

# Changes in International Immigration and Internal Native Mobility after Covid-19

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## Some Important Facts post-Covid

- Large drop in employment/participation Jan-Apr 2020 (-22 Million Jobs); slow recovery, up to July 2022 (back to Jan 2020 level 152 million). Missing 5 million employed relative to pre-2020 trend.
- Large increase in unfilled job vacancies, From April 2020 to January 2022 (from 3.3% to 7.1% of employment about 12 million vacancies).

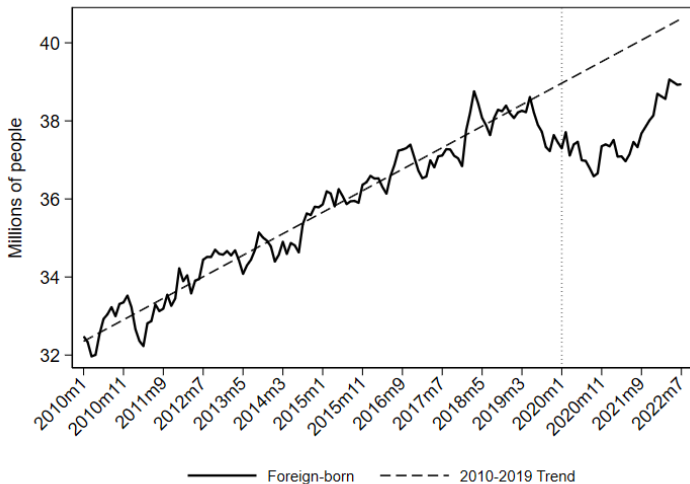
# Where are we looking to Account for those facts?

- **Factors in Focus** Increased retirement; Resignation/reallocation across jobs (remote work); Large welfare benefits.
- **Less known Factor** Significant drop in immigration flows, stagnation of immigrant population/employment, Especially 2019-early 2021. Can it contribute to explain the missing workers/vacancies?

# This Paper

- **Question 1** How did Immigration of Foreign-Born to the US change during and after Covid-19?
- **Question 2** How did internal mobility of US citizens change during-after Covid-19?
- **Question 3** Did the drop in international immigration affect native mobility, controlling for other changes? Did Native replace the missing foreign workers?
- Using most current data– Monthly CPS up to July 2022, Annual Social Economic Supplement CPS 2021, 2022– not ACS 2020 so can at most consider US States as units

**Figure 1:** US Working-age Foreign-born Population, January 2010-July 2022

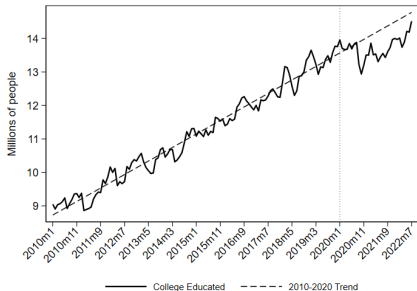


Pre-2019 yearly Inflow: 660,000; Gap in July 2022: 1.65 million

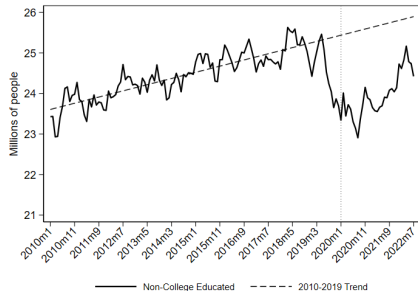
# How could such a drop affect employment?

- Skill composition
- Age composition
- States, Origins
- Broad Sectors
  
- Do these features imply potentially significant impact on employment? Which type of Labor most affected?

