

# **Concessions, Violence, and Indirect Rule: Evidence from the Congo Free State**

By Sara Lowes and Eduardo Montero (*QJE*, 2021)

Ishara Musimwa

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# Plan

① Background

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## Research question

- ▶ What are the long-term effects of labour coercion (in rubber concessions) on economic development in what is now the Democratic Republic of Congo ?
- ▶ The labour coercion during the rubber regime (in Congo Free State) under King Leopold II of Belgium has undermined long-run development in the DRC, despite the regime lasting only 14 years.

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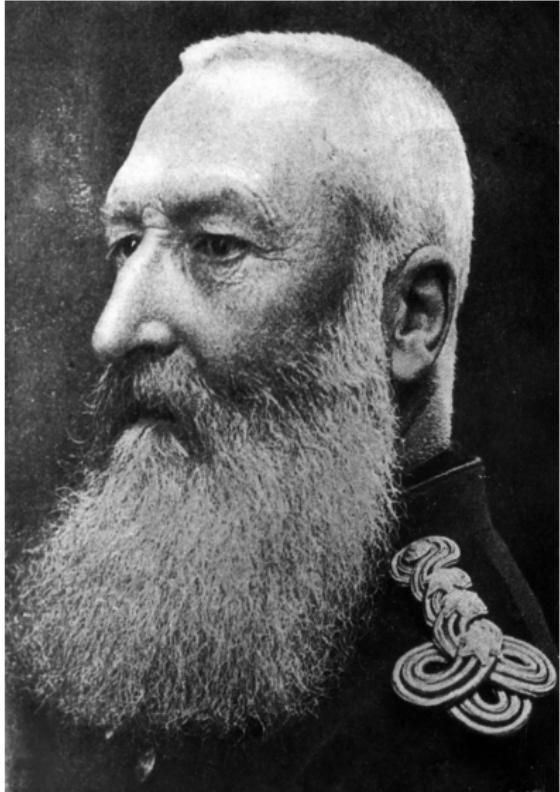
## Historical Background

# African territories claimed by European countries in 1870



- Territoires sous suzeraineté ottomane
- Possessions françaises
- Possessions britanniques
- Possessions portugaises
- Possessions espagnoles
- Possessions italiennes
- Etats Boers

## King Leopold II of Belgium and the owner of Congo Free State



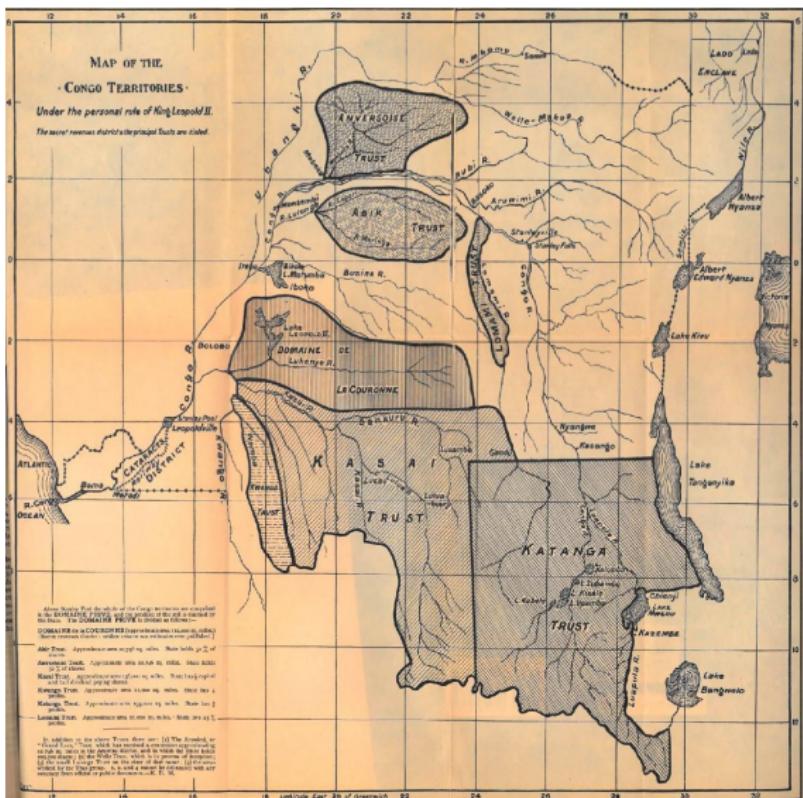
- ▶ claimed a large part (2M+ km<sup>2</sup>) as his private property
- ▶ In 1885 (Berlin Congress), negotiated the creation of CFS as his PERSONAL colony
- ▶ Promised to end slaves trades, bring civilization and the gospel (missionaries) and keep the CFS as a free-trade zone for individuals of all nationality

