

Regional Spread, Social Drivers, and Economic Outcomes of the Sars-Cov-2 Pandemic in Germany 2020

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Increasing Divergence and Changing Social Trends in Europe?
Longer-term Developments and Consequences of the Pandemic**

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Outline

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Motivation

- ❖ **(Social) Inequality – drivers and outcomes of pandemics ?**
 - *Who is affected most by Sars-Cov-2 infections ?*
 - *Who is affected most by socio-economic impacts from pandemics ?*
 - *Patterns of (social) change during pandemic progress ?*

The paper addresses **epidemiological and socio-economic** impacts due to the sars-cov-2 pandemic in Germany and their variations according to **income strata**.

[Results I] The first part of the paper highlights survey results from SOEP-CoV 2020 – *(DE march/april – june/july 2020)*

[Results II] The second part of the paper refers to changes in patterns of regional sars-cov-2 infections during pandemic – SOEPv35 | RKI-data - *(DE march/april – june/july 2020)*

Empirical Concept – Data Sources

- ❖ **Socio-economic characteristics of regions remain stable over time - “prospective simulation”**
 - *Socio-economic characteristics of 2018 are applied to the same individuals/households in 2020 [Results I]*
 - *Regional epidemiological impacts of pandemic are applied to individuals/households in 2018 [Results II]*

Data Source	N (obs.)	observation level	time	timing
SOEPv35 <i>(Pre-SOEP)</i>	Ind Ad (N=48.282 34.022)	households individuals <i>households individuals</i>	2018 <i>2019, 2020</i>	annual (interview-date) <i>interview-date (annual)</i>
SOEP-Cov	Res Ad (N=6.694 8.968)	respondents (adults)	2020 [31.03-04.07.]	9 time periods
RKI	Reg (N=401)*T	regional indicators (nuts-3)	2020-2021	period, month, cal.week, [day]

Data source	region	applications
SOEPv35 <i>(Pre-SOEP)</i>	nuts-3	2018: Income Strata (Quantiles); social characteristics <i>2019: hh-income 2020: hh-members; hh-income and timing</i>
SOEP-Cov	nuts-3	2020: epidemiological and socio-economic pandemic impacts
RKI	nuts-3	2020-2021: regional sars-cov-2 indicators (infection, decease)

Empirical Concept – Indicators [->Results I]

