

# **Ein Virus, das keine Grenzen kennt?**

**Reiseverkehr, Einreisebeschränkungen und die internationale Verbreitung von COVID-19**

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https://www.dailymail.co.uk/news/article-8036213/World-reaches-coronavirus-tipping-point-three-deaths-spark-panic-Italy.html

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## Italian passenger jet is 'held' after arriving in Mauritius as authorities 'demand all on board are quarantined or fly straight back' amid concerns over coronavirus which has killed SIX in the country... while UK insists 'threat to British public is low'

- Passengers from Italy's worst-affected regions were held up after arriving in Mauritius on an Alitalia flight
- Forty of them eventually chose to return home to northern Italy where the virus death toll has risen to six
- Two men aged 84 and 88 and a woman at a Brescia hospital were confirmed as victims four, five and six today
- Britain has said the 'threat is low' while France has dismissed calls to close its mountainous border with Italy
- Italy has confirmed 219 cases of the virus, by far the largest number outside China, Japan and South Korea
- Lombardy and Veneto have locked down towns and banned public events with schools shut to stop the virus
- A passenger left a flight from London to Milan today amid fears that tourists could spread virus across Europe

175%

DE 99% 11:44

# Forschungsfragen

- Lässt sich das Virus tatsächlich nicht von Grenzen aufhalten oder bremsen? > gemäß der Theorie, dass wenn das Virus einmal irgendwann angekommen ist, es sich weiter national verbreiten wird
- 1. Teilfrage: ist das Ausmaß der Betroffenheit von Ländern von COVID-19 unabhängig von internationalen Reiseverkehrsströmen?
- 2. Teilfrage: sind Einreisebeschränkungen tatsächlich gegen die Verbreitung des Virus wirkungslos geblieben?

# Datengrundlage

- Teilfrage 1: alle unabhängige Staaten der Welt mit >50000 Einwohnern, für die Daten zu COVID-19 und zum internationalen Reiseverkehr vorliegen (n=176)
- Teilfrage 2: Alle europäische Länder (n=40), alle nicht-europäische Mitglieder der OECD (n=10), sowie weitere Länder aus allen Kontinenten zu denen ich bisher Reisebeschränkungen kodieren konnte (n=37)

