The Death of Distance: Mobile Internet and Political Trust in Africa

Working Paper

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Context

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Shape how citizens develop trust in political institutions, depending on their proximity to the capital city

Motivation

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1. Information scarcity in remote areas alters how citizens process and respond to political information
    - Given the high costs of acquiring reliable information about government performance, citizens rationally adapt by relying on accessible but potentially biased sources: ethnic affiliations, partisan signals, and local social networks *McKay et al., 2023; Brinkerhoff et al., 2018*

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   - Without exposure to comparative benchmarks, these citizens lack reference points for evaluating public service quality, often normalizing suboptimal outcomes as the status quo *Adida et al., 2020; Gottlieb, 2016; Provenzano, 2024*

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These dynamics converge into an equilibrium of uninformed, disengaged trust in remote areas that undermines political accountability

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- Perpetuate a low-accountability equilibrium where politicians have weak incentives to deliver quality services or respond to citizen demands *Gottlieb, 2016; Harding, 2015*
  - Exacerbating regional inequalities *Asher et al., 2018; Provenzano, 2024*
  - Slowing institutional development *Kaasa and Andriani, 2022; Evans and Rose, 2012*

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How information frictions affect institutional development and whether a new information channel can reshape these spatial patterns

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  - Regional and ethnic favoritism from ruling governments *Franck and Rainer, 2012; Hodler and Raschky, 2014; Kramon and Posner, 2016; De Luca et al., 2018*

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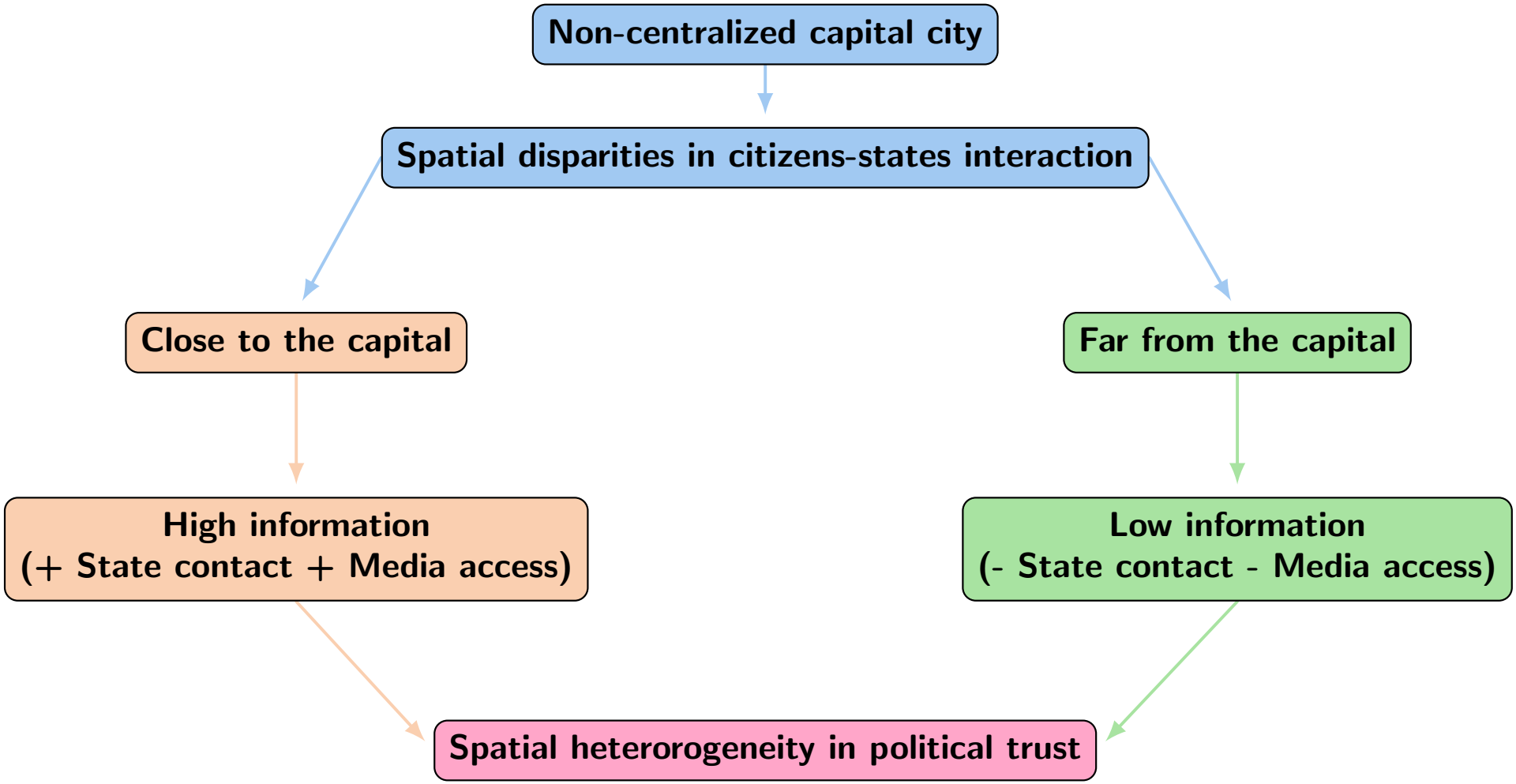
- Mobile internet can reduce the distance effect on political trust, causing a "death of distance" that transforms *uninformed trust* into active engagement

