

Do Face Masks Matter in Kansas & Johnson County?

PRESENTED BY

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Updating our Estimates of the Effect of Mask Mandates

Data

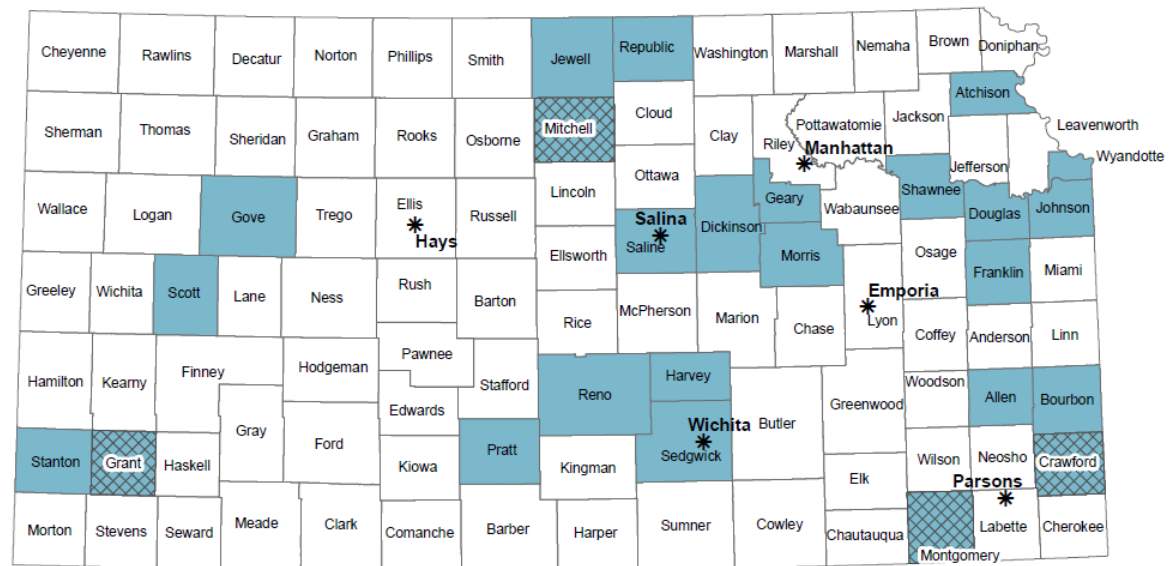
- **Daily total number of cases per county (New York Times)**
 - Most recent data from October 11
- **2019 Population per county (US Census)**
- **City and County Face Mask Responses (Kansas Health Institute)**
- **Social Mobility Data:** Maryland Transportation Institute (2020). University of Maryland COVID-19 Impact Analysis Platform, <https://data.covid.umd.edu>, accessed on [October 14,2020], University of Maryland, College Park, USA.

Updating our Estimates of the Effect of Mask Mandates in KS

New Counties

County	Date Adopted	Enforced
Geary	8/5/2020	Y
Gove	8/3/2020	Y
Grant	7/3/2020	N
Harvey	9/16/2020	Y
Morris	7/10/2020	Y
Pratt	7/16/2020	Y
Republic	8/4/2020	Y
Saline	7/9/2020	Y
Scott	8/10/2020	Y
Sedgwick	9/9/2020	Y
Stanton	7/23/2020	Y