**Figure 2:** US Working-age Foreign-born Population by College Education

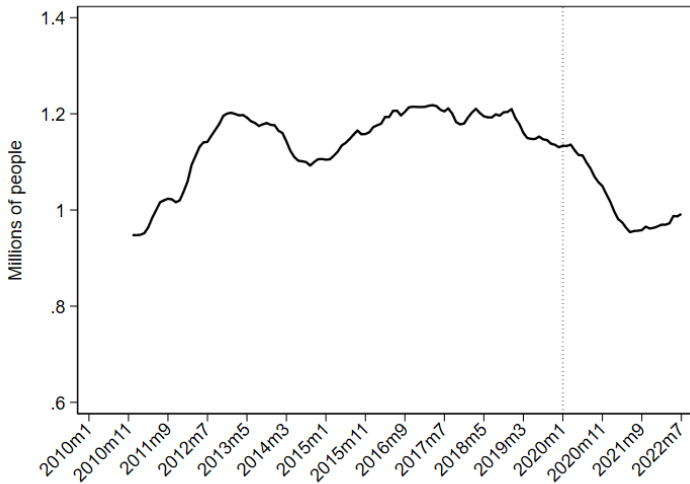


College Educated



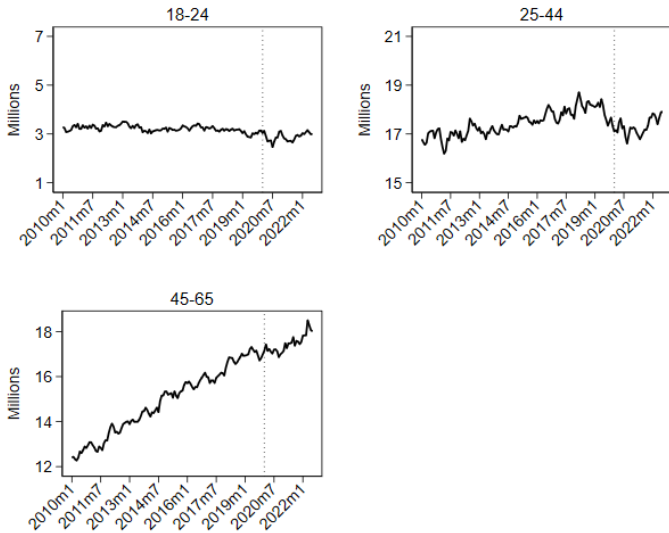
Non-College Educated

**Figure 3:** US Foreign-born Population, 18-24, Attending College

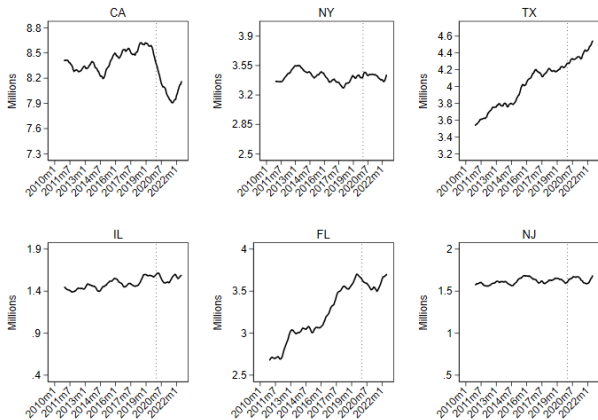




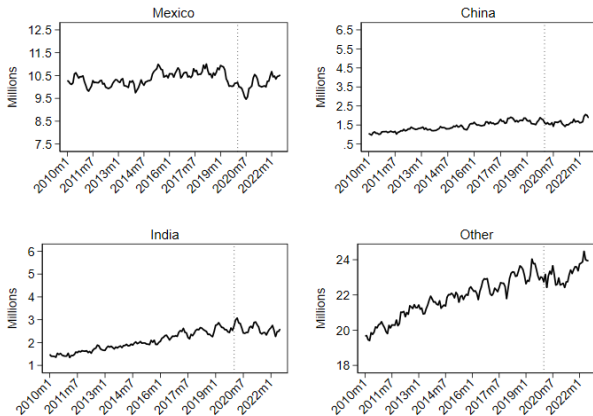
**Figure 4:** US Foreign-born Population by Age Group