This paper


Non-centralized capital city
Spatial disparities in citizens-states interaction
Close to the capital
Far from the capital
High information
(+ State contact + Media access)
Low information
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Spatial heterorogeneity in political trust

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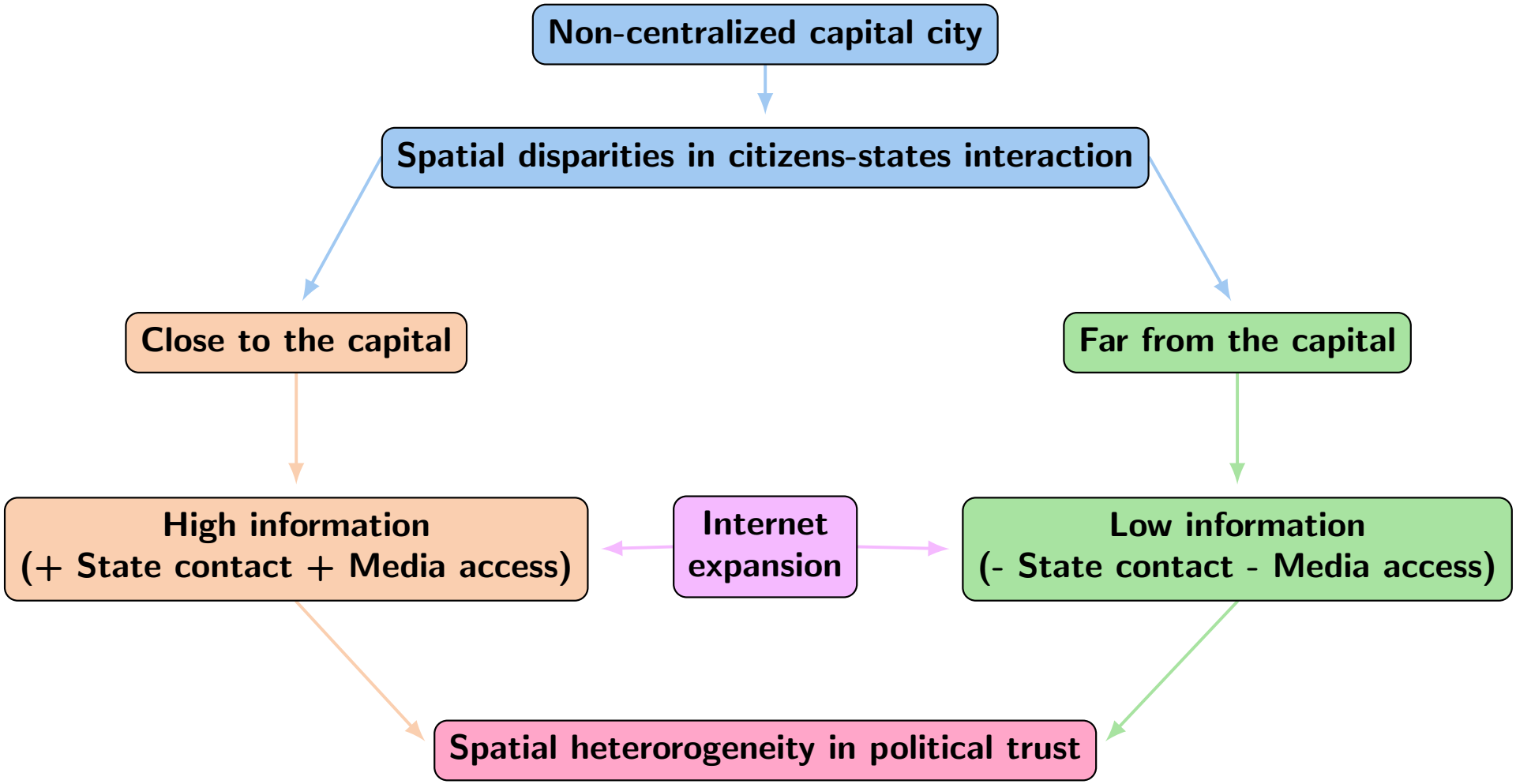
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Empirical strategy overview

Combine Afrobarometer geocoded surveys data across 20 Sub-Saharan countries between 2011-2021, with GSMA digital maps of mobile internet coverage

We examine **(1)** spatial disparities in political trust and **(2)** how mobile internet access expansion may affect these differences

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Combine Afrobarometer geocoded surveys data across 20 Sub-Saharan countries between 2011-2021, with GSMA digital maps of mobile internet coverage

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1. Effect of capital city distance on political trust: **Border discontinuity design**
   - Colonial boundaries - which became modern national borders - that arbitrarily divided historical ethnic homelands *Michalopoulos and Papaioannou, 2014; Provenzano, 2024*
   - Sharp variations in citizens' distances from their respective national capital

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   - Sharp variations in citizens' distances from their respective national capital
2. Internet coverage effect: **Instrumental variable**
   - Instrument for internet coverage using lightning strike patterns *Manacorda and Tesei, 2020; Guriev et al., 2021*
   - Areas with frequent lightning strikes have higher costs for internet infrastructure deployment and maintenance, while these weather patterns are plausibly exogenous to political trust