Mask Mandates in Kansas, by County as of August 20, 2020

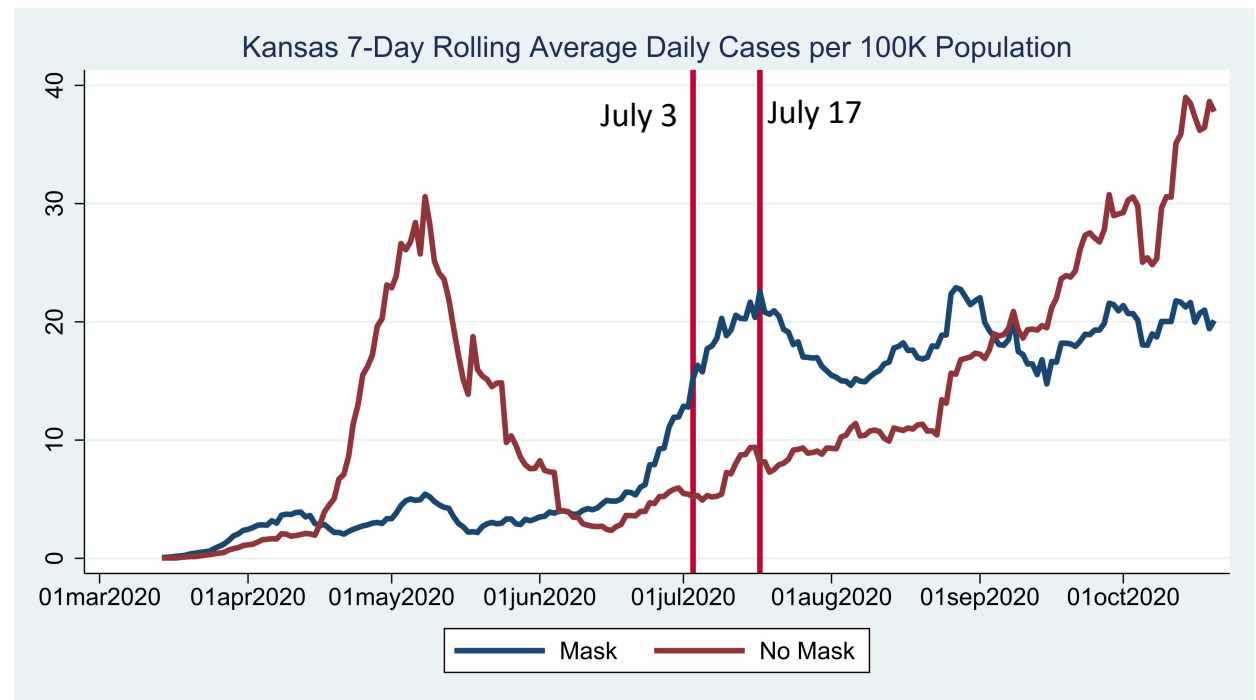


Source: Institute for Policy & Social Research, The University of Kansas; data from the Kansas Chamber and Kansas Health Institute.

- Adopted (or did not rescind Governor's) mask order
- Not enforcing mask order
- No county mask mandate
- * City mask mandate

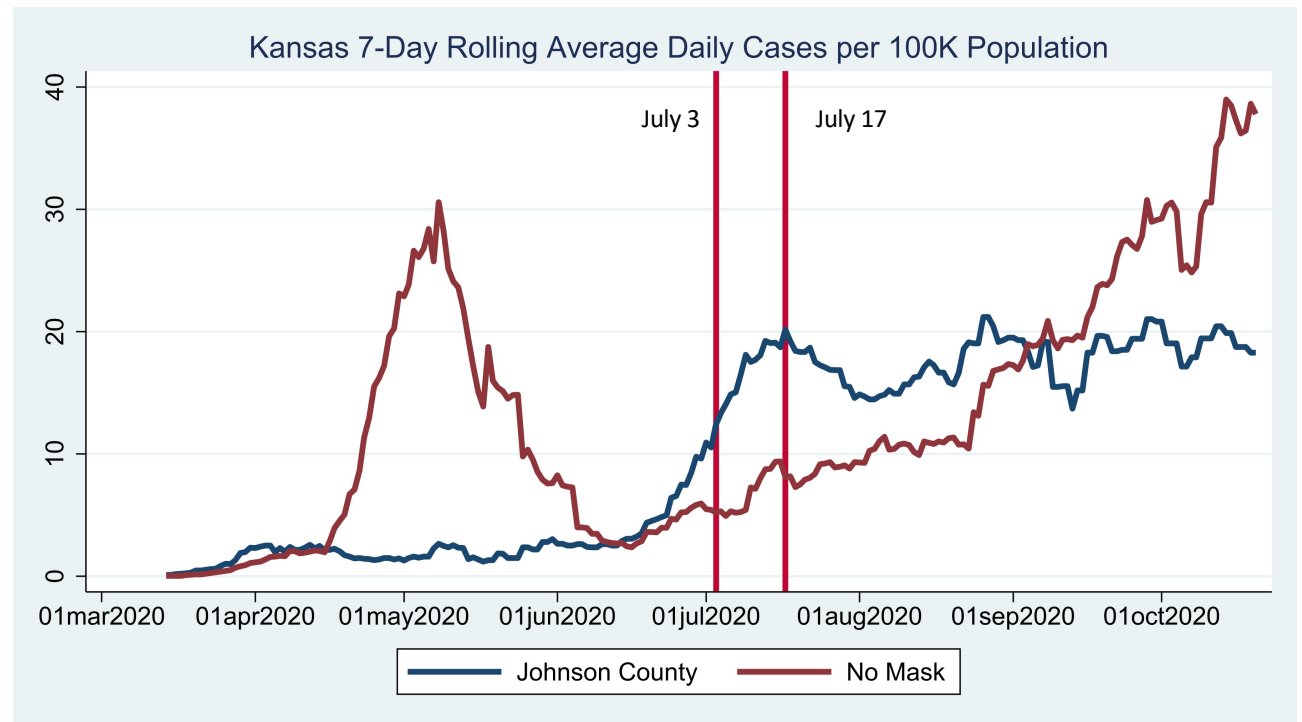
Kansas 7-Day Rolling Average Daily Cases per 100K Population