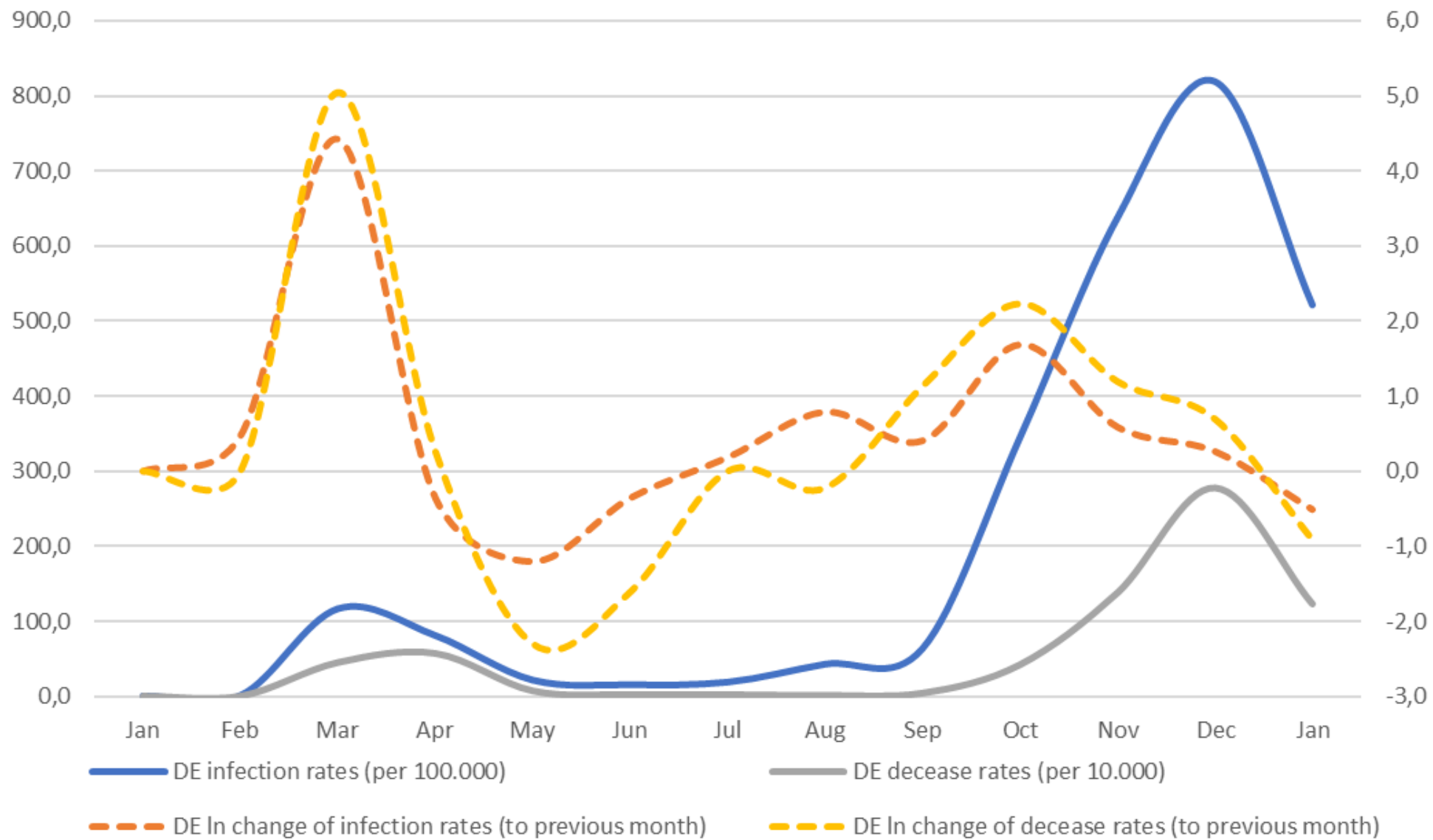


Indicators for epidemiological and socio-economic impacts of pandemic

Indicator	Indicator Label	Data Origin
pcov	Tested positive	SOEP-CoV 2020
pcov_1	Test completed	SOEP-CoV 2020
pcov_2	In home quarantine	SOEP-CoV 2020
pcov_3	Counties with more than 400 Infec./100000 (jan-01 - jul-14 2020)	RKI-Data
pcov_4	Real./expected Jobloss	SOEP-CoV 2020
pcov_5	Changes in working hours, home office	SOEP-CoV 2020
pcov_6	Real. / expected Income Loss	SOEP-CoV 2020
d1hek	% of household with reduction in hh-income [to previous year]	SOEP-2019 and SOEP-2020

Sars-Cov-2 Infections and Deceases in Germany [Jan-2020 - Jan-2021]

- per month -



Results I

(DE Jan-01 – Jul-14 2020) [1/3]

TabCov 1

Regional Infections in counties (nuts-3) over time periods [DE, 2020]

Respondents in Counties (mean)	Corona-Infections in counties - Jan - Jul 2020			
	[jan-01 - feb-29]	[mar-01 - apr-14]	[apr-15 - may-31]	[jun-01 - jul-14]
Infected	5,7	888,5	269,0	164,2
Infected/100000Ew	1,2	161,9	49,1	20,4
50+Infected/100000Ew	0,2%	86,3%	39,2%	10,0%

Infections in counties - according to income quantiles [2018]

<i>Top.Quintile</i>	6,1	933,6	291,6	171,3
<i>4.Quintile</i>	7,0	914,0	271,6	153,9
<i>3.Quintile</i>	5,3	916,7	271,7	187,3
<i>2.Quintile</i>	5,0	840,9	252,3	149,0
<i>Bot.Quintile</i>	5,3	791,2	250,3	164,9

Resp. In counties with 50u.m Infections/100000Ew per period - according to income quantiles [2018]

<i>Top.Quintile</i>	0,2%	90,3%	45,3%	10,3%
<i>4.Quintile</i>	0,6%	88,6%	43,5%	9,8%
<i>3.Quintile</i>	0,0%	88,4%	35,3%	11,7%
<i>2.Quintile</i>	0,1%	85,2%	39,4%	9,0%
<i>Bot.Quintile</i>	0,2%	81,0%	33,9%	10,2%

Data sources: SOEPv35, RKI (own calculations)

Results I

(DE Mar-31 – Jul-04 2020) [2/3]