Main results

1. **Distance from the capital effect**
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Internet access facilitates the shift from uninformed trust to active democratic engagement, particularly in previously isolated areas

Literature contribution

- Geography of trust
  - Distance from administrative centers *Brinkerhoff et al. 2018; Bland et al., 2023; Li, 2004*
  - Higher institutional trust in rural area *McKay et al., 2023; Li, 2004*

  → **Distance shapes citizens' political trust**

- Political economy of the capital city
  - National institutions' reach *Herbst, 2000; Michalopoulos and Papaioannou, 2014*
  - Democratic accountability *Provenzano, 2024; Gottlieb, 2016*
  - State capacity *Pierskalla et al., 2017; Müller-Crepon, 2023*

  → **Strategic placement affects patterns of political trust and democratic engagement**

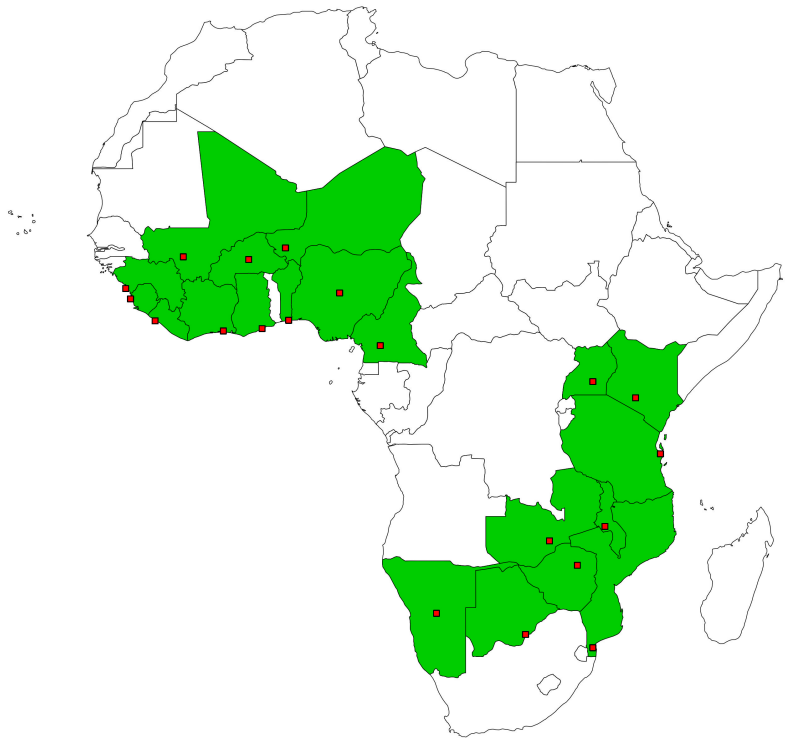
- Internet role in accountability and governance information
  - Governance satisfaction *Guriev et al., 2021; Cariolle et al., 2024; Miner, 2015*
  - Electoral accountability *Donati, 2023; Chong et al., 2015*

  → **Connectivity reshapes spatial patterns of accountability**

Data

- Afrobarometer surveys accross 20 Sub-Saharan countries: rounds 5 to 8 (2011-2021)
  - Geolocated information on public opinion, media consumption and demographic characteristics at the individual level
  - Distance from the capital city
- Collins Bartholomew's Mobile Coverage Explorer: 2G/3G network coverage (2011-2021)
  - 1×1-kilometer binary grid cells
  - Regional level mean coverage
  - Weighted by UN-adjusted population density grid cells

Figure 1: Country Sample and Capital Cities



Empirical strategy - Spatial disparities in political trust

Effect of distance from the capital city on political trust

$$trust_{ict} = \beta_0 + \beta_1 distance_{ict} + \gamma X_{ir}^{'} + \mu_{ct} + \varepsilon_{ict} \quad (1)$$

- $trust_{ict}$: Average trust in parliament and president (0-3 scale)
- $distance_{ict}$: Relative distance measure (0-1 scale)
  $\rightarrow$ *Michalopoulos and Papaioannou, 2014*
- $X_{ir}^{'}$: Set of individual and regional controls
- μ_{ct}: Country $\times$ round fixed effects
- ϵ_{ict}: Error term
- Robust standard errors clustered at the region x round level