- Counties with a mask mandate saw a decrease starting 14 days after the mandate
- New spikes afterwards despite mandate
- Mask counties “stationary”
- No-Mask counties steadily increasing



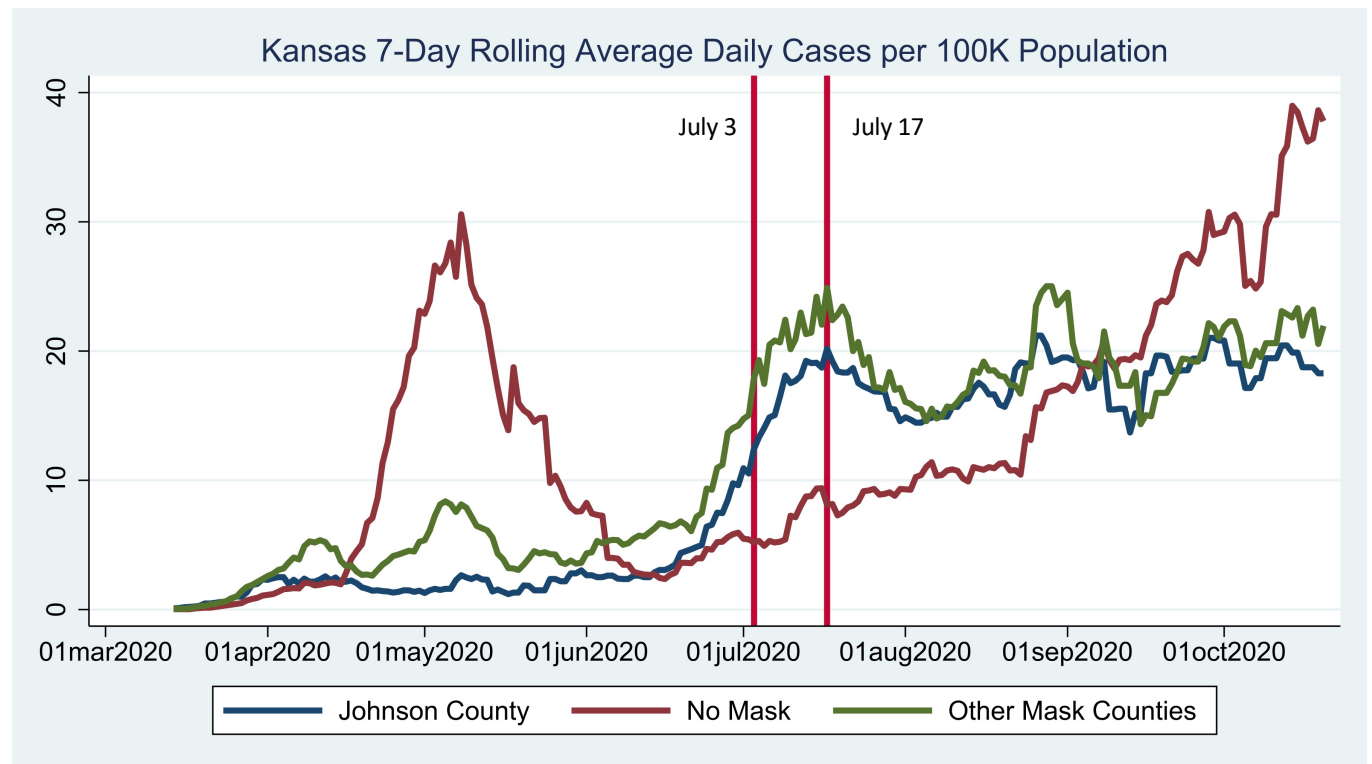
Johnson vs. No Mask Counties 7-Day Rolling Average Daily