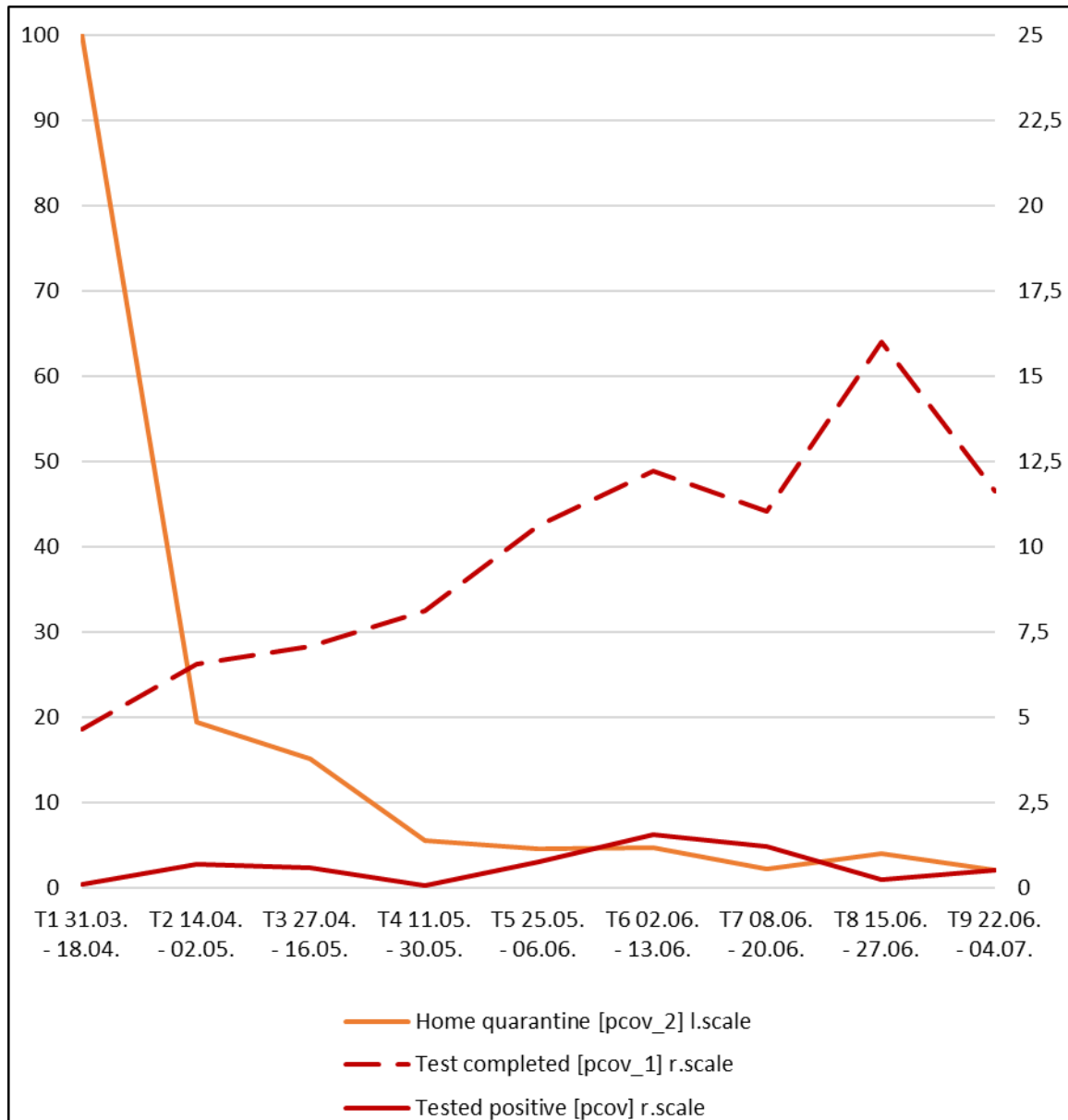
- ❖ **Epidemiological Impacts**
 - Higher Rates in Home Quarantine and Tests for lower incomes | *Higher regional infection rates for higher incomes*
- ❖ **Pandemic Impacts on Labour Market**
 - More Risks for *Real./Expected Job Loss at bottom/top incomes* | *More changes for working for mid & top incomes*
- ❖ **Pandemic Impacts on Incomes, Consumption and Savings**
 - More Risks for *Real./Expected Income Loss at bottom incomes* | *More hhs with income reduction at mid & top incomes*

TabCov 2 Epidemiological and socio-economic impacts from pandemic by income strata [DE mar-31 - jul-04 2020]