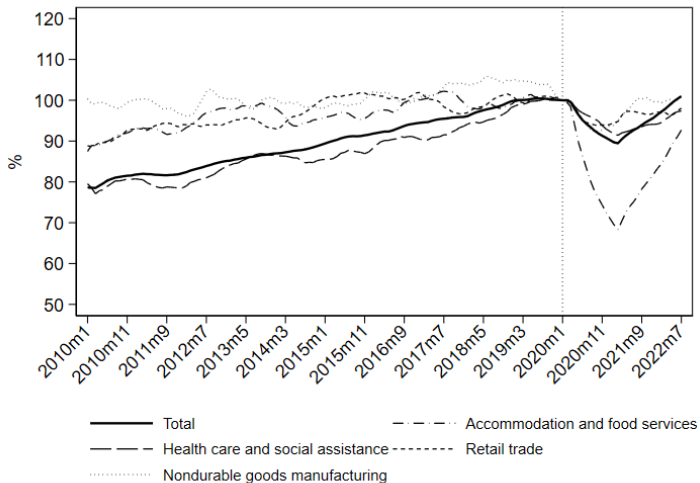
**Figure 5:** Working-age Foreign-born Population in Top Immigration States



**Figure 6:** Working-age Foreign-born Population by Origin



**Figure 7:** Working-age Foreign-born Employed Population, most-immigrant-intensive sectors

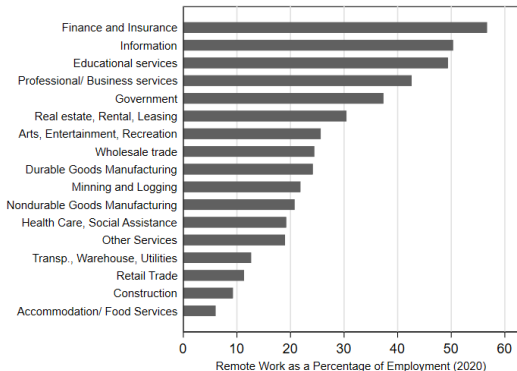


Large drop from Trend in July 2022. Dramatic drop and gap for Food-Hospitality

# Main Characteristics of Immigrant drop

- Concentrated in non-college educated.
- Particularly large among Young, Mexican, doing manual intensive jobs.
- Food-hospitality, personal services most affected
- Are the sector that lost immigrants the same that had to be performed "in person"– low remote work options–?

Figure 8: Percent of Remote Employment by Sectors (CPS-2020)

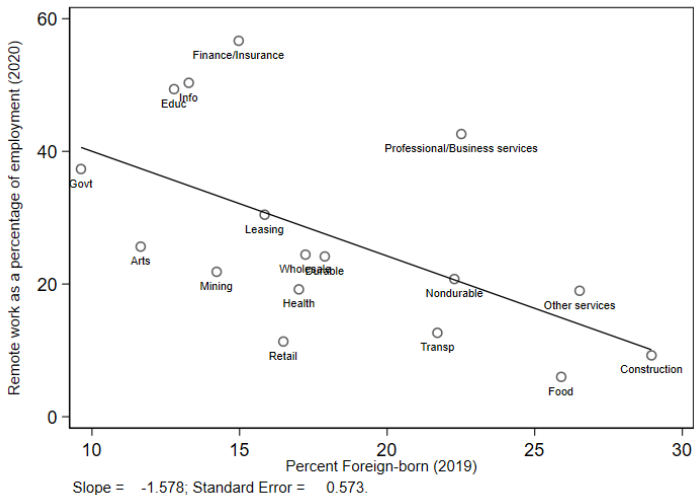


17 broad sectors.

"worked remote last week" as percent of employment.

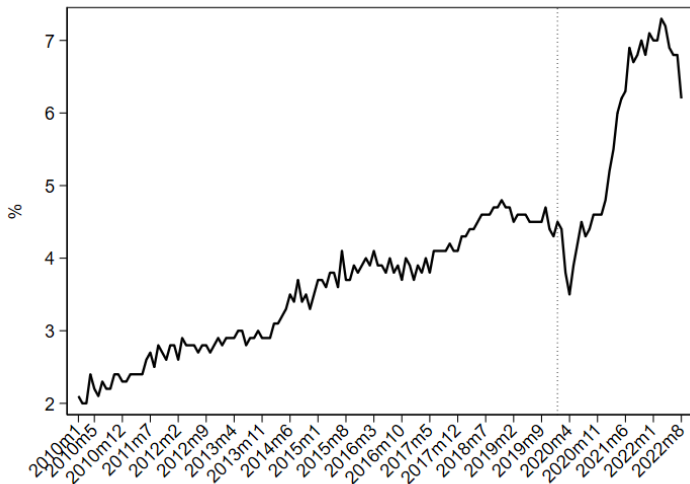
Manual, service jobs hard to do in remote