## Rubber concessions in the Congo Free State

- ▶ 1887 : invention of the pneumatic tires (increased the demand for natural rubber and Congo had an abundance of it) and Leopold had financial troubles.
- ▶ Leopold granted concessions to private firms, where rubber quotas were enforced by the “Force Publique” and village chiefs



**Figure 1:** 1904 Map of Concessions Granted by Leopold II



# Coerced Labor in the Congo Free State (1885-1908)

- ▶ Rubber quotas : 4 kg every two weeks  
( $\Rightarrow$  24 days/m of full-time labor)
- ▶ Villagers forced deep into the jungle to tap wild landolphia
- ▶ ABIR has in 1 year made a net profit = $12 \times K_0$



## Extremely Violent Enforcement (“Blood Rubber”)

- Punishment : Whipping, mutilation (severing of hands), execution
- Militarized : Force publique and company militia (“sentries”)



# Death Toll (Most undocumented fact of modern history)

- ▶ Millions perished during the CFS (1885-1908)
  - Hochschild (1998), Nzongala-Ntalaja (2002) :  
50% of population (10M)
  - Vansina (2010): catastrophic losses, precise figure unknowable

## As Hochschild describes

*"the world has managed to forget one of the great mass killings of recent history... it was unmistakably clear that the Congo of a century ago had indeed seen a death toll of Holocaust dimensions"*  
(Hochschild, 1998)

- ▶ Most undocumented fact of modern history (archives were burnt)

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# Data

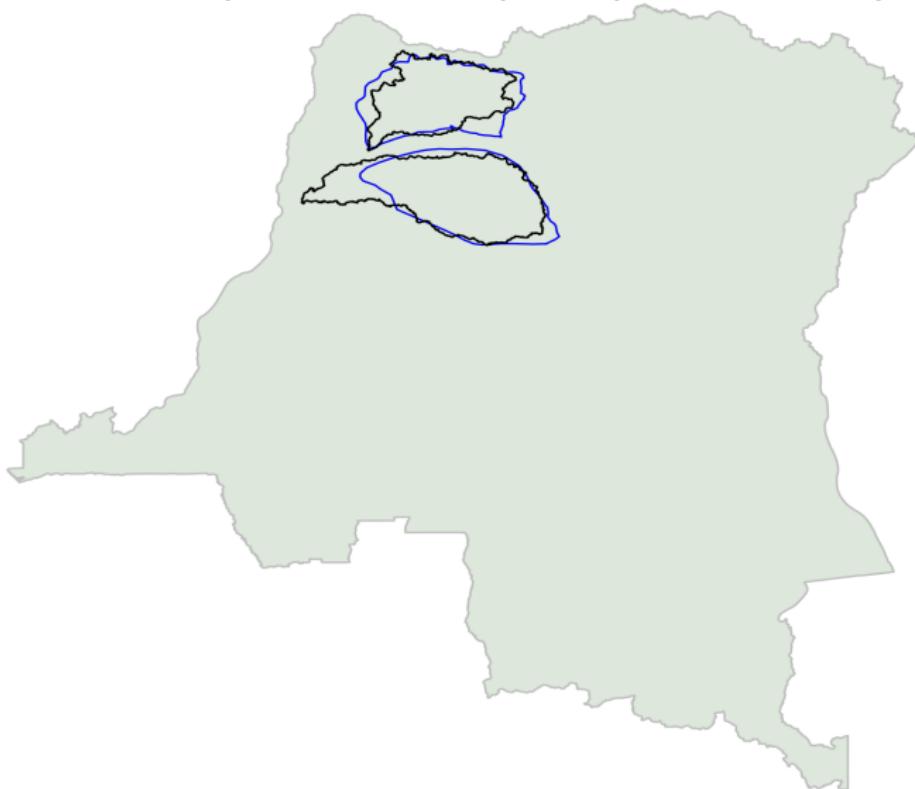
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## Data : Treatment [Concession (blue) and River (black)]

