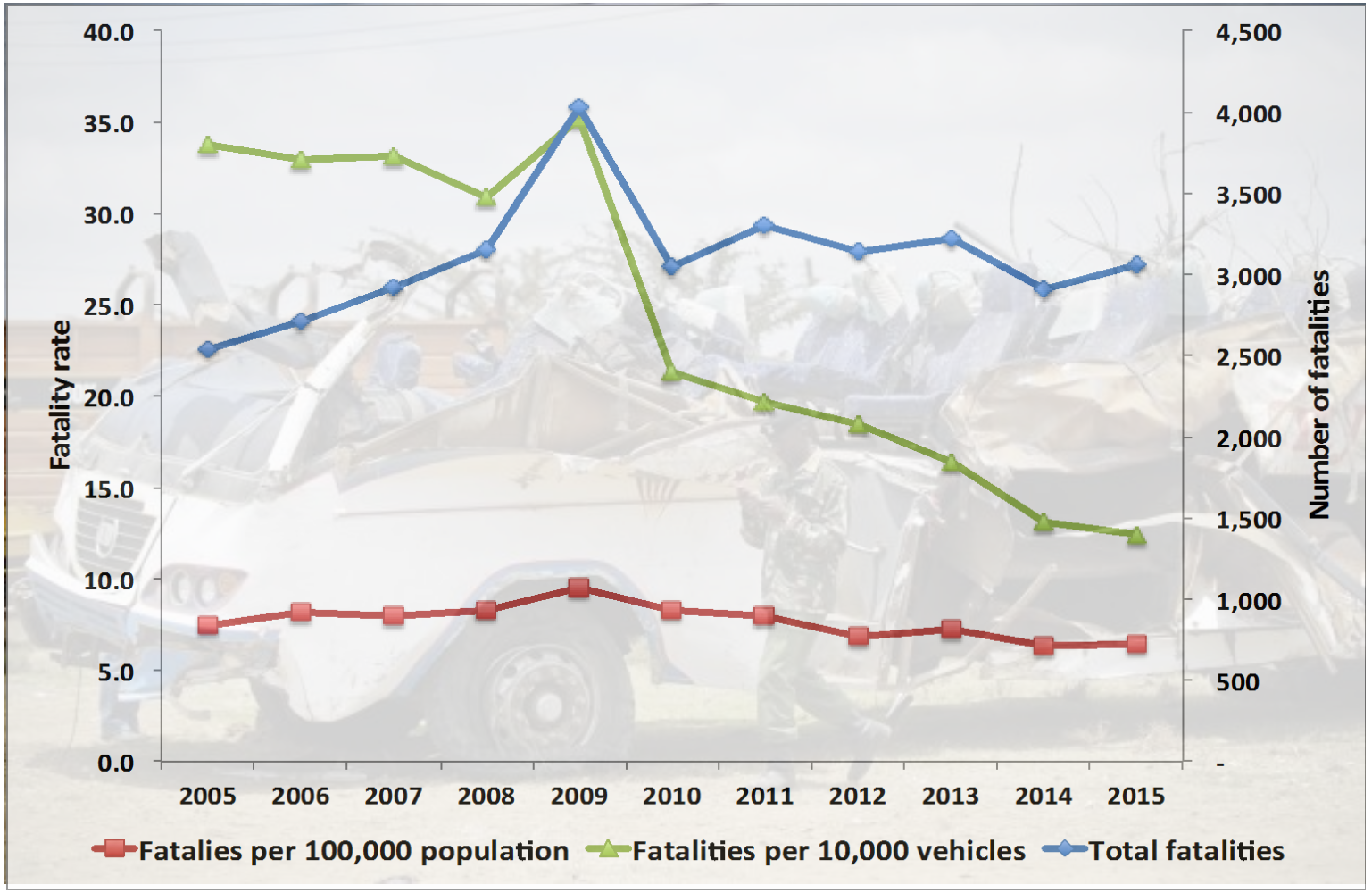
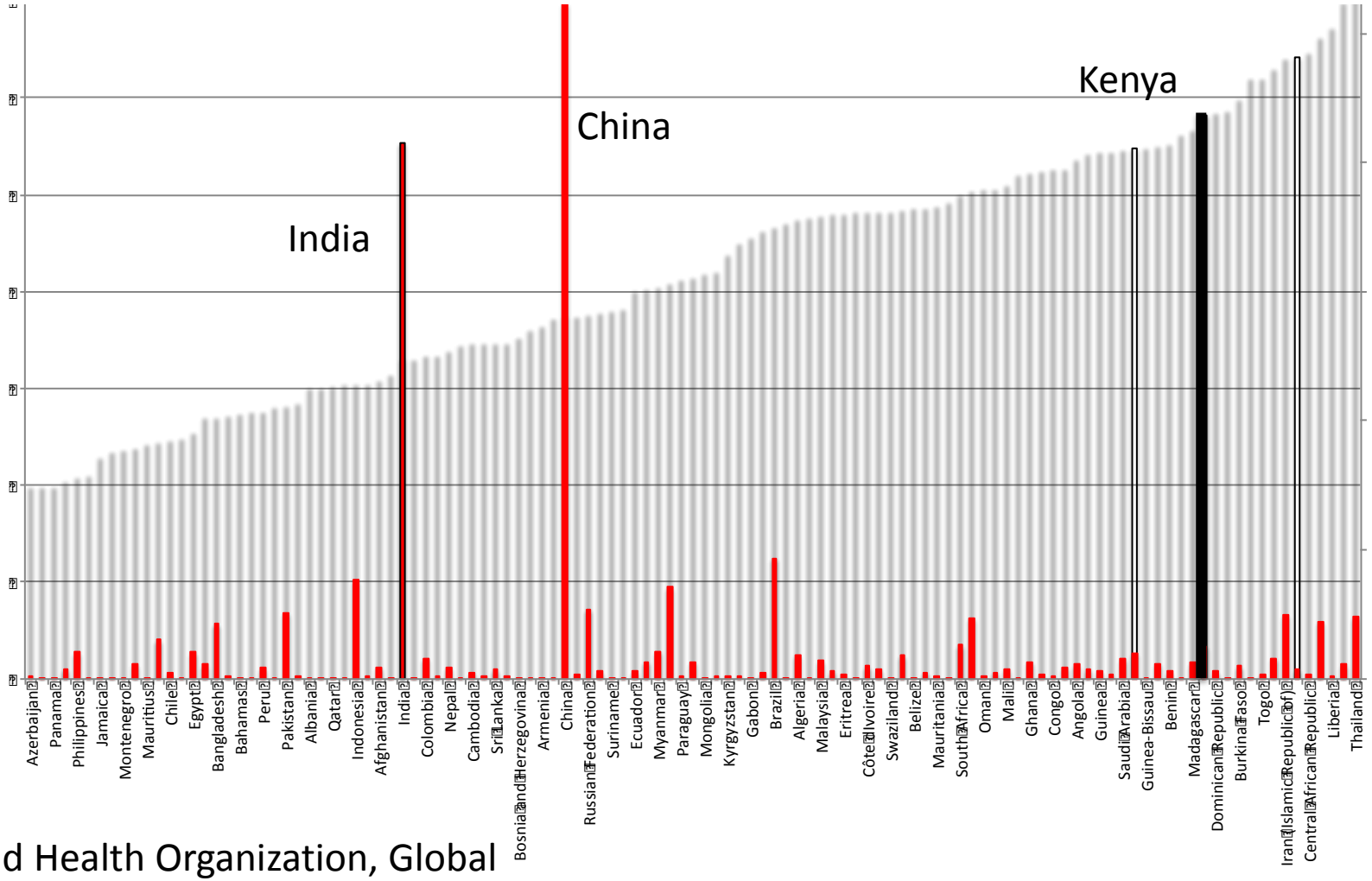
Kenya's road safety challenge