**Figure 9:** Percent Remote Employment vs Percent Foreign-born across Sectors



Significant negative correlation. Food hospitality, Construction and non-durable manufacturing hit hard: loss of immigrants, low remote options

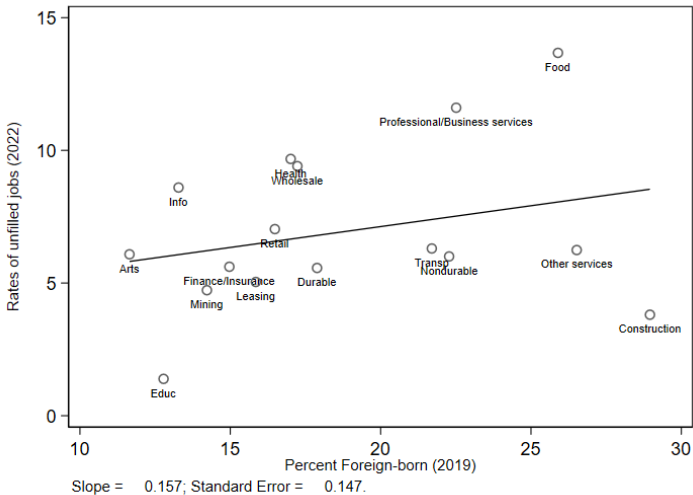
**Figure 10:** The massive Non-farm Job Vacancy Rate increase



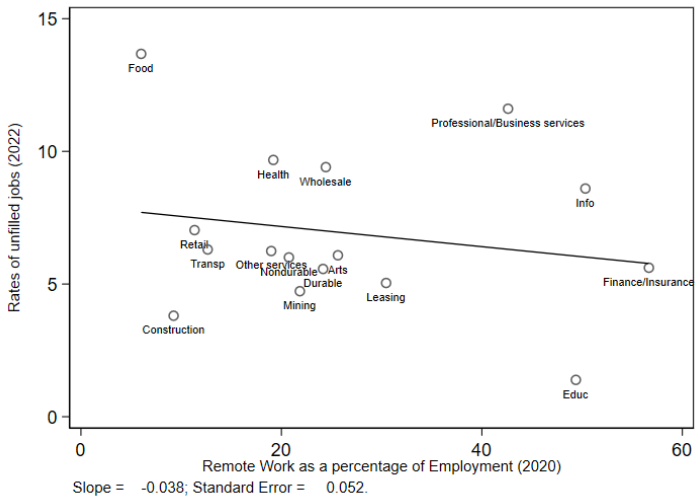
Can Drop in Foreign-born and lack of remote work options account for vacancy increase?



**Figure 11:** Rates of Unfilled Jobs vs Percentage Foreign-born across Sectors



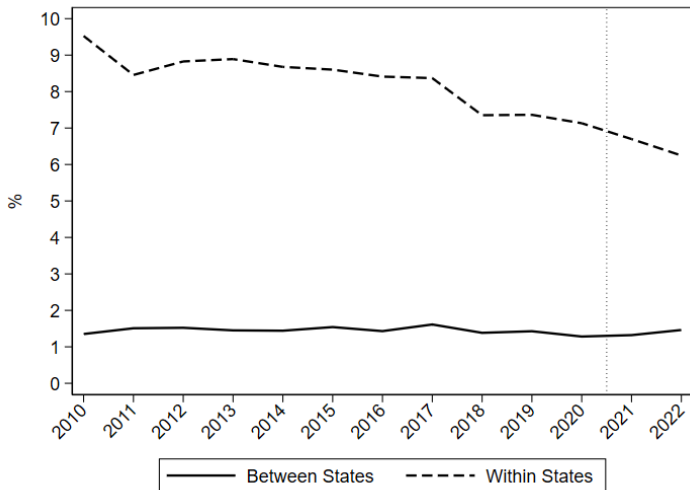
**Figure 12:** Rates of Unfilled Jobs vs Percent of Remote Employment across Sectors