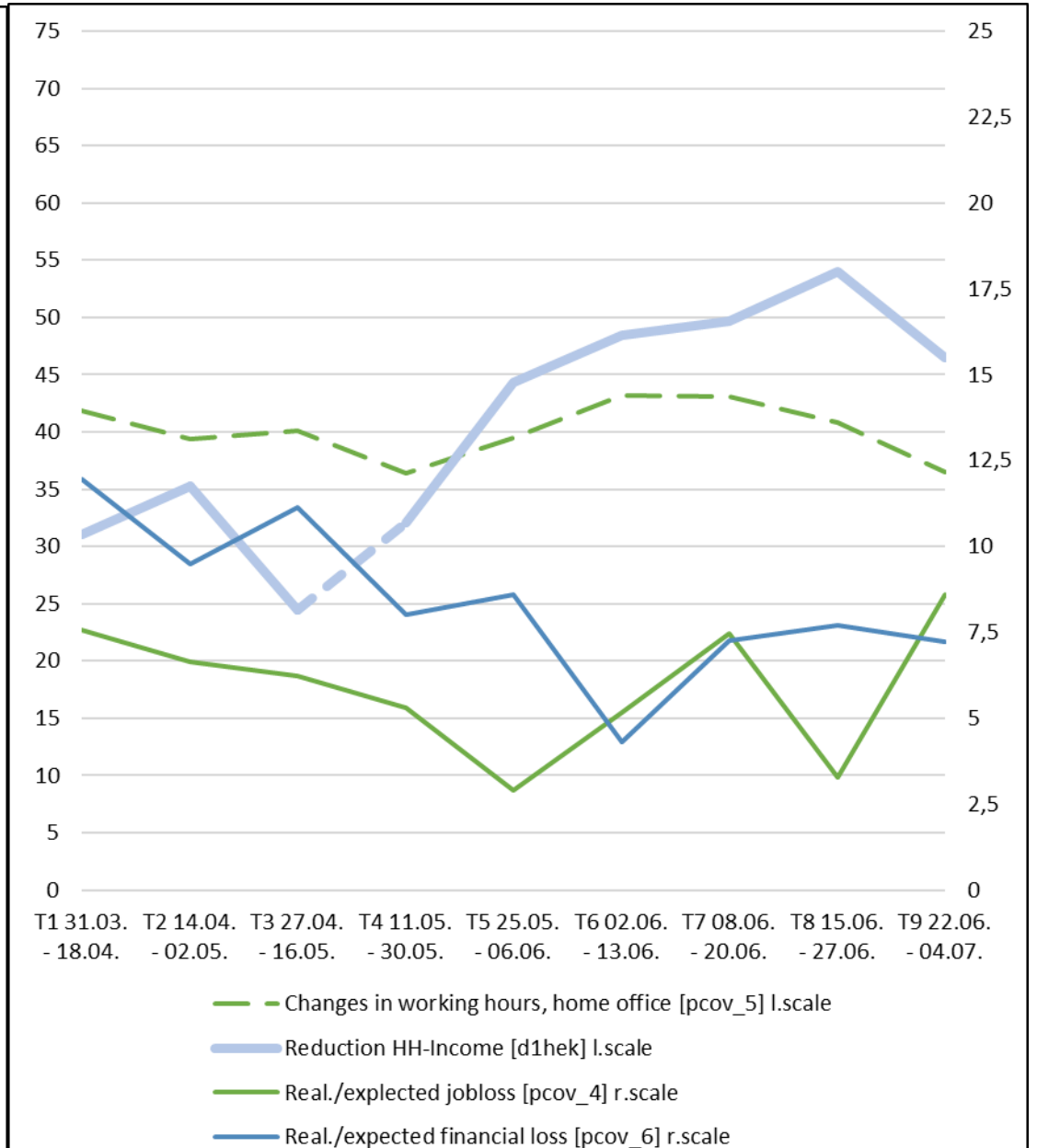
Respondents (age 18+) (in %)	positive Tested (infected) [pcov]	Tested (pos. and neg.) [pcov_1]	in Home Quarantine [pcov_2]	Living in county 400Inf./100000Ew [pcov_3]	real./expect. job loss [pcov_4]	Changes at work W-Time , Home-O. [pcov_5]	real./expect. Income loss [pcov_6]	Reduction in HH-Income [d1hek]
(in%) total	0,5%	7,7%	33,6%	11,2%	6,4%	40,1%	9,6%	39,3%
<i>according to income quantiles [2018]</i>								
Top.Quintile	0,6%	7,9%	28,8%	13,2%	6,2%	53,4%	5,9%	41,5%
4.Quintile	0,3%	7,0%	28,9%	12,5%	4,5%	48,5%	6,6%	40,6%
3.Quintile	0,3%	8,4%	34,1%	9,2%	3,5%	38,6%	6,9%	41,2%
2.Quintile	0,4%	5,2%	37,6%	11,7%	5,9%	30,2%	9,5%	37,9%
Bot.Quintile	1,0%	8,4%	40,2%	8,6%	10,8%	25,1%	19,7%	34,9%