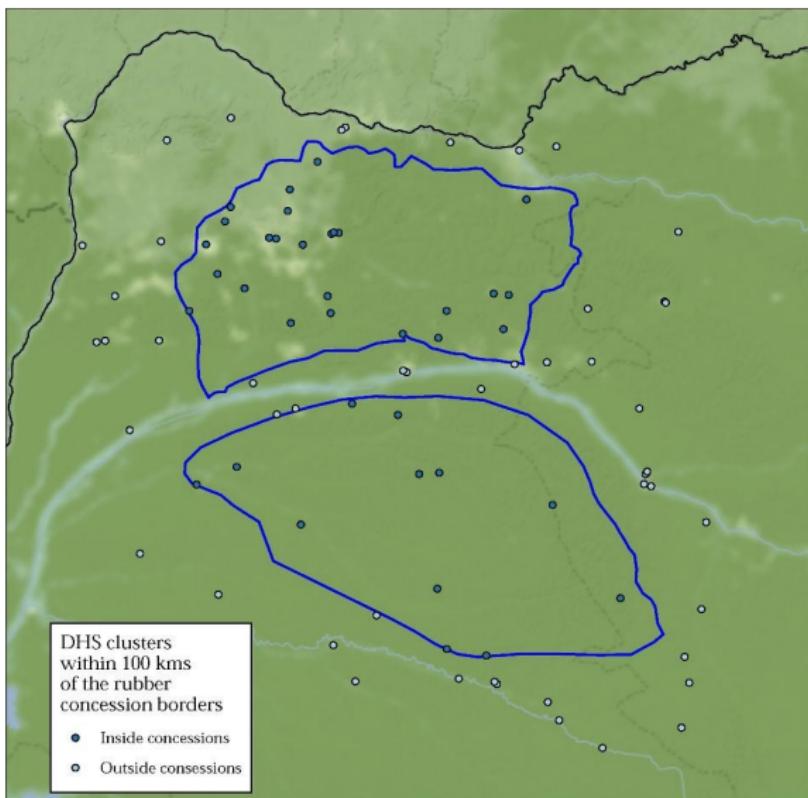


## Data : Outcomes

Main outcomes : DHS from 2007 and 2014

- **Education** : years of schooling, literacy indicator
- **Wealth** : DHS wealth index/ log(wealth factor score)
- **Health** : height-for-age percentile

Figure 2: Maps of Clusters from the DHS 2007 and 2014 for DRC



# Regression Discontinuity Design

$$y_{i,v} = \alpha + \gamma \text{RubberConcession}_v + f(\text{location}_v) + X_i' \beta + \phi + \varepsilon_{i,v}$$

- $y_{i,v}$ : outcome for individual  $i$  from village  $v$
- $\text{RubberConcession}_v = 1$  if village  $v$  lies inside Abir/Anversoise, 0 otherwise
- $f(\text{location}_v)$ : local linear RD in distance to concession border, fit separately on each side
- $X_i$ : individual controls (age, age<sup>2</sup>, gender, survey-year indicators)
- $\phi$ : nearest-concession fixed effect
- **Baseline**: optimal bandwidth (MSE) + robustness to fixed 100km window, SEs clustered at the DHS cluster level
- Balance : geography, disease, location, pre-concession characteristics