Empirical strategy - Spatial disparities in political trust

Border discontinuity design

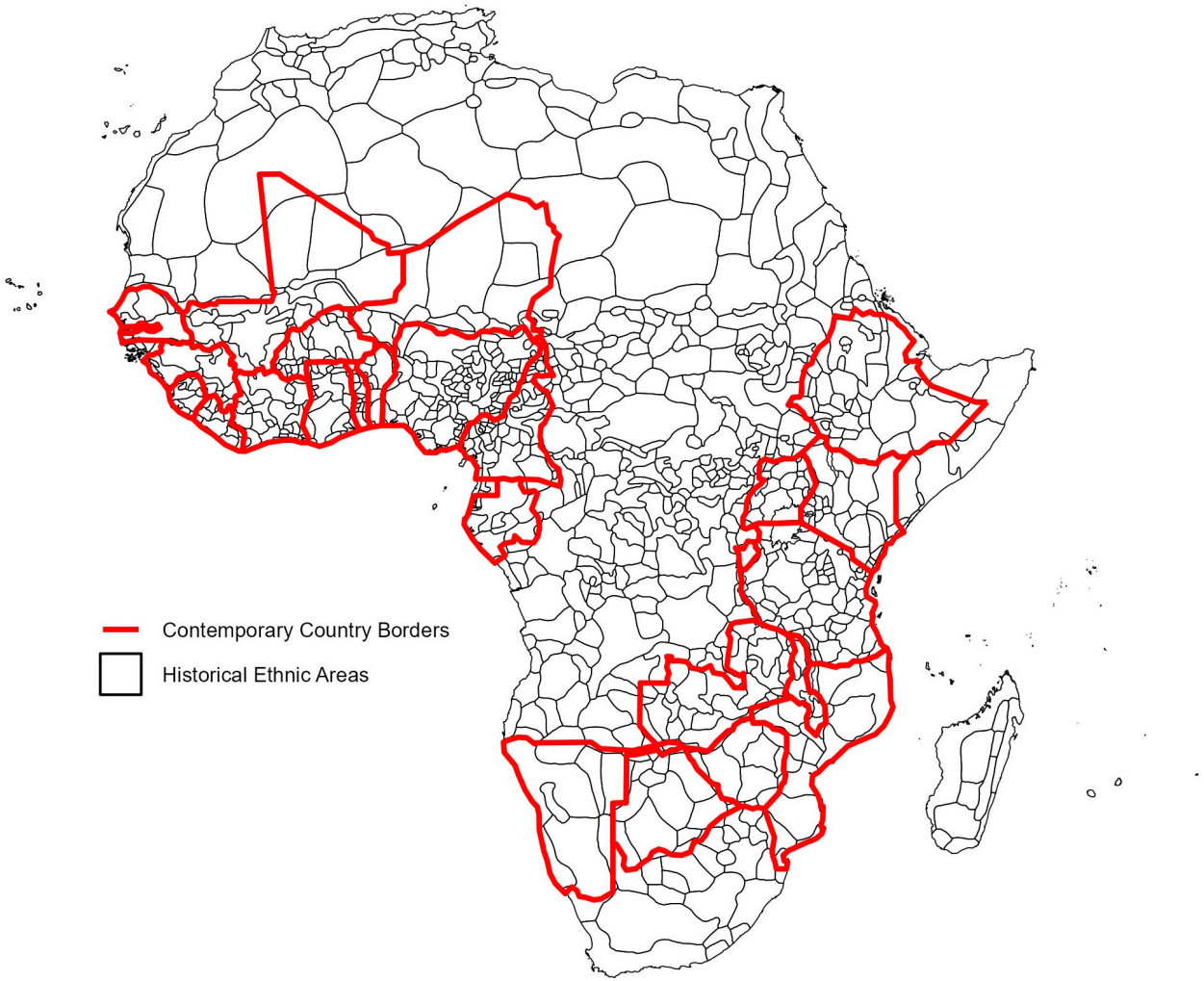
- Colonial boundaries - which became modern national borders - that arbitrarily divided historical ethnic homelands *Michalopoulos and Papaioannou, 2014; Provenzano, 2024*

- These arbitrary divisions created quasi-random national affiliations in border regions, generating sharp variations in citizens' distances from their respective national capital

- Compare individuals from the same ethnic group who, due to colonial boundaries, live at different distances from their capital cities

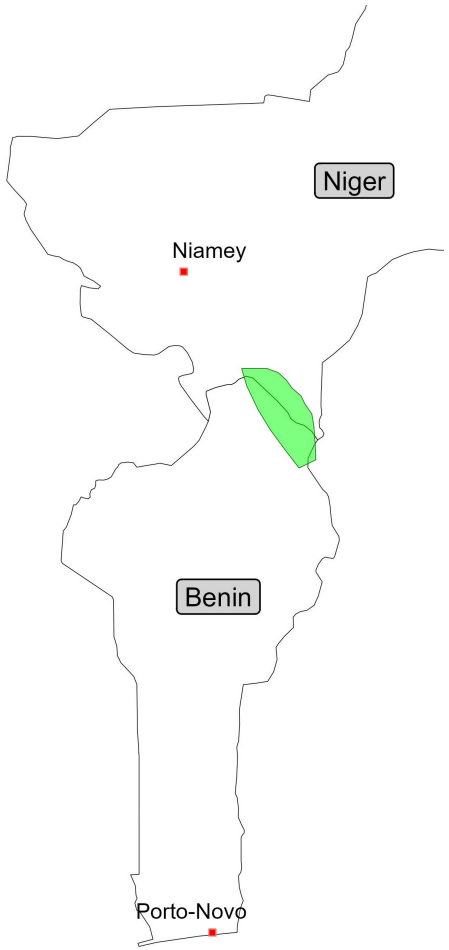
Empirical strategy - Spatial disparities in political trust

Figure 2: Historical Ethnic Areas and Contemporary National Boundaries



Empirical strategy - Spatial disparities in political trust

Figure 3: Exemple: Dendi Ethnic Group



$$trust_{ict} = \beta_0 + \beta_1 distance_{ict} + \gamma X_{ir}^{'} + \nu_{\mathbf{e}} + \mu_{ct} + \varepsilon_{ict} \quad (2)$$