Global road deaths*



* World Health Organization, Global status report on road safety, 2015

It's only going to get worse

2004			2030	
Cause	%	Rank	Cause	%
Ischaemic hearth disease	12.2	1	Ischaemic hearth disease	12.2
Cerebrovascular disease	9.7	2	Cerebrovascular disease	9.7
Lower respiratory infections	7.0	3	Chronic obstructive pulmonary disease	7.0
Chronic obstructive pulmonary disease	5.1	4	Lower respiratory infections	5.1
Diarrhoeal diseasees	3.6	5	Road traffic injuries	3.6
HIV/AIDS	3.5	6	Trachea, bronchus, lung cancers	3.5
Tuberculosis	2.5	7	Diabetes mellitus	2.5
Trachea, bronchus, lung cancers	2.3	8	Hypertension	2.3
Road traffic injuries	2.2	9	Stomach cancer	2.2
Prematurity and low birth weight	2.0	10	HIV/AIDS	2.0
Neonatal infections and other	1.9	11	Nephritis and nephrosis	1.9
Diabetes mellitus	1.9	12	Self-inflicted injuries	1.9
Malaria	1.7	13	Liver cancer	1.7

Source: WHO Global Status Report on Road Safety, 2009

Road accidents are a leading cause of death amongst youth

Rank	0-4 years	5-14 years	15-29 years	30-44 years
1	Perinatal causes	Lower respiratory infections	Road traffic injuries	HIV/AIDS
2	Lower respiratory infections	Road traffic injuries	HIV/AIDS	Tuberculosis
3	Diarrhoeal diseases	Malaria	Tuberculosis	Road traffic injuries

Source: WHO Global Status Report on Road Safety, 2009

- Global Fund for AIDS, TB and Malaria

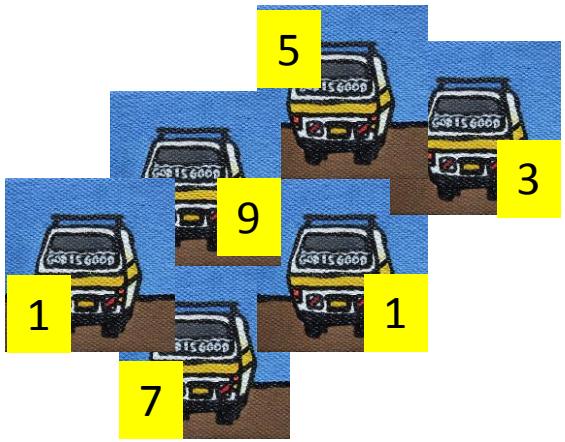
  ….and Road traffic injuries?