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## Results

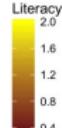
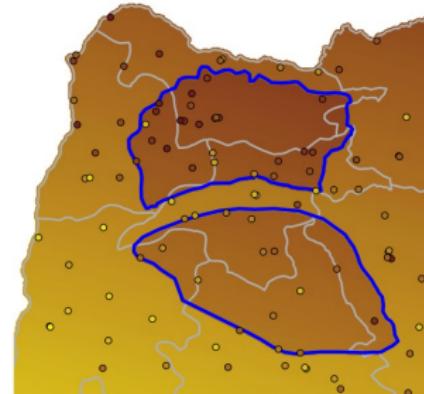
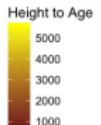
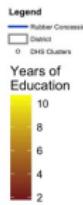
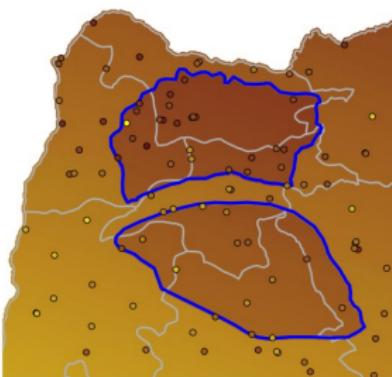
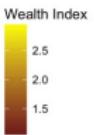
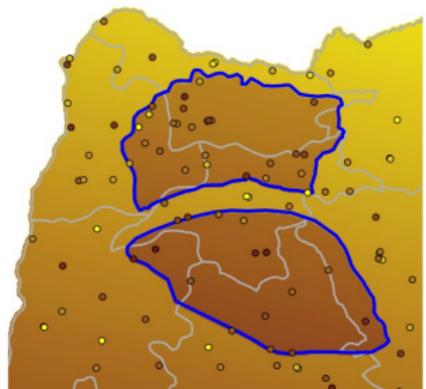
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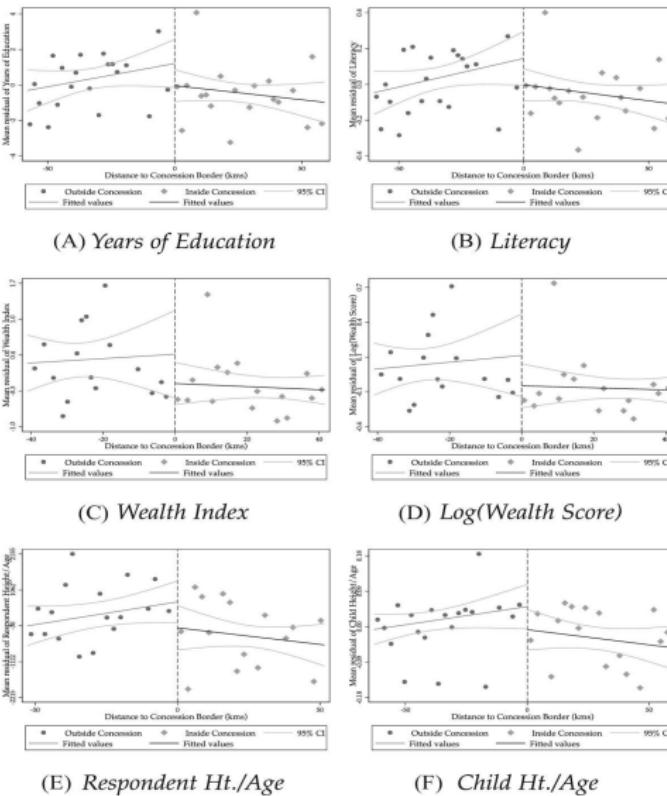
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## Results: RD Plots for Development Outcomes



# Results



# Results: Effects on Education, Wealth, and Health

	(1)	(2)	(3)	(4)
Panel A: Education	Years of education		Literacy	
<b>Inside concession</b>	-1.804** (0.777)	-1.396** (0.635)	-0.190** (0.084)	-0.150** (0.069)
Bandwidth choice	Optimal	Wide	Optimal	Wide
Observations	3,309	4,274	3,368	4,266
Clusters	61	85	62	85
Bandwidth	59.43	100.00	60.97	100.00
Mean dep. var.	4.997	5.109	0.447	0.465
Std. dev. dep. var.	3.802	3.821	0.497	0.499
Panel B: Asset wealth	Wealth index		Log(wealth score)	
<b>Inside concession</b>	-0.797* (0.436)	-0.686** (0.306)	-0.350** (0.173)	-0.259** (0.126)
Bandwidth choice	Optimal	Wide	Optimal	Wide
Observations	2,627	4,281	2,627	4,281
Clusters	47	85	47	85
Bandwidth	41.76	100.00	41.92	100.00
Mean dep. var.	2.090	2.034	10.932	10.912
Std. dev. dep. var.	1.074	1.060	0.431	0.443
Panel C: Health	Respondent ht./age percentile		Child ht./age percentile	
<b>Inside concession</b>	-0.112** (0.045)	-0.093** (0.038)	-0.090** (0.037)	-0.085** (0.033)
Bandwidth choice	Optimal	Wide	Optimal	Wide
Observations	1,050	1,422	1,065	1,314
Clusters	55	85	64	85
Bandwidth	53.49	100.00	64.85	100.00
Mean dep. var.	0.262	0.259	0.248	0.247
Std. dev. dep. var.	0.254	0.252	0.318	0.316