Empirical strategy - Spatial disparities in political trust

Identification assumptions

1. Two individuals living in the same historical ethnic region share similar geographical, social, and historical traits, except for their distance from the capitals

2. The differences observed on either side of the country border are not attributable to institutional differences

$$trust_{ict} = \beta_0 + \beta_1 distance_{ict} + \gamma X'_{ir} + \theta Z'_{ct} + \nu_{\mathbf{e}} + \lambda_t + \varepsilon_{ict} \qquad (3)$$

Distance increases political trust

Table 1: Effect of distance from the capital on political trust

	OLS			
	Political trust			
	Base sample		Border sample	
	(1)	(2)	(3)	(4)
Distance from the capital	0.284***	0.270***	0.681***	0.397*
	(0.04)	(0.03)	(0.16)	(0.21)
Individual & regional controls	Yes	Yes	Yes	Yes
Country controls	Yes	No	Yes	No
Round FE	Yes	No	Yes	No
Country X Round FE	No	Yes	No	Yes
Ethnic homeland FE	No	No	Yes	Yes
Observations	98,235	98,235	4,189	4,189
Adjusted-R^2	0.158	0.197	0.159	0.189

Notes: The border sample includes individuals residing within a 20-kilometer buffer around a country border that overlaps with a historical ethnic homeland, as defined by Murdock (1959). Robust standard errors clustered at the region x round level for the base sample and ethnic homeland x region x round level for the border sample are in parentheses. The set of individual controls includes values of: normalized distance from the largest non-capital city, age, age squared, sex, education, employment status, rural/urban situation, personal economic conditions perception, ethnic discrimination, interest in politics, TV news consumption, radio news consumption, newspaper news consumption. The set of regional controls includes values of: nighttime light, population density, region area, president birthplace dummy. The set of country controls includes: log(GDP.p.c.), log(area), V-Dem Polyarchy index, World Bank corruption index, political regime type, colonial origin. *** / ** / * represent significance at the 0.01 / 0.05 / 0.10 levels, respectively.

Distance increases political trust

Figure 4: Border discontinuity - *Based on regression estimates from (3) of Table 1*

Empirical strategy - Internet coverage and spatial disparities

Effect of internet coverage on political trust by distance

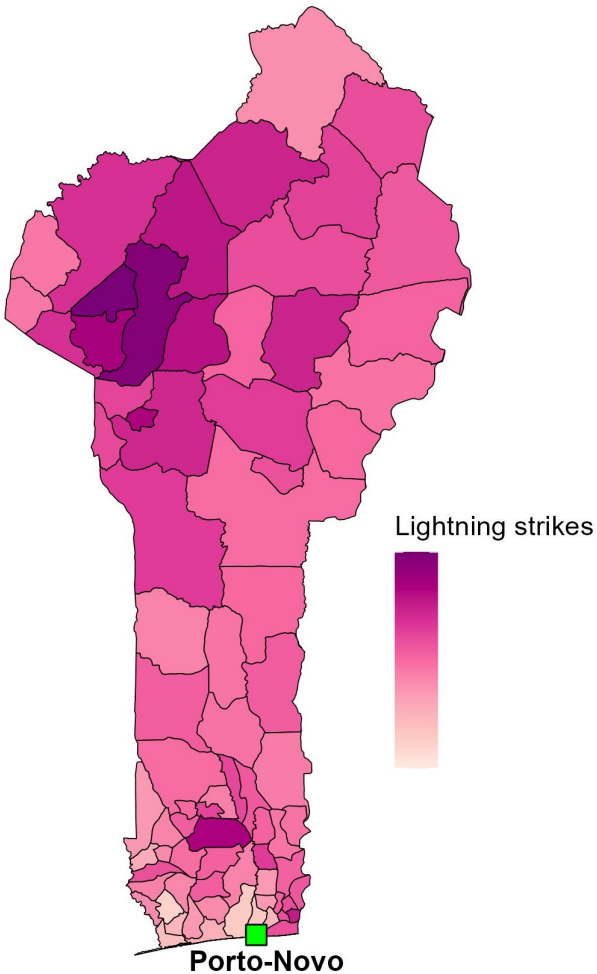
$$\begin{aligned} trust_{ict} =& \beta_0 + \beta_1 distance_{ict} + \beta_2 \textbf{internet\_coverage}_{ict} + \beta_3 \textbf{distance} \times \textbf{internet\_coverage}_{ict} \\ &+ \gamma X'_{ir} + \mu_{ct} + \varepsilon_{ict} \end{aligned} \tag{4}$$

internet_coverage$_{ict}$: Regional average of internet coverage weighted by population density *Guriev et al., 2021, Cariolle and Carroll, 2024*