I. Heckle and Chide

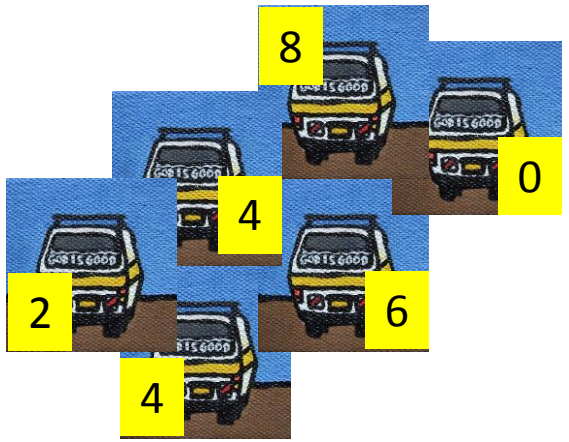
II: Testing Heckle and Chide

2,400 long-distance vehicles; 4 insurance companies

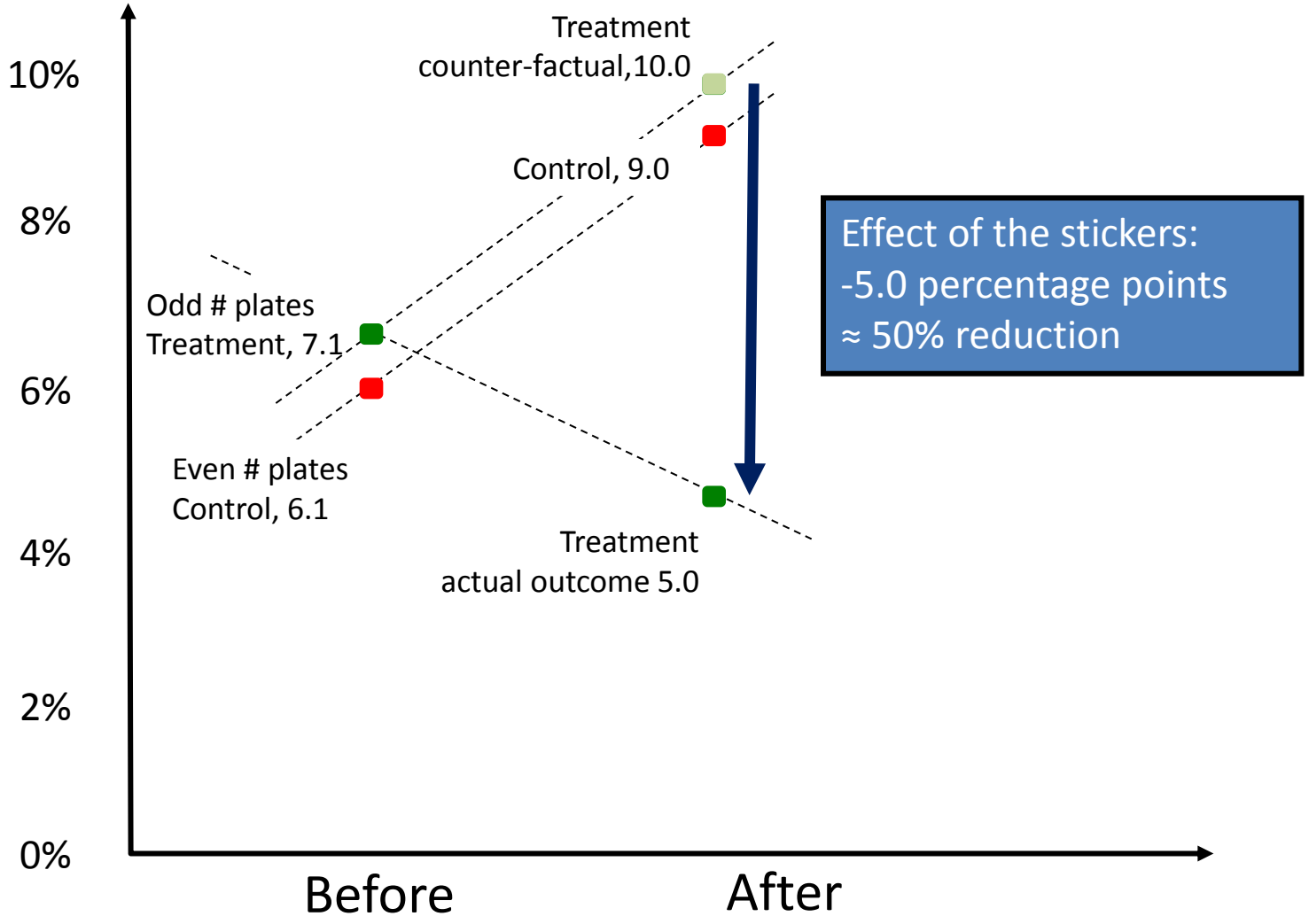
Treatment Group
Odd number plates



Control Group
Even number plates



Effect on *matatus'* insurance claims



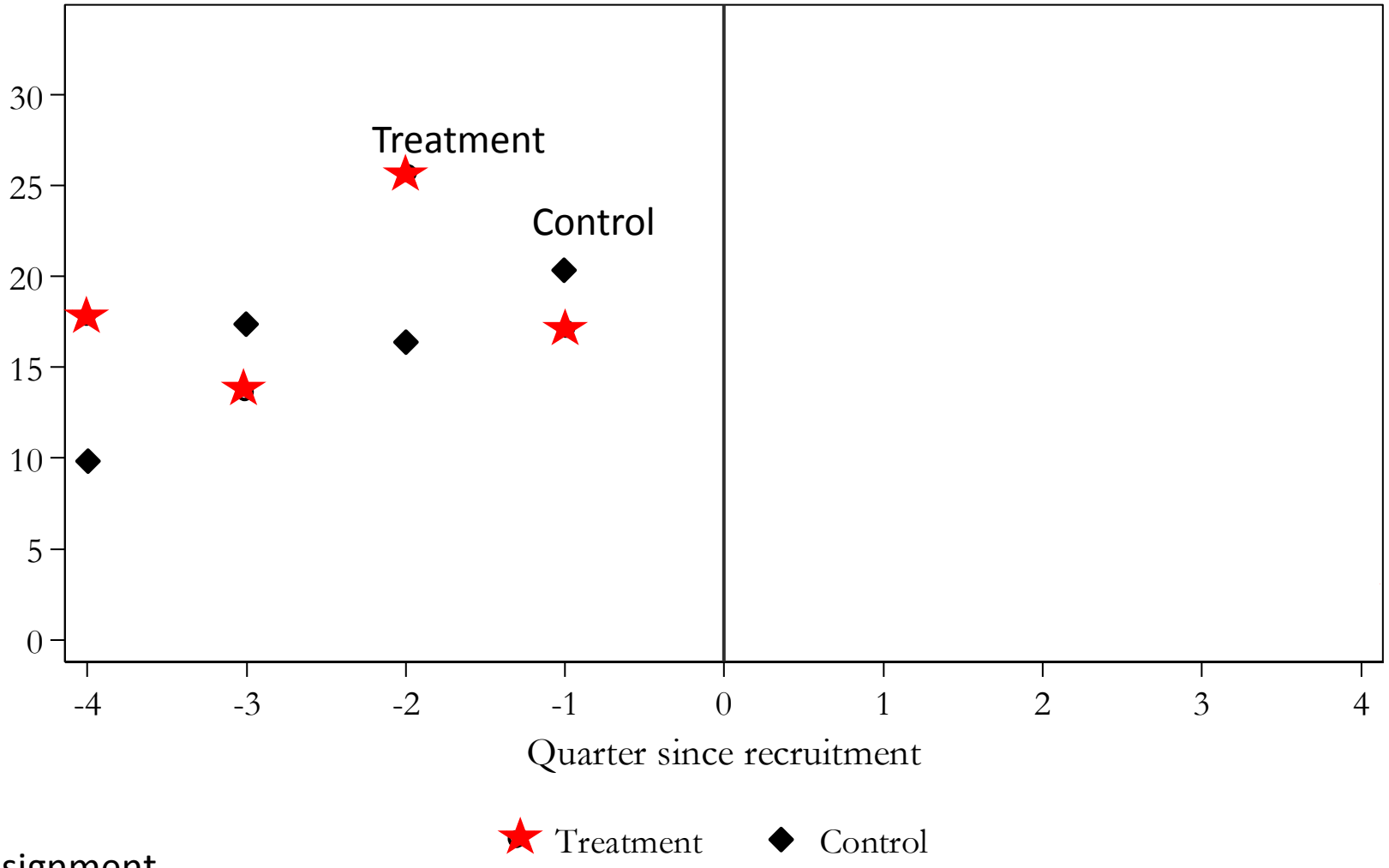
Results

$$y_{ijt} = \alpha_o + \beta_1 Post_{it} + \beta_2 T_{it} + \beta_3 (Post * T)_{it} + \mu_j + \epsilon_{ijt}$$

	OLS		ITT	
	I	II	III	IV
Post	0.024	0.025	0.029	0.030
	(0.012)*	(0.012)*	(0.013)*	(0.012)*
T	0.007	0.009	0.010	0.009
	(0.010)	(0.011)	(0.010)	(0.011)
Post x T	**-0.042**	**-0.043**	**-0.050**	**-0.051**
	(0.016)**	**(0.015)****	**(0.016)****	**(0.016)****
Constant	0.062	0.042	0.061	0.042
	(0.008)**	(0.013)**	(0.008)**	(0.013)**
SACCO controls	No	Yes	No	Yes
Observations	4322	4318	4322	4318
Rate reduction	-45%	-57%	-50%	-63%