- Johnson County had a decrease starting 14 days after the mandate
- Results are not increasing over time for Johnson County
- No-Mask counties steadily increasing and now have much higher case rates than Johnson County



Johnson vs. No Mask Counties 7-Day Rolling Average Daily

- This graph includes other no-mask counties (green line)
- Results look very similar.
- Masks appear to stop increasing spread as opposed to driving cases down.



Difference-in-Differences Analysis

What is the average effect starting 21 days after the mandate?

$$Y_{it} = \alpha + \beta \text{Mandate}_{it} + \eta X_t + \gamma_t + \delta_t + \epsilon_{it}$$

Where:

- Y_{it} : Daily cases in county i at day t
- Mandate_{it} : Dummy equal to one **starting N = 21 days since mask mandate** in county i , and zero otherwise
- X_t : A vector with variables controlling for social distancing behavior
- γ_t : A vector with day fixed effects
- δ_t : A vector with county fixed effects
- ϵ_{it} : Error term

Difference-in-Difference Estimates

- Mask mandate associated with an average 7 fewer cases per day in Kansas (50% of Mean)
- Johnson County: between 6.5 and 8.5 fewer cases (45% to 60% of Average)

VARIABLES	Full Sample		Johnson County	
Mask Mandate + 21 days	-7.30*** (1.13)	-7.12*** (1.15)	-8.54** (3.86)	-6.49* (3.88)
Constant	-3.92 (5.69)	-13.46 (9.09)	-3.20 (5.83)	-15.27 (9.62)
Observations	11,424	11,424	9,928	9,928
R-squared	0.24	0.24	0.24	0.25
Number of Counties	84	84	73	73
Average New Daily Cases	14.27		14.46	
County FE	Y	Y	Y	Y
Day FE	Y	Y	Y	Y

Note: Non-Enforcers, Late Adopters and Mixed Counties dropped. Standard errors in parentheses

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$



Conclusions

Do Masks Matter?

- According to our findings, yes!
- Counties in Kansas with mask mandates are seeing 7 fewer cases per 100K people per day
- Mask mandate in Johnson County associated with 6.5 to 8.5 fewer cases



THANK YOU

Difference-in-Difference Estimates

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- Johnson County: between 6.5 and 8.5 fewer cases (45% to 60% of Average)

VARIABLES	Full Sample		Johnson County	
Mask Mandate + 21 days	-7.30*** (1.13)	-7.12*** (1.15)	-8.54** (3.86)	-6.49* (3.88)
% Staying Home (7-day Avg, 6-week Lag)		0.30*** (0.09)		0.27*** (0.10)
Work trips/person (7-day Avg, 6-week Lag)		4.32 (3.33)		4.85 (3.55)
Non-work trips/person (7-day Avg, 6-week Lag)		-1.00 (1.12)		0.01 (1.20)
% out-of-county trips (7-day Avg, 6-week Lag)		0.25** (0.11)		0.33*** (0.12)
% out-of-state trips (7-day Avg, 6-week Lag)		-0.66*** (0.20)		-0.95*** (0.21)
Miles/person (7-day Avg, 6-week Lag)		-0.10*** (0.03)		-0.11*** (0.03)
Constant	-3.92 (5.69)	-13.46 (9.09)	-3.20 (5.83)	-15.27 (9.62)
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