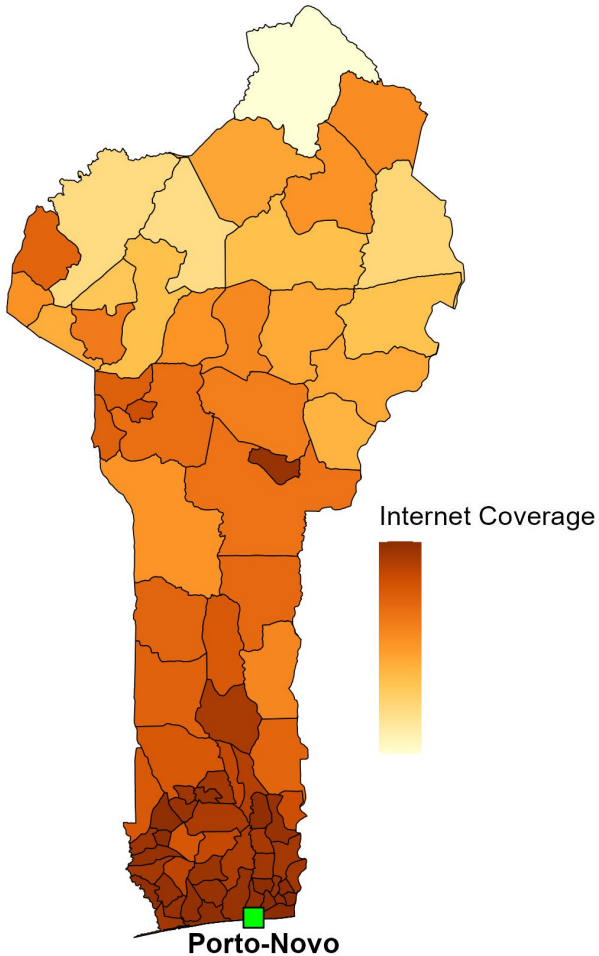
- **Reverse causality:** Areas with higher political trust might experience less deployment of internet infrastructure

Empirical strategy - Internet coverage and spatial disparities

Figure 5: Example: Benin Lightning Strikes and Internet Coverage



(a) Lightning strikes



(b) Internet coverage (2019-2021)

Empirical strategy - Internet coverage and spatial disparities

Lightning strikes instrument

- Instrument internet coverage using regional lightning strike patterns
  Manacorda and Tesei, 2020; Guriev et al., 2021; Cariolle and Carolle, 2024

- Areas with frequent lightning strikes face higher infrastructure deployment and maintenance costs, while these weather patterns are plausibly exogenous to political trust

- Average daily lightning strikes at the regional level using VHRFC data over 1998-2013, weighted by regional population density

Geographical instrument $\rightarrow$ focus on the base sample

Empirical strategy - Internet coverage and spatial disparities

First-stage

$$\textbf{internet\_coverage}_{ict} = \beta_0 + \beta_1 \textbf{lightning\_strike}_r \times t + \gamma X_{ir}^{'} + \mu_{ct} + v_{ict} \tag{5}$$

$$\textbf{distance} \times \textbf{internet\_coverage}_{ict} = \beta_0 + \beta_1 \textbf{distance} \times \textbf{lightning\_strike}_r \times t + \gamma X_{ir}^{'} + \mu_{ct} + v_{ict} \tag{6}$$

Second-stage

$$trust_{ict} = \beta_0 + \beta_1 distance_{ict} + \beta_2^{2S} \textbf{internet\_coverage}_{ict} + \beta_3^{2S} \textbf{distance} \times \textbf{internet\_coverage}_{ict} + \gamma X_{ir}^{'} + \mu_{ct} + \varepsilon_{ict} \tag{7}$$

Internet mitigates spatial disparities

Table 2: Effect of internet coverage on political trust by distance

	Base sample				
	OLS	First Stage			2SLS
	Political trust	Internet coverage		Distance × Internet coverage	Political trust
	(1)	(2)		(3)	(4)
Distance from the capital	0.463***				1.361***
	(0.05)				(0.49)
Internet coverage	0.029				1.470**
	(0.06)				(0.64)
Distance from the capital × Internet coverage	-0.480***				-2.295**
	(0.10)				(1.09)
Lightning strikes		-0.002***		-0.000	
		(0.00)		(0.00)	
Distance from the capital city × Lightning strikes		0.000		-0.001**	
		(0.00)		(0.00)	
SW *F* - Lightning strikes	-	-	19.66	-	-
SW *F* - Distance × Lightning strikes	-	-	11.13	-	-
Individual & regional controls	Yes	Yes		Yes	Yes
Country X Round FE	Yes	Yes	-	Yes	Yes
Observations	98,235	99,414		99,414	98,235
Adjusted-R^2	0.198	-	-	-	

Notes: *Notes*: Robust standard errors clustered at the region x round level. The set of individual controls includes values of: normalized distance from the largest non-capital city, age, age squared, sex, education, employment status, rural/urban situation, personal economic conditions perception, ethnic discrimination, interest in politics, TV news consumption, newspaper news consumption, radio consumption. The set of regional controls includes values of: nighttime light, population density, region area, president birthplace dummy. *** / ** / * represent significance at the 0.01 / 0.05 / 0.10 levels, respectively.