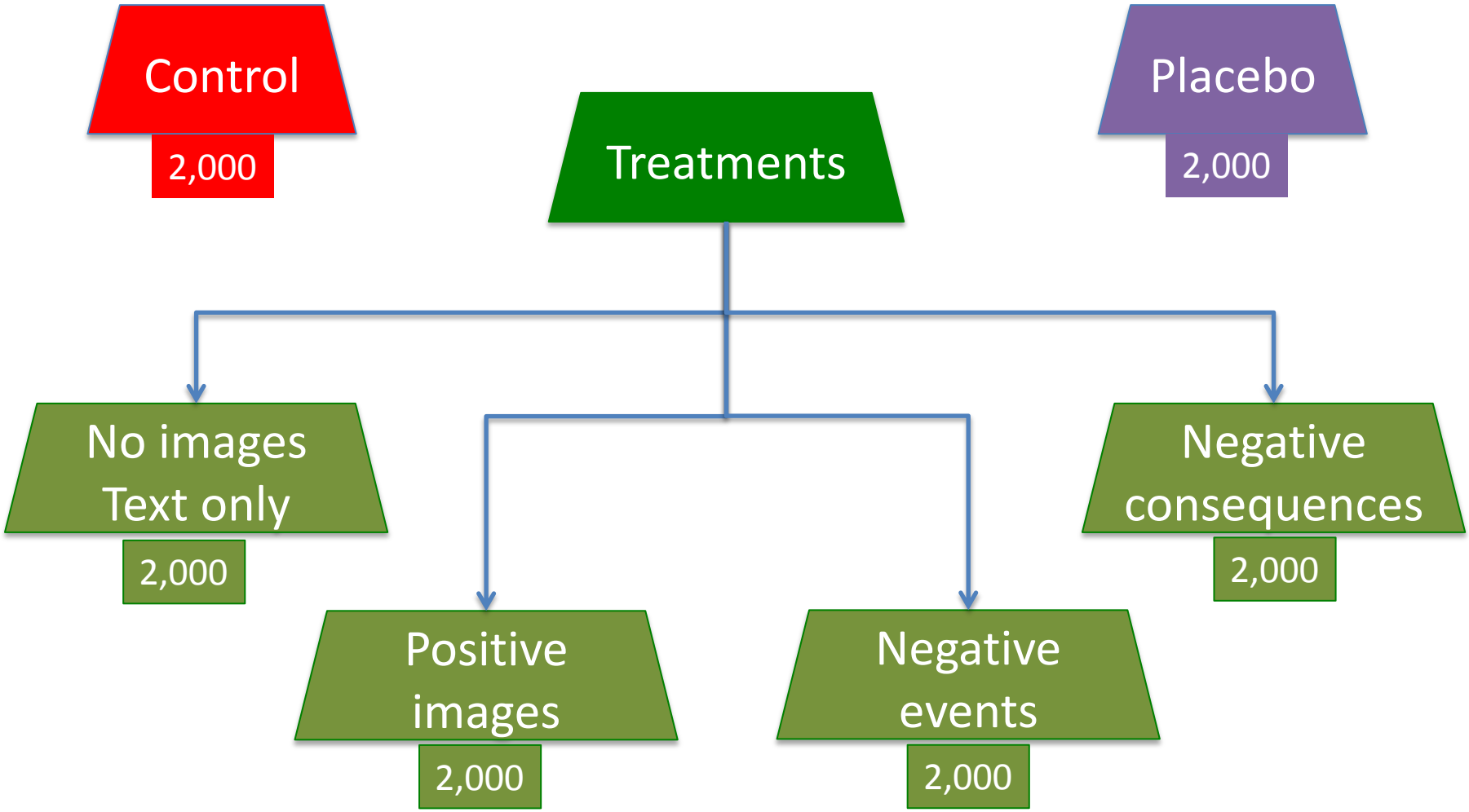
p-values in parentheses.

Quarterly claims per 1,000 vehicles*



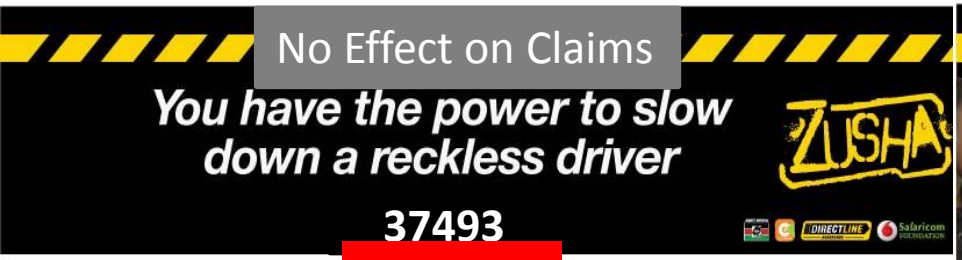
* By assignment

III: *Zusha*!

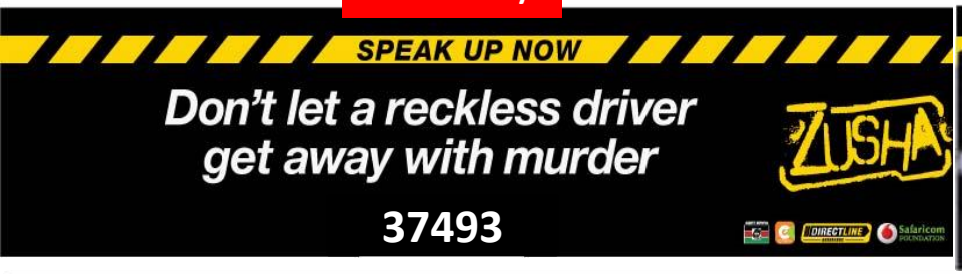

Control
2,000
Treatments
Placebo
2,000
No images
Text only
2,000
Positive
images
2,000
Negative
events
2,000
Negative
consequences
2,000