Epidemiological Indicators



Socio-economic Indicators

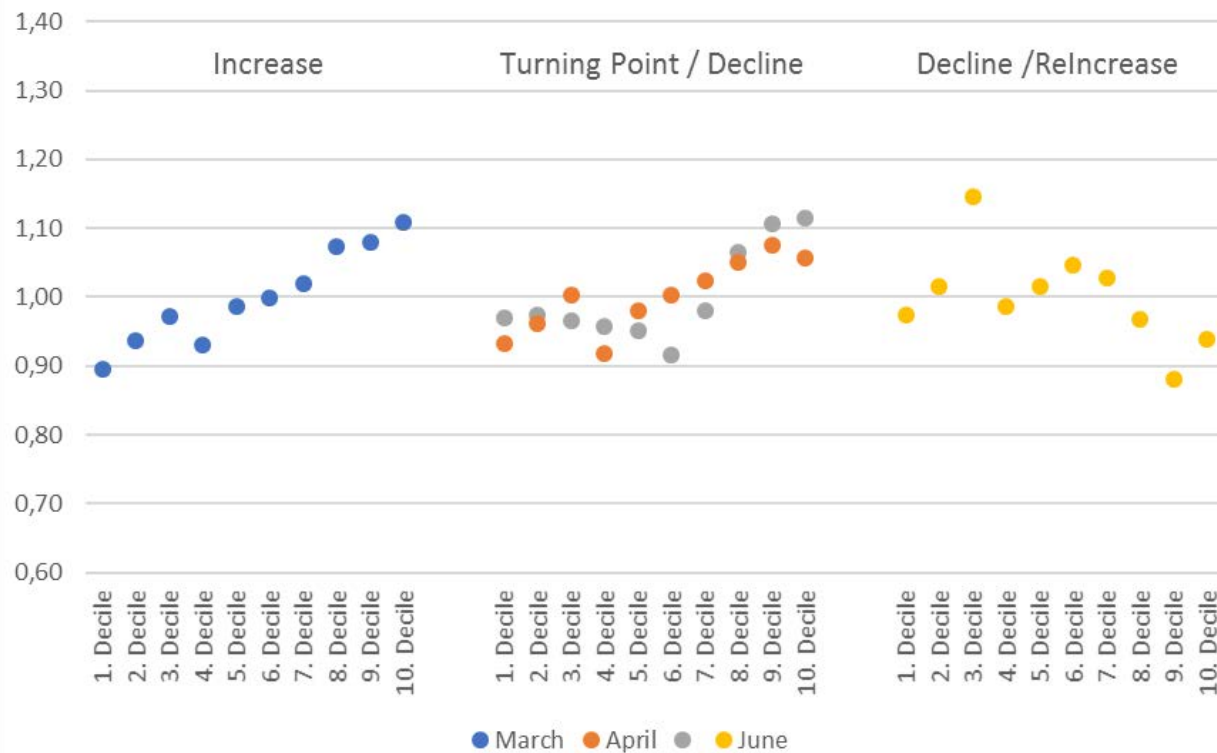


Results II

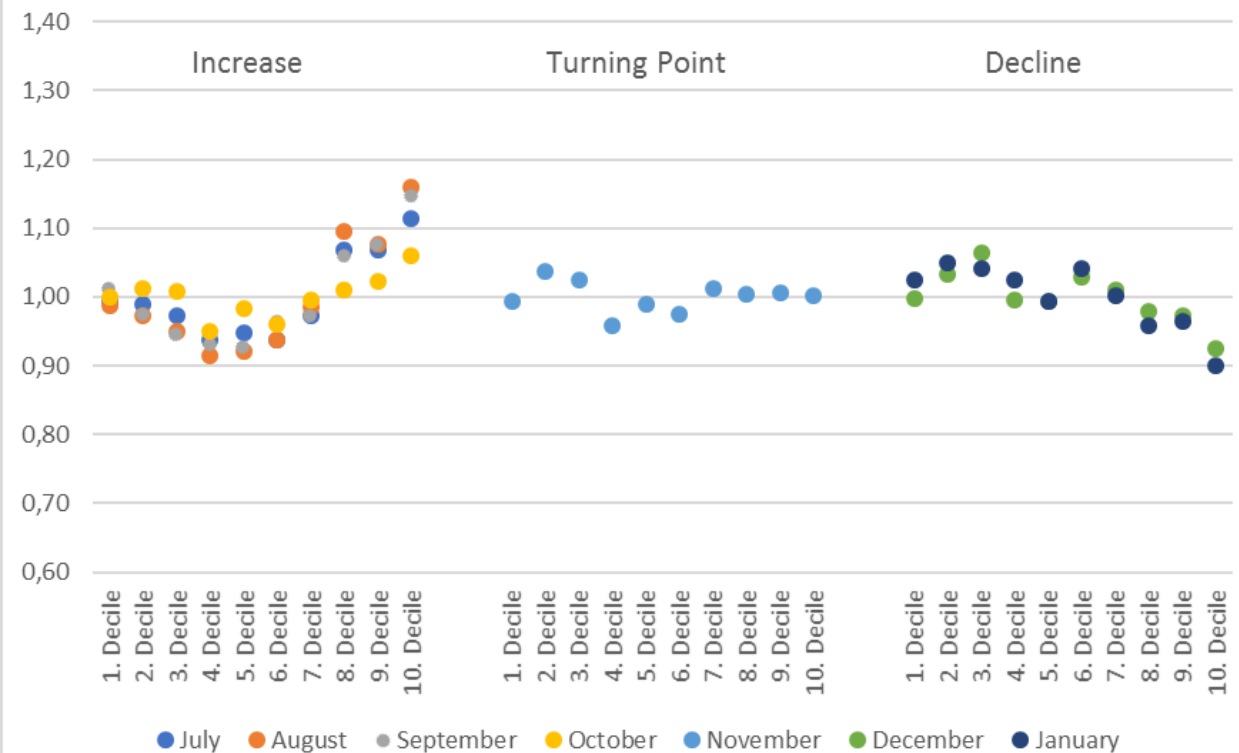
(DE Mar-2020 – Jan-2021)