IV - Border sample

Internet mitigates spatial disparities

Figure 6: Marginal effect of Distance from the capital as a function of Internet coverage

Null effect of internet on generalized trust

Table 3: Generalized trust

	2SLS	
	Base sample: rounds 5 & 8	
	Political trust	Generalized trust
	(1)	(2)
Distance from the capital	1.358**	-0.157
	(0.62)	(0.17)
Internet coverage	1.508	-0.101
	(0.94)	(0.23)
Distance from the capital × Internet coverage	-2.161*	0.542
	(1.22)	(0.33)
Individual & regional controls	Yes	Yes
Country X Round FE	Yes	Yes
Observations	49,404	49,362

Notes: Robust standard errors clustered at the region x round level are in parentheses. The set of individual controls includes values of: normalized distance from the largest non-capital city, age, age squared, sex, education, employment status, rural/urban situation, personal economic conditions perception, ethnic discrimination, interest in politics, TV news consumption, newspaper news consumption, radio consumption. The set of regional controls includes values of: nighttime light, population density, region area, president birthplace dummy. *** / ** / * represent significance at the 0.01 / 0.05 / 0.10 levels, respectively.

Internet enchances political accountability

Table 4: Political accountability

	2SLS	
	Vote against ruling party	Country performance
	Base sample	Base sample
	(1)	(2)
Distance from the capital	-1.306***	1.560***
	(0.40)	(0.52)
Internet coverage	-1.370***	1.565**
	(0.47)	(0.62)
Distance from the capital × Internet coverage	2.614***	-3.065***
	(0.92)	(1.16)
Individual & regional controls	Yes	Yes
Country X Round FE	Yes	Yes
Observations	99,414	98,512

Notes: Robust standard errors clustered at the region x round level are in parentheses. The set of individual controls includes values of: normalized distance from the largest non-capital city, age, age squared, sex, education, employment status, rural/urban situation, personal economic conditions perception, ethnic discrimination, interest in politics, TV news consumption, newspaper news consumption, radio consumption. The set of regional controls includes values of: nighttime light, population density, region area, president birthplace dummy. *** / ** / * represent significance at the 0.01 / 0.05 / 0.10 levels, respectively.

Internet mitigates spatial disparities

Figure 7: Marginal effect of Distance from the capital as a function of Internet coverage

(a) Vote against rulling party

(b) Country performance

Information censorship

Table 5: Media and institutions freedom

	2SLS: Political trust			
	Base sample			
	Media		Institutions	
	Free	Captured	Free	Captured
	(1)	(2)	(3)	(4)
Distance from the capital	-4.922	1.133***	0.078	2.151***
	(11.77)	(0.41)	(0.83)	(0.77)
Internet coverage	-3.475	1.220*	0.112	2.964***
	(10.01)	(0.68)	(1.37)	(1.06)
Distance from the capital × Internet coverage	9.210	-2.160*	0.391	-4.202**
	(21.19)	(1.22)	(1.59)	(1.90)
Individual & regional controls	Yes	Yes	Yes	Yes
Country X Round FE	Yes	Yes	Yes	Yes
Observations	48,174	50,061	45,238	52,997

Notes: Robust standard errors clustered at the region x round level are in parentheses. The set of individual controls includes values of: normalized distance from the largest non-capital city, age, age squared, sex, education, employment status, rural/urban situation, personal economic conditions perception, ethnic discrimination, interest in politics, TV news consumption, newspaper news consumption, radio consumption. The set of regional controls includes values of: nighttime light, population density, region area, president birthplace dummy. *** / ** / * represent significance at the 0.01 / 0.05 / 0.10 levels, respectively.

Conclusion

- **Trust in political institutions** promotes state legitimacy, civic engagement, social cohesion
- **Nature of trust** is key for expecting favorable outcomes
- High levels of political trust with low information **can be misleading** and undermine democratic accountability and effective governance
- **Remote areas** are more prone to *uninformed trust* in political institutions due to both information scarcity and low expectation-engagement cycle

Conclusion

- **Mobile internet** potentially breaks information barriers by reducing the cost of accessing information about the government

- Replace *uninformed trust* with critical evaluation to restore accountability mechanisms needed for institutional development

IV - Border sample

Table 6: IV - Border sample : Effect of internet coverage on political trust by distance

	Border sample				
	OLS	First Stage			2SLS
	Political trust	Internet coverage		Distance × Internet coverage	Political trust
	(1)	(2)		(3)	(4)
Distance from the capital	0.640**				1.214***
	(0.26)				(0.42)
Internet coverage	0.620**				0.809
	(0.30)				(1.02)
Distance from the capital × Internet coverage	-0.535				-2.559**
	(0.46)				(1.18)
Lightning strikes		0.002		0.003***	
		(0.00)		(0.00)	
Distance from the capital city × Lightning strikes		0.000		-0.003***	
		(0.00)		(0.00)	
SW F - Lightning strikes	-	-	12.45	-	-
SW F - Distance × Lightning strikes	-	-	16.25	-	-
Individual & regional controls	Yes	Yes		Yes	Yes
Country X Round FE	Yes	Yes	-	Yes	Yes
Ethnic homeland FE	Yes	Yes	-	Yes	Yes
Observations	4,189	4,247		4,247	4,189
Adjusted-R^2	0.190	-	-	-	

Notes: *Notes*: The border sample includes individuals residing within a 20-kilometer buffer around a country border that overlaps with a historical ethnic homeland, as defined by Murdock (1959). Robust standard errors clustered at the ethnic homeland x region x round level for the border sample are in parentheses. The set of individual controls includes values of: normalized distance from the largest non-capital city, age, age squared, sex, education, employment status, rural/urban situation, personal economic conditions perception, ethnic discrimination, interest in politics, TV news consumption, newspaper news consumption, radio consumption. The set of regional controls includes values of: nighttime light, population density, region area, president birthplace dummy. *** / ** / * represent significance at the 0.01 / 0.05 / 0.10 levels, respectively.