Results

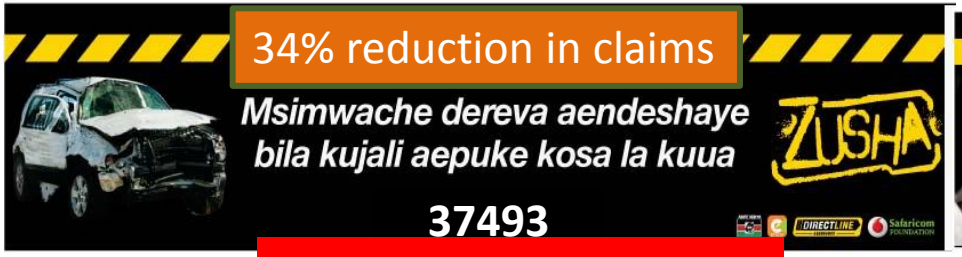
No Effect on Claims



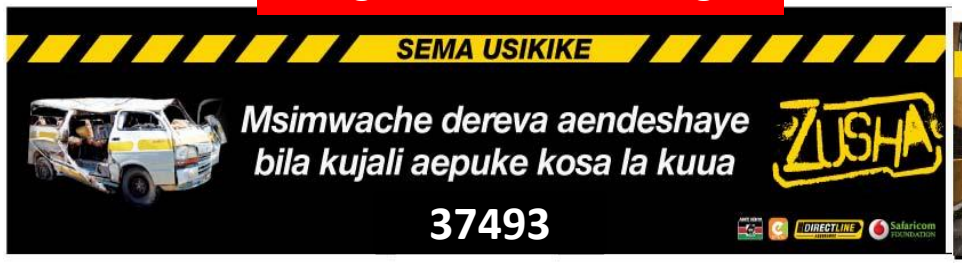
Text only



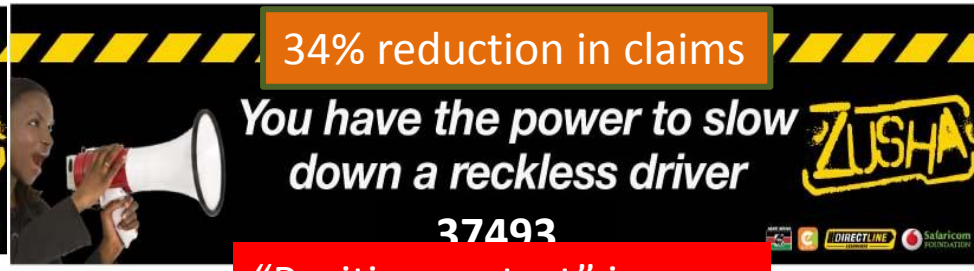
34% reduction in claims



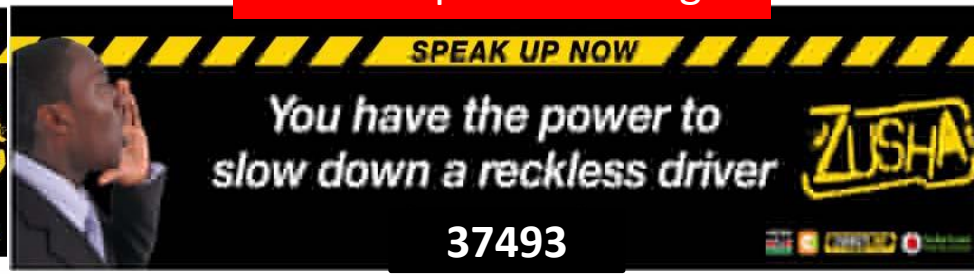
"Negative event" images



34% reduction in claims



"Positive protest" images



26% reduction in claims

"Negative consequence" images

Passengers need to work together

17% reduction in claims

34% reduction in claims

Messaging or Money?

Treatment

26-34% reduction in claims

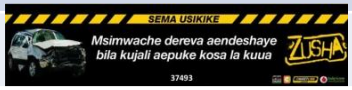
Placebo

Travel Well

Safiri Salama

No Effect on Claims

Results: insurance claims

	DD estimate Effect	After-counterfactual	% effect
Any treatment sticker	-0.017**	0.0686	-25%
			

Directly Observed Trips

- 4,405 trips taken by enumerators equipped with GPS devices

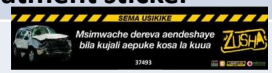
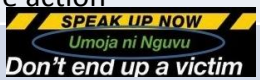
I. Speed data

- Maximum speed and average moving speed recorded automatically on the GPS device