# We observe significant changes in

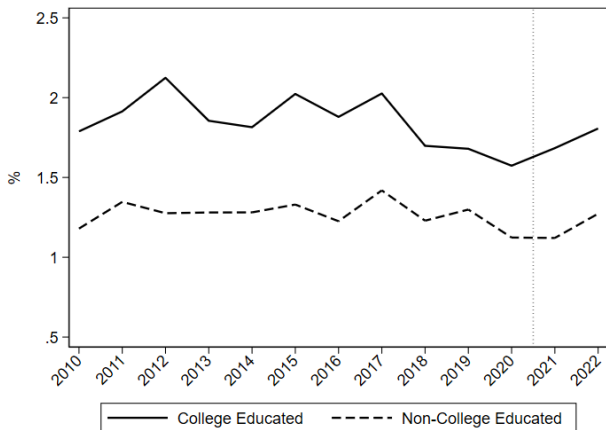
- Job vacancies
- Immigration
- Remote work
  
- Those factors generated and denote significant unbalances across labor markets
  
- Very uneven sector and state distribution. Did this trigger native mobility? Inter-states?
  - ▶ First analyze indicators of overall native yearly mobility
  - ▶ Then look at native mobility in relation to state-specific shocks

**Figure 13:** Working-age Native-born Mobility Rates by Distance of Migration

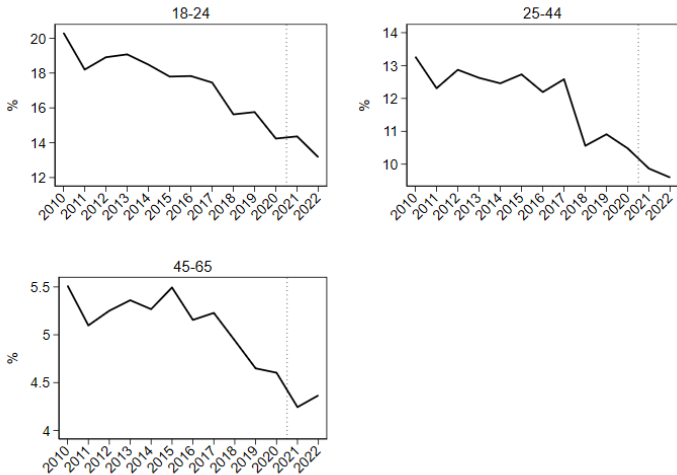


Percentage of people in working age who moved during the previous year– ASEC March CPS data

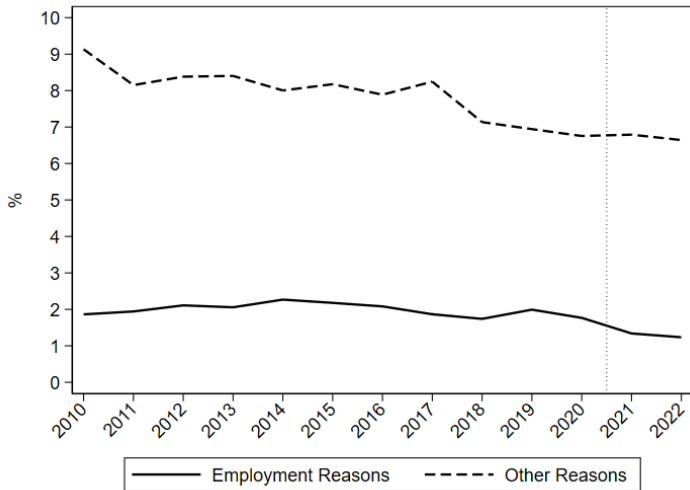
**Figure 14:** Working-age Native-born Mobility Rates by College Education