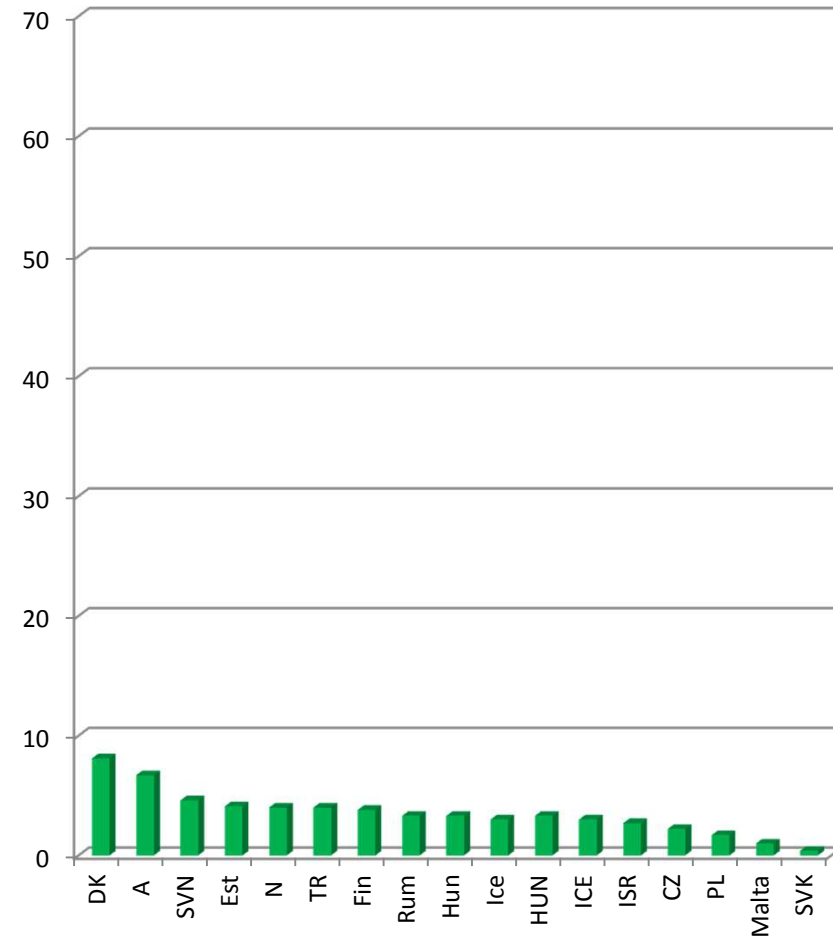
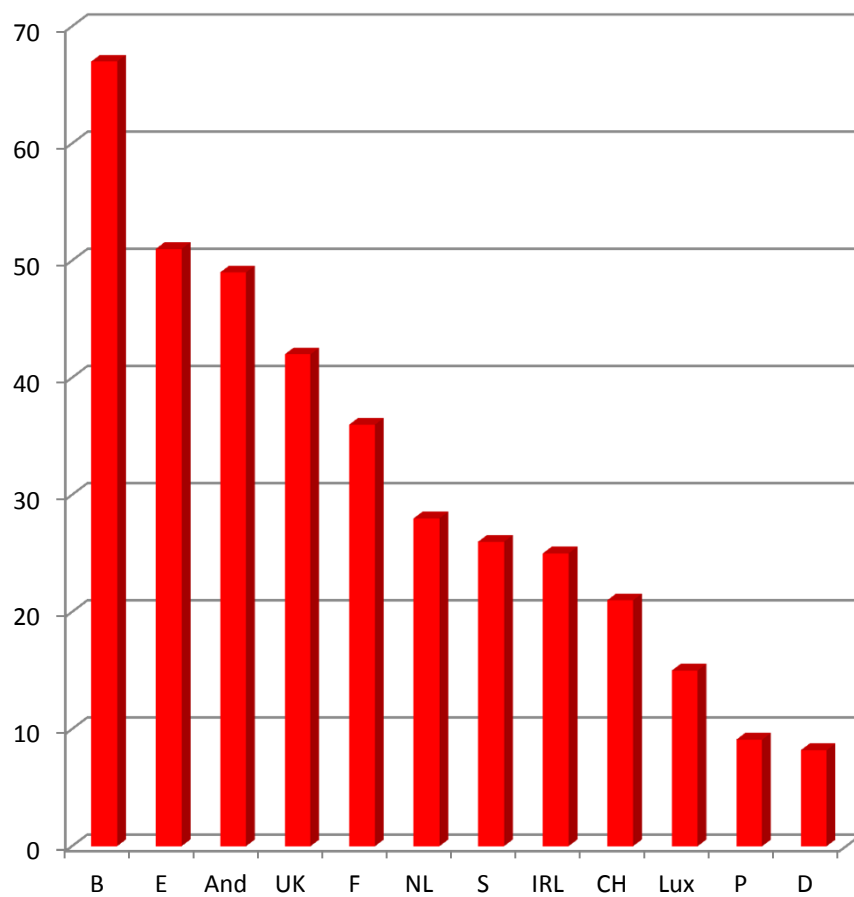
# Variablen