- ❖ **Variation of regional sars-cov-2 infection rates by income deciles during pandemic**
 - Higher infection rates in regions of higher incomes at the beginning of pandemic waves
 - Higher infection rates in regions of middle and lower incomes in ongoing periods of pandemic

Pandemic Period March - June 2020 (DE)



Pandemic Period Jul-2020 - Jan 2021 (DE)

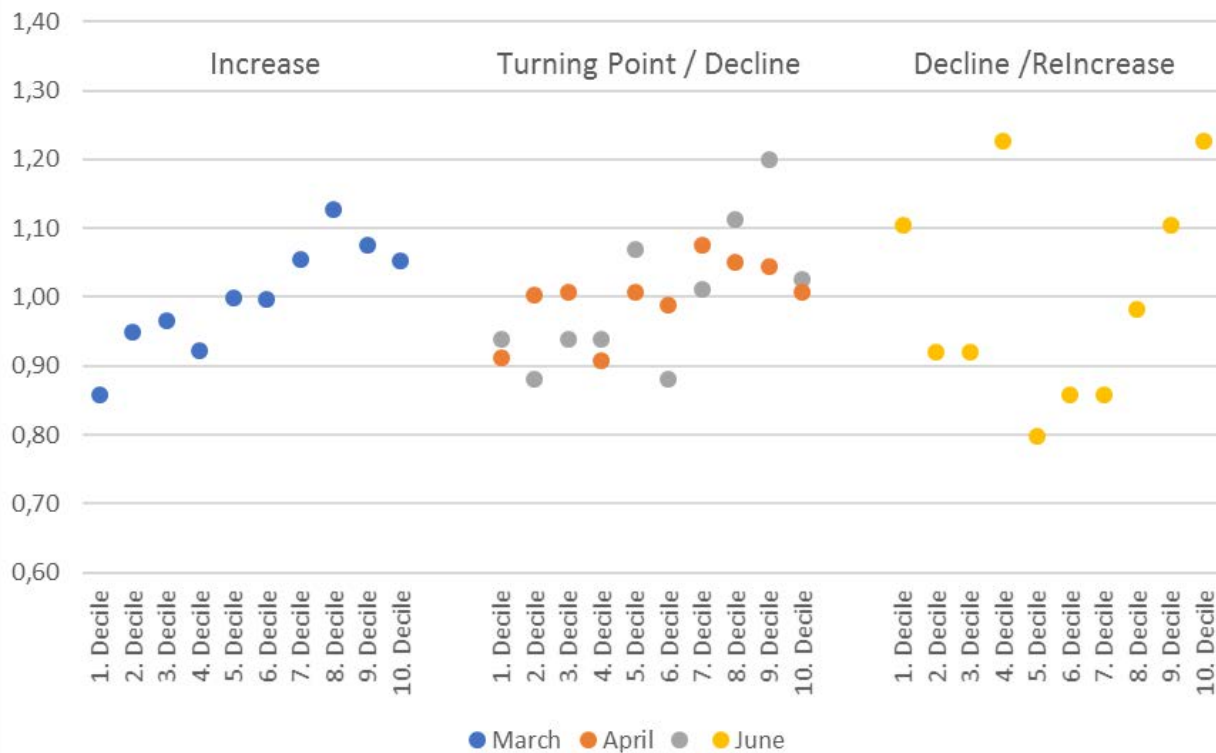


Results II

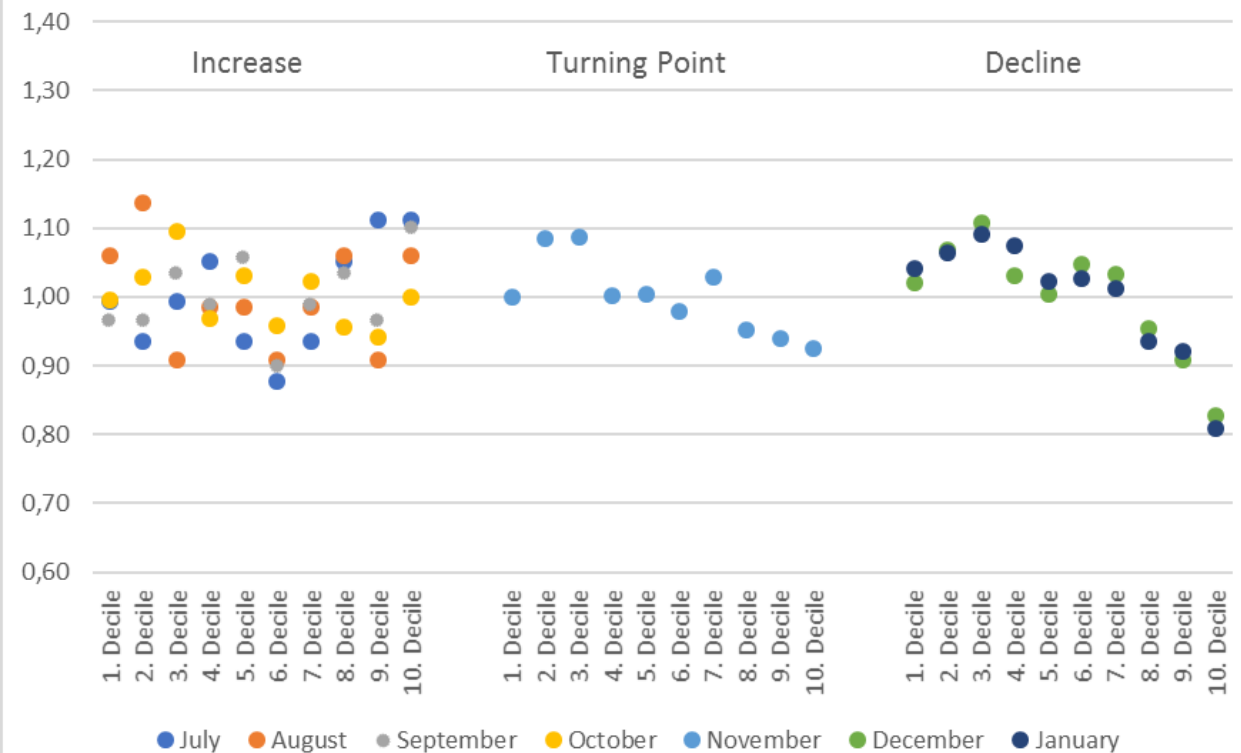
(DE Mar-2020 – Jan-2021)

- ❖ **Variation of regional sars-cov-2 death rates by income deciles during pandemic**
 - Higher death rates in regions of higher incomes at the beginning of pandemic waves
 - Lower death rates in regions of higher incomes at the end of 2nd pandemic wave

Pandemic Period March - June 2020 (DE)



Pandemic Period Jul-2020 - Jan 2021 (DE)



Discussion

❖ **(Social) Inequality – drivers and outcomes of pandemics ?**

- *Who is affected most by Sars-Cov-2 infections ?*
- *Who is affected most by economic impacts from pandemics ?*
- *Patterns of (social) change during pandemic progress ?*

Results I:

❖ **Pandemic Impacts on Income Strata for epidemiological indicators**

- Lower incomes: tests, home quarantine | Higher incomes – regional infection rates

❖ **Pandemic Impacts on Labour Market | HH-Incomes, Consumption and Savings**

- Lower incomes: expected/realized job loss, expected/realized income loss
- Middle & higher incomes – changes at working conditions | hhs with income reduction

- **No clear indication for rising social spread during pandemic - middle incomes with moderate risks**

Results II:

❖ **Variation of regional sars-cov-2 infection and death rates by income strata during pandemic**

- **Higher Income Regions: Higher infection and death rates at the beginning of pandemic waves**

- **Higher Income Regions as social drivers – at the beginning of pandemic waves ?**

- *Higher Income Groups provide more (international) contacts – taking more risks*
- *Higher Income Groups are living at more interesting places where people have more contacts.*

Similar patterns may be observed in other European countries as well.

Thank you!

References

Goebel, Jan; Krause, Peter (2021): Auswirkungen der Coronapandemie nach Einkommens- und Bevölkerungsschichtung – eine Momentaufnahme. In: Statistisches Bundesamt (Destatis), Wissenschaftszentrum Berlin für Sozialforschung (WZB) (Hg.): Datenreport 2021, Ein Sozialbericht für die Bundesrepublik Deutschland.