# Mechanism

	(1)	(2)	(3)	(4)
Panel A: Village development	Village public goods index		Village subjective ratings index	
<b>Inside concession</b>	-0.127*	-0.115**	-0.881***	-0.434**
Bandwidth choice	Optimal	Wide	Optimal	Wide
Observations	266	304	147	212
Clusters	136	221	87	162
Bandwidth	34.39	100.00	22.63	100.00
Mean dep. var.	-0.003	0.003	0.062	0.068
Std. dev. dep. var.	0.285	0.291	0.740	0.690
Panel B: Chief quality and accountability	Chief elected		Chief public good index	
<b>Inside concession</b>	-0.423**	-0.345***	-0.279**	-0.194*
Bandwidth choice	Optimal	Wide	Optimal	Wide
Observations	189	255	250	296
Clusters	104	189	120	210
Bandwidth	26.89	100.00	28.44	100.00
Mean dep. var.	0.503	0.506	-0.080	0.016
Std. dev. dep. var.	0.502	0.501	0.519	0.494
Panel C: Respect for authority	Survey questions index		Chief IAT score	
<b>Inside concession</b>	0.137	0.197	0.165	0.026
Bandwidth choice	Optimal	Wide	Optimal	Wide
Observations	274	465	257	417
Clusters	142	313	127	285
Bandwidth	21.71	100.00	21.07	100.00
Mean dep. var.	0.068	0.003	-0.091	-0.088
Std. dev. dep. var.	0.739	0.750	0.566	0.549

**Institutions** : Use of indirect rule led to less accountable leaders and lower public-goods provision

# Mechanism

	(1)	(2)	(3)	(4)
<b>Panel A: Trust and closeness</b>		<b>Trust index</b>		<b>Closeness index</b>
<b>Inside concession</b>		0.299 (0.235)	0.313*** (0.120)	0.521** (0.210)
Bandwidth choice	Optimal	Wide	Optimal	Wide
Observations	304	465	299	465
Clusters	152	313	158	313
Bandwidth	23.70	100.00	24.99	100.00
Mean dep. var.	0.137	0.041	0.156	0.045
Std. dev. dep. var.	0.701	0.707	0.717	0.717
<b>Panel B: Survey measures of sharing norms</b>		<b>Respondent</b>		<b>Village of origin</b>
<b>Inside concession</b>		0.517** (0.254)	0.339* (0.184)	0.490** (0.230)
Bandwidth choice	Optimal	Wide	Optimal	Wide
Observations	308	453	285	363
Clusters	156	304	144	255
Bandwidth	26.47	100.00	28.06	100.00
Mean dep. var.	0.068	0.031	0.012	0.006
Std. dev. dep. var.	0.835	0.825	0.785	0.783
<b>Panel C: Experimental measures of sharing norms</b>		<b>Dictator game: share sent</b>		<b>Effort task: share redistributed</b>
<b>Inside concession</b>		-0.018 (0.025)	0.001 (0.020)	0.067** (0.030)
Bandwidth choice	Optimal	Wide	Optimal	Wide
Observations	258	438	368	437
Clusters	135	300	193	300
Bandwidth	21.46	100.00	37.22	100.00
Mean dep. var.	0.449	0.445	0.410	0.405
Std. dev. dep. var.	0.122	0.123	0.134	0.134

**Culture** : Higher “social capital” (i.e., social ties, trust, cooperation) interpreted as coping when formal institutions fail, which allows low quality leadership to persist