IV - Base sample

Individual heterogeneity

Table 7: Individual heterogeneity

	2SLS: Political trust			
	Base sample			
	Education		Urban/Rural	
	$<$ Secondary	$\geq$ Secondary	Urban	Rural
	(1)	(2)	(3)	(4)
Distance from the capital	1.208***	1.394	1.133**	1.961***
	(0.31)	(1.17)	(0.52)	(0.70)
Internet coverage	1.706*	1.271	0.397	3.374***
	(0.92)	(1.32)	(0.63)	(1.18)
Distance from the capital $\times$ Internet coverage	-1.909**	-2.422	-1.785*	-3.447*
	(0.83)	(2.41)	(0.98)	(1.81)
Individual & regional controls	Yes	Yes	Yes	Yes
Country X Round FE	Yes	Yes	Yes	Yes
Observations	36,389	62,039	37,348	60,887

Notes: Robust standard errors clustered at the region x round level are in parentheses. The set of individual controls includes values of: normalized distance from the largest non-capital city, age, age squared, sex, education, employment status, rural/urban situation, personal economic conditions perception, ethnic discrimination, interest in politics, TV news consumption, newspaper news consumption, radio consumption. The set of regional controls includes values of: nighttime light, population density, region area, president birthplace dummy. Education, rural/urban, and age controls are omitted from columns (1-2), (3-4), and (5-8), respectively.*** / ** / * represent significance at the 0.01 / 0.05 / 0.10 levels, respectively.

IV - Internet news

Table 8: IV - Base sample : Effect of internet news on political trust by distance

	Border sample				
	OLS	First Stage			2SLS
	Political trust	Internet news		Distance × Internet news	Political trust
	(1)	(2)		(3)	(4)
Distance from the capital	0.301***				0.768***
	(0.03)				(0.12)
Internet news	-0.010*				-0.308
	(0.01)				(0.23)
Distance from the capital × Internet news	-0.045***				-0.800***
	(0.01)				(0.17)
Internet coverage		0.253***		-0.129***	
		(0.057)		(0.037)	
Distance from the capital city × Internet coverage		-0.077		0.622***	
		(0.09)		(0.07)	
SW F - Internet coverage	-	-	28.25	-	-
SW F - Distance × Internet coverage	-	-	81.36	-	-
Individual & regional controls	Yes	Yes		Yes	Yes
Country X Round FE	Yes	Yes	-	Yes	Yes
Ethnic homeland FE	Yes	Yes	-	Yes	Yes
Observations	97,686	98,849		98,849	97,686
Adjusted-R^2	0.198	-	-	-	

Notes: *Notes*: Robust standard errors clustered at the x region x round level are in parentheses. The set of individual controls includes values of: normalized distance from the largest non-capital city, age, age squared, sex, education, employment status, rural/urban situation, personal economic conditions perception, ethnic discrimination, interest in politics, TV news consumption, newspaper news consumption, radio consumption. The set of regional controls includes values of: nighttime light, population density, region area, president birthplace dummy. *** / ** / * represent significance at the 0.01 / 0.05 / 0.10 levels, respectively.

IV - Social media news

Table 9: IV - Base sample : Effect of social media news on political trust by distance

	Border sample				
	OLS	First Stage			2SLS
	Political trust	Social medias news		Distance × Social medias news	Political trust
	(1)	(2)		(3)	(4)
Distance from the capital	0.340***				0.656***
	(0.04)				(0.13)
Social medias news	-0.013**				-0.623
	(0.01)				(0.38)
Distance from the capital × Social medias news	-0.045***				-0.500***
	(0.01)				(0.15)
Internet coverage		0.212***		-0.249***	
		(0.07)		(0.05)	
Distance from the capital city × Internet coverage		-0.120		0.949***	
		(0.11)		(0.09)	
SW *F* - Internet coverage	-	-	10.39	-	-
SW *F* - Distance × Internet coverage	-	-	63.93	-	-
Individual & regional controls	Yes	Yes		Yes	Yes
Country X Round FE	Yes	Yes	-	Yes	Yes
Ethnic homeland FE	Yes	Yes	-	Yes	Yes
Observations	70,234	71,103		71,103	70,234
Adjusted-R^2	0.207	-	-	-	

Notes: *Notes*: Robust standard errors clustered at the x region x round level are in parentheses. The set of individual controls includes values of: normalized distance from the largest non-capital city, age, age squared, sex, education, employment status, rural/urban situation, personal economic conditions perception, ethnic discrimination, interest in politics, TV news consumption, newspaper news consumption, radio consumption. The set of regional controls includes values of: nighttime light, population density, region area, president birthplace dummy. *** / ** / * represent significance at the 0.01 / 0.05 / 0.10 levels, respectively.

Country sample and capital cities

Figure 8: Country Sample and Capital Cities