Simon Kühne, Martin Kroh, Stefan Liebig, Sabine Zinn (2020): The Need for Household Panel Surveys in Times of Crisis: The Case of SOEP-CoV. Survey Research Methods (2020) Vol. 14, No. 2, pp. 195-203 doi:10.18148/srm/2020.v14i2.7748

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Empirical Concept – Indicators (1/4)

❖ *Indicators for epidemiological and socio-economic impacts of pandemic – epidemiological indicators*

TabCov 1 Indicators of epidemiologic and socio-economic consequences of Covid-19

Indicator	Indicator Label	Data Origin	Question	Item	Criterion
pcov hcov	Tested positive	SOEP-CoV 2020	Have you already been tested for the coronavirus? What were the test results?	Yes, infected (tested positive)	1
			(If you live in a household with two or more people:) Has [first name 1, first name 2, etc.] been tested for the coronavirus? (If yes:) What were the test results?	Yes, infected (tested positive)	1
pcov_1 hcov_1	Test completed	SOEP-CoV 2020	Have you already been tested for the coronavirus?	Yes	1
			(If you live in a household with two or more people:) Has [first name 1, first name 2, etc.] been tested for the coronavirus?	Yes	1
pcov_2 hcov_2	In home quarantine	SOEP-CoV 2020	Whether you have been tested or not, are you currently at home in self-quarantine?	Yes, I have been placed under quarantine	1
				Yes, I am in self-quarantine	1
			Whether he/she has been tested or not: Is [first name 1, first name 2, etc.] currently at home in self-quarantine?	Yes, I have been placed under quarantine	1
				Yes, I am in self-quarantine	1
pcov_3 hcov_3	Counties with more than 400Infec./100000Ew	RKI-Daten	Counties - Infections/100000Ew	More than 400 Infections per 100000 Inhabitants in county time frame [jan-01 - jul-14 2020]	> 400 = 1

Empirical Concept – Indicators (2/4)



Indicators for epidemiological and socio-economic impacts of pandemic – job loss

Indicator	Indicator Label	Data Origin	Question	Item	Criterion
pcov_4 hcov_4	Real./expected Jobloss	SOEP-CoV 2020	How likely do you think it is that you will experience the following in the next 12 months due to measures to prevent and slow the spread of the coronavirus?	lose your job as the result of layoffs or company closure?	$\geq 75\% = 1$
				this has already happened	1
			Have there been any changes in your working situation recently due to the corona crisis?	My business is directly affected by the fact that my suppliers are unable to deliver the parts or materials that I need for my business.	1
				My business is directly affected by customers cancelling their orders for my products or currently having no demand for my services.	1
				I have been forced to lay off employees.	1
			(If the answer was no): What changes have taken place in your work situation due to the corona crisis?	I quit my job / resigned.	1
				I was laid off.	1
				I lost my job when my employer was forced to shut down operations under government restrictions.	1
I lost my job when my employer went out of business permanently.	1				

Empirical Concept – Indicators (3/4)



Indicators for epidemiological and socio-economic impacts of pandemic – working time, home office

Indicator	Indicator Label	Data Origin	Question	Item	Criterion
pcov_5 hcov_5	Changes in working hours, home office	SOEP-CoV 2020	(If you are employed but not self-employed:) Have there been recent changes to your work situation due to the coronavirus?	I am working reduced hours	1
				I am working entirely from home	1
				I am working partly from home	1
				I am taking time off in compensation for overtime	1
				I am taking a special form of paid vacation	1
				I have been put on paid leave	1
			Have there been any changes in your working situation recently due to the corona crisis?	I have more flexible working hours	1
				I am working entirely from home.	1
			Have there been any changes in your working situation recently due to the corona crisis?	I am working partly from home.	1
				My business is directly affected by the new regulations on opening hours or other restrictions.	1
				I am making use of the regulations on reduced working hours with my employees.	1
			I am making use of the regulations on special forms of unpaid vacation with my employees.	1	

Empirical Concept – Indicators (4/4)



Indicators for epidemiological and socio-economic impacts of pandemic – income & savings

Indicator	Indicator Label	Data Origin	Question	Item	Criterion
pcov_6 hcov_6	Real. / expected Income Loss	SOEP-CoV 2020	How likely do you think it is that you will experience the following in the next 12 months due to measures to prevent and slow the spread of the coronavirus?	have difficulties paying your bills and be forced to take out new loans?	≥ 75%
				- this has already happened	1
				encounter serious financial difficulties and possibly have to apply for social welfare benefits?	≥ 75%
				- this has already happened	1
				be forced to use your savings or liquidate your investments?	≥ 75%
				- this has already happened	1
				be forced to drastically lower your standard of living?	≥ 75%
				- this has already happened	1
d1hek	Reduction in household income [compared to previous year]	SOEP-2019 and SOEP-2020 [preliminary data]	monthly net household income	share of population with declining hh-income hek[2020] - hek [2019]	< 0 = 1