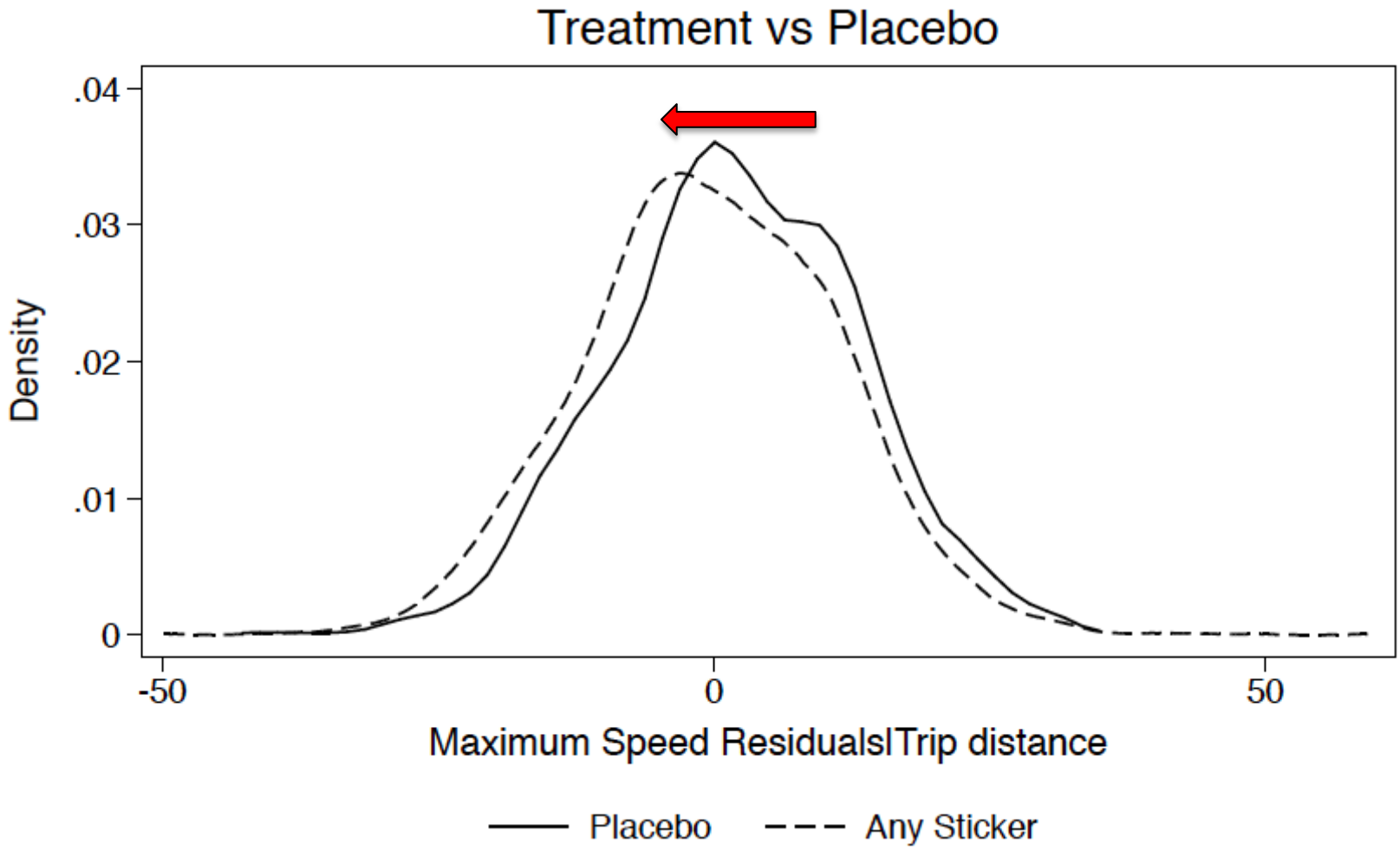
II: Behavioral data

- Enumerators asked to record reckless events and passenger responses

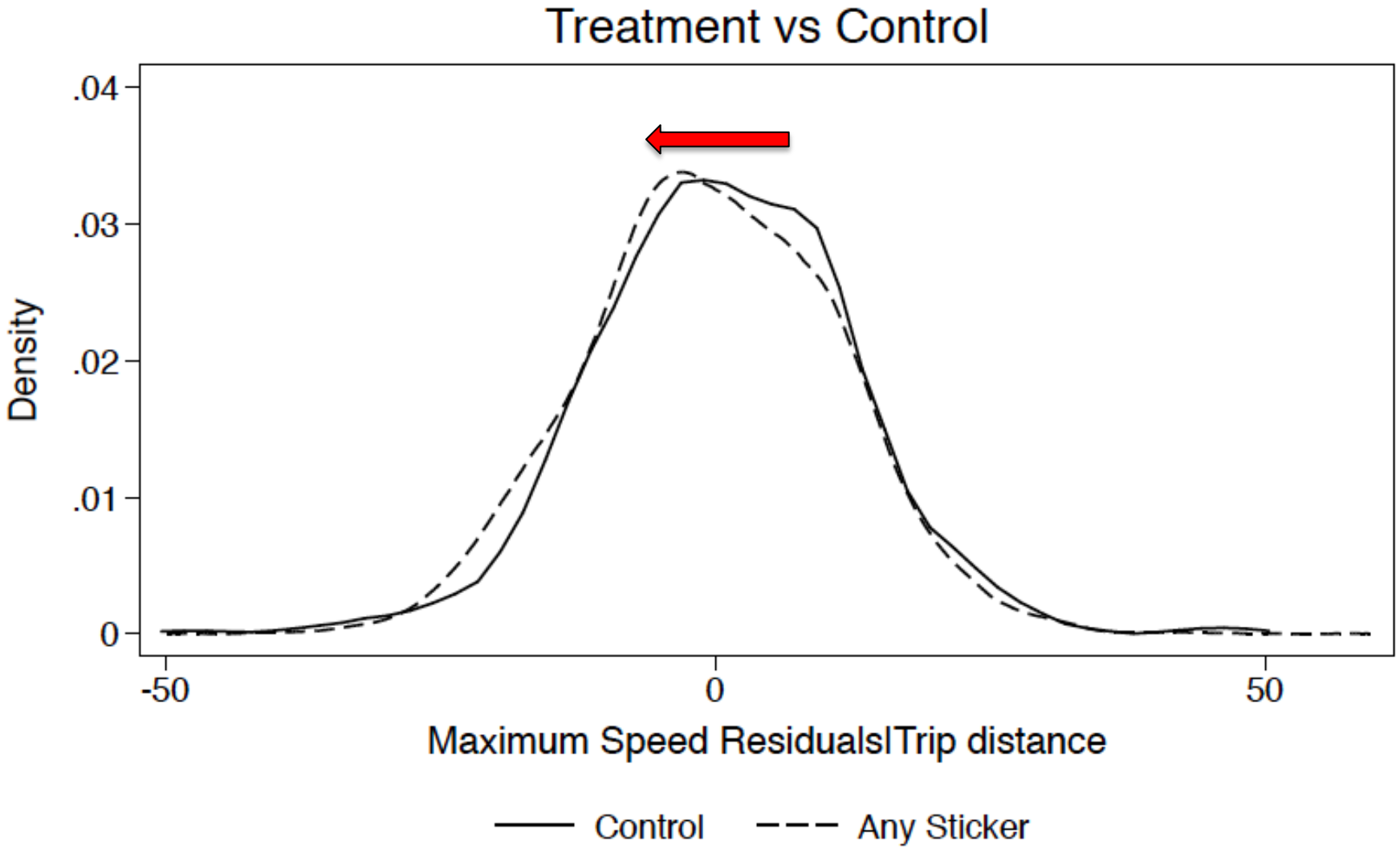
Results: Speed and recklessness

	Max speed	Average speed	Reckless event	Passenger voice
Placebo	0.908	0.146	0.027	0.049
	(0.745)	(0.792)	(0.033)	(0.035)
Any treatment sticker	-0.979	-1.019**	0.020	0.005
	(0.606)	(0.506)	(0.024)	(0.027)
Collective action				
Individual action	-1.257*	-0.853	0.024	-0.003
	(0.649)	(0.629)	(0.026)	(0.029)
Collective action	-0.687	-1.194**	0.017	0.013
	(0.637)	(0.484)	(0.027)	(0.030)
Message type				
Text only	-0.692	-1.404***	0.022	-0.012
	(0.707)	(0.532)	(0.032)	(0.033)
Protest images	-0.039	-0.984*	0.036	0.018
	(0.685)	(0.509)	(0.030)	(0.033)
Accident images	-2.039***	-0.966	0.012	0.001
	(0.717)	(0.811)	(0.030)	(0.034)
Injury images	-1.210*	-0.755	0.010	0.010