- Zahl der COVID-Tote zum 1.5.2020 (per capita oder logarithmiert)
- Datum des 1. COVID Falls, des 10. Falls, des 1. Todesfalles und des 10. Todesfalles
- Reiseverkehr: International tourist arrivals, UN World Tourism Organization, 2017
- Datum der Einführung von Einreisestopps für Reisende aus China, Italien, und das gesamte Ausland sowie Datum der Einführung von Quarantänemaßnahmen für Einreisende aus China, Italien, und das gesamte Ausland (eigene Kodierung aus einer Vielzahl von Quellen)
- Sekundäre Kodierung von Einreisebeschränkungen relativ zum Verlauf der COVID-epidemie im jeweiligen Einreiseland: vor dem 1. Fall, vor dem 10. Fall, vor dem 1. Todesfall, vor dem 10. Todesfall, nach dem 10. Todesfall, oder bis zum 1.5.2020 überhaupt nicht.
- Kontrollvariablen: GDP per capita, Freedom House political rights and civil liberties score, mediales Alter der Bevölkerung (oder % über 65; Ergebnisse ändern sich nicht), geographische Region (Europa, Amerika, MENA, Subsahara Afrika, Asien-Pazifik), Bevölkerungsdichte (nicht gezeigt weil konsistent insignifikant)

# Ergebnisse

	Baseline model	Plus tourist arrivals	Plus tourist arrivals	Plus entry restrictions
GDP per capita	+++	+++	+	n.s.
Median age	n.s.	-	n.s.	n.s.
Democracy	n.s.	n.s.	n.s.	(+)
Region (ref. Asia-Pacific)				
Europe	+++	+++	+	+
Americas	n.s.	n.s.	n.s.	n.s.
MENA	n.s.	n.s.	n.s.	n.s.
Subsahara Africa	n.s.	n.s.	n.s.	n.s.
Tourist arrivals (millions)		+++ <b>B=.285</b>	+++ <b>B=.330</b>	++ <b>B=.211</b>
Entry restrictions scale (1= all restrictions prior to 10 <sup>th</sup> death; 0 = no restrictions prior to 10 <sup>th</sup> death)				- - - <b>B= -13.8</b>
R <sup>2</sup>	.34	.48	.44	.55
N=	176	176	87	87

# Zahl der COVID-19 Todesfälle (zum 1.5.2020) pro 100.000 Einwohner in europäischen Ländern, die die Einreise aus Italien vor (rechts in grün) oder nach (links in rot) dem 10. nationalen Todesfall verhängten



# Robustness checks

- Alternative modelling strategy with logged number of deaths as dependent variable and logged population as additional predictor variable. No difference regarding the key variables (tourist arrivals and entry restrictions). Only substantive difference is that not just Europe, but also the Americas and MENA have more deaths than Asia-Pacific in this specification
- Excluding cases that never had 10 deaths: entry restrictions effect even increases somewhat (n=67; B=16.3)
- Controlling for the timing of the 10th death, assuming that the earlier this event occurs, the longer casualty numbers have to increase and the shorter the time window for authorities to decide on entry restrictions: virtually no change (n=67; B=14.9), also because the timing of the 10th death has no significant effect on per capita deaths
- Controlling additionally for number of deaths on 20 March, assuming that in most cases these cannot yet reflect effects of entry restrictions (e.g., the average date of Italy entry bans was 13 March): entry restrictions effect only slightly reduced (B=12.3), i.e. entry restrictions explain differences across countries controlling for pre-intervention differences



# What about China and Italy?

- On 23 January, China implemented an internal travel ban, precluding all travel in and out of Hubei province. At the time, 17 COVID deaths had been recorded, all of which had occurred within Hubei province. The low per capita death rate in China thus fully conforms to the model (see also Kraemer et al., *Science* 1 May 2020)
- Italy implemented a quarantine of a few municipalities (54,000 inhabitants) on 22 February. At the time, 2 deaths had been recorded. On 8 March Italy banned travel in and out of 14 Northern provinces in 5 regions (with some 16 million inhabitants). By then, 366 people had already died, at least 13 of which outside the quarantine zone. Italy thus implemented travel restrictions much too late and conforms to the model.
- But why did Italy see an outbreak at all, even though it had cancelled all flights to and from China early on (on 31 January)? > May just have been bad luck (two Chinese tourists had already tested positive in Italy before the ban) or import of Chinese cases continued in spite of the ban through indirect entry via other Schengen countries. The origin of the infection of „patient zero“ of the Northern Italy outbreak (a manager of a local Unilever branch) remains as yet unknown.

**Vielen Dank für Ihre Aufmerksamkeit!**