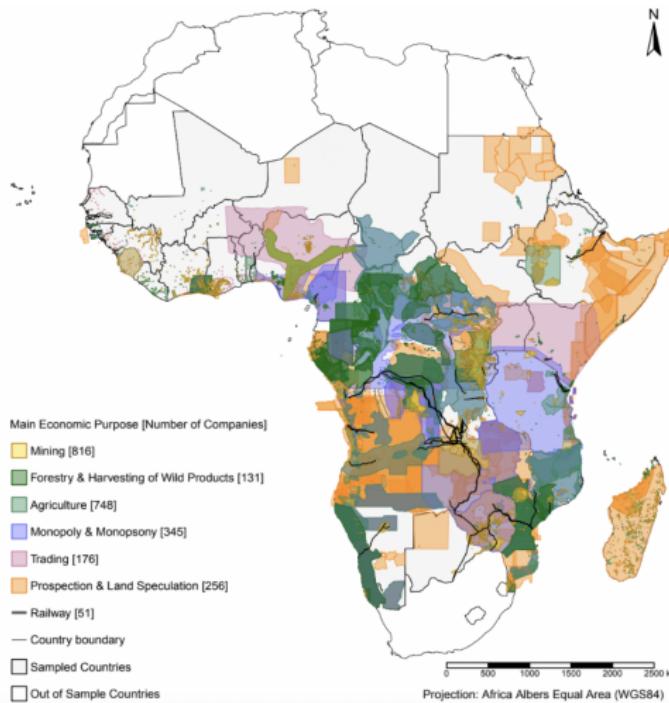
## Conclusion of Lowes and Montero (2021)

- They examine an brutal and violent episode of colonial labour coercion
- The labour coercion has undermined long-run development in the DRC.
- Individuals in former rubber concession areas have lower levels of education, are poorer, and have worse health outcomes than individuals just outside the concessions.
- Even historical events of short duration can have long-lasting effects on development and local institutional quality.

Do you want a BONUS ?

# Bonus : Chiovelli, Michalopoulos and Papaioannou (2026)

Figure 3: 700+ Africa-wide concessions boundaries



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## Types of companies : Extractive, Developmentalist and Mixed



Hospital HCB



Plant UMHK

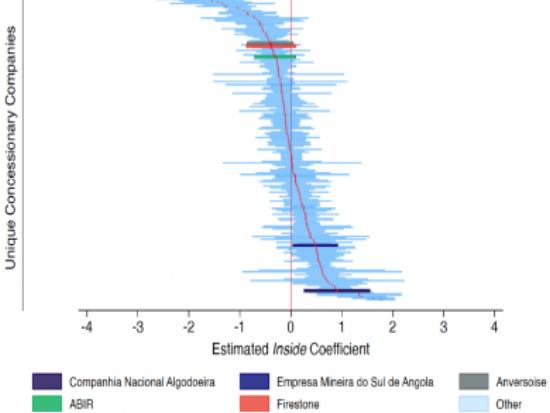
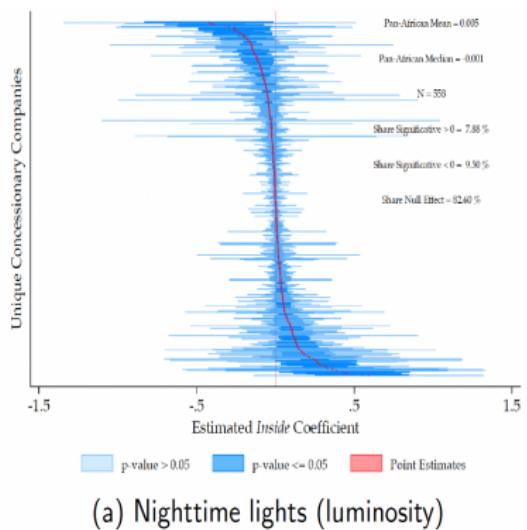


Congo-Ocean Railway



Workers Kolmanskop Mines, Ltd.

# Local Economic Legacy of Concessions



(b) DHS composite wealth index

Credit: Last 3 slides are screenshots from Augustin Bergeron

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## Data and RDD

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## Contribution des provinces au PIB de la RDC (en 2022)

PIB de la RDC à prix courant 2022 : 132 063,71 milliards de CDF