	(0.734)	(0.824)	(0.031)	(0.034)
Observations	4405	4405	1471	1471

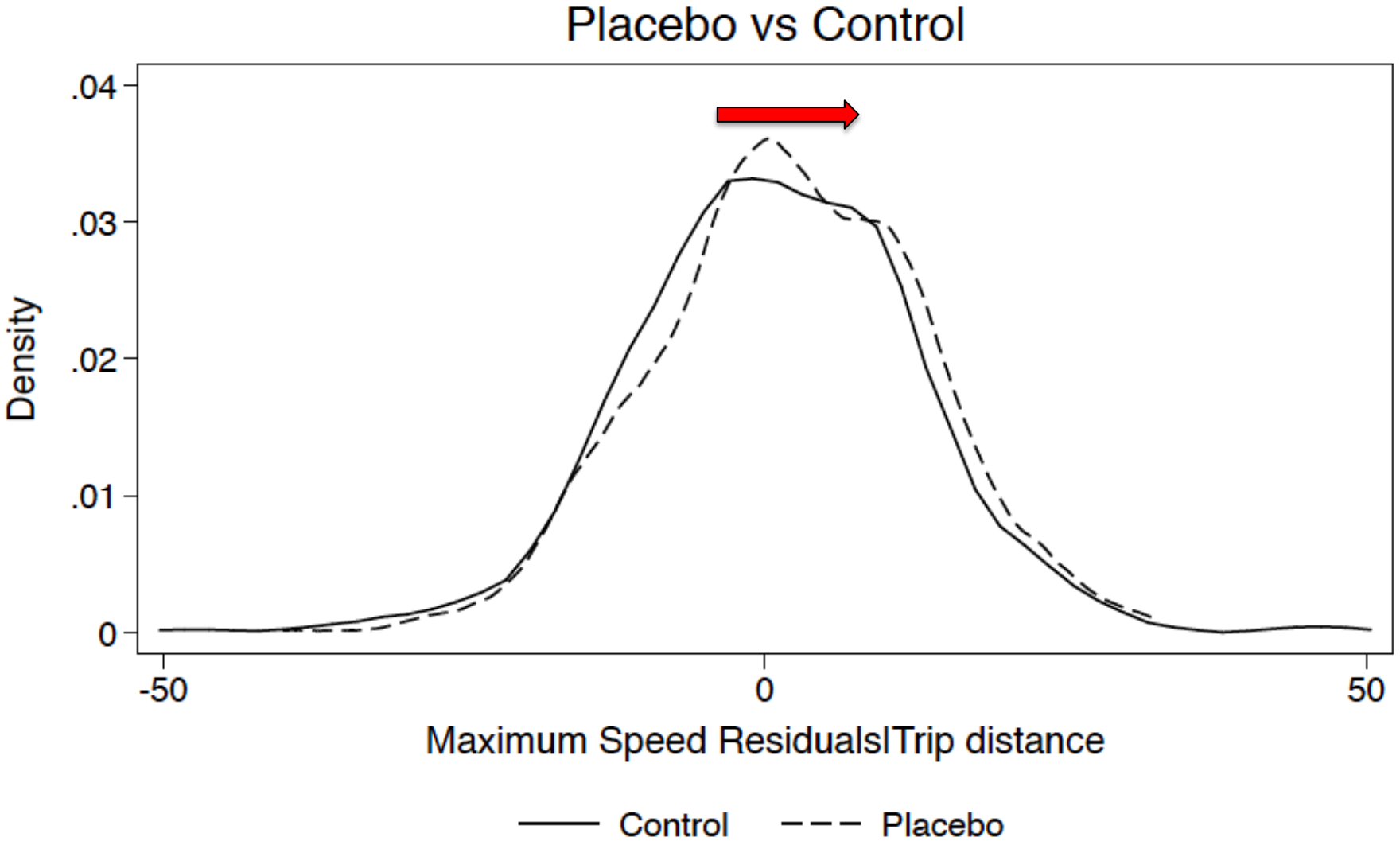
Maximum speed distribution



Maximum speed distribution



Maximum speed distribution



IV: Scaling up *Zusha*!

- Working to have stickers inserted in all public service vehicles in the country

- Complement the stickers with other media
  - Billboards
  - Radio/TV
  - Social media

Cost estimates

	Annual	Five year
Cost per matatu	200/-	1,000/-
Cost per bus	400/-	2,000/-
Cost for whole fleet	12 million/-	60 million/-

- Is a year of life of a Kenyan worth the cost of lunch for two at Java House?

Comparative costs

Speed governor: 30-35,000 shillings per vehicle

Total cost: 1.2 billion

Zusha: 1,000-2,000 shillings per vehicle, 5 years

Total cost: 60 million

Georgetown University Initiative

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