**Figure 15:** Working-age Native-born Mobility Rates by Age Categories



**Figure 16:** Working-age Native-born Mobility Rates by Reason for Migration

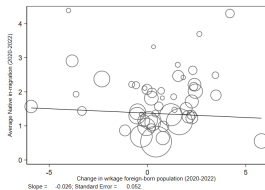


# No evidence of significant post-covid change in trend

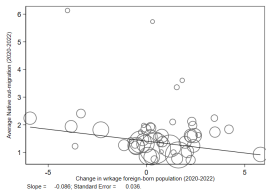
- Continued decline/stability of mobility overall and across states
- Similar pattern for non-college educated
- Continued decline in mobility in young and prime working age
- Continued slight decline in mobility for employment reasons
- The aggregate internal mobility measures do not show the jump/trend break comparable to immigrant population and vacancies
- Is inter-state mobility more responsive to those changes? Does internal mobility respond to asymmetric shock and unbalances?



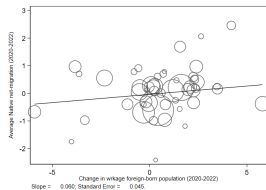
**Figure 17:** No correlation between Working-age Native-born inter-state mobility Patterns and Change in Foreign-born Population by State



In-migration



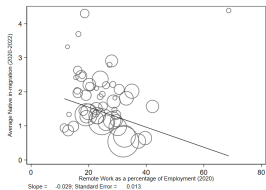
Out-migration



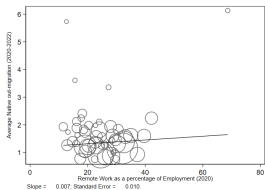
Net-migration

No evidence of immigrant "replacement" across labor markets (states)

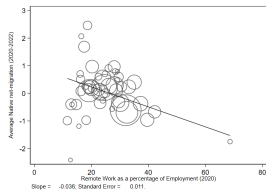
**Figure 18:** Some correlation Native-born inter-state mobility Patterns vs Intensity of Remote Employment by State



In-migration



Out-migration



Net-migration

Did remote work opportunities replaced mobility into a state?

# A more systematic approach to native inter-state mobility response

- Analyze whether native in- out- and net-migration in a state is correlated with (affected by) immigrants. Does this differ post-Covid?
- Controlling for labor demand (Bartik) and for remote work opportunities post-Covid.

$$\frac{Mig_{st}}{Pop_{s,2010}} = \phi_t + \phi_s + \beta_0 \frac{\Delta Immi_{st}}{Pop_{s,2010}} + \beta_1 \frac{\Delta Bartik Empl_{st}}{Pop_{s,2010}} + \gamma_0 (PostCov_t) \frac{\Delta Immi_{st}}{Pop_{s,2010}} + \gamma_1 (PostCov_t) \frac{Remote_{s,2020}}{Pop_{s,2020}} + \varepsilon_{st} \quad (1)$$

# Exogenous Immigration and Demand changes

- $\frac{\Delta Immi_{st}}{Pop_{s,2010}}$  is foreign immigration change . To proxy the supply drop due to different nationality decline and initial distribution across states we instrument with shift-share:

$$\frac{\Delta \widehat{F}_{s,t}^{Foreign}}{Pop_{s,2010}} = \frac{\sum_{c=1}^{51} S_{sc}^{2010} \cdot F_t^c - \sum_{n=1}^{51} S_{sc}^{2010} \cdot F_{t-1}^c}{Pop_{s,2010}} \quad (2)$$

- Control for sector-driven labor demand change (Bartik)

$$\frac{\Delta Bartik Empl_{s,t}}{Pop_{s,2010}} = \frac{\sum_{n=1}^{17} S_{ns}^{2010} \cdot Empl_t^n - \sum_{n=1}^{17} S_{ns}^{2010} \cdot Empl_{t-1}^n}{Pop_{s,2010}} \quad (3)$$

# Limits and Caveats

- Only short-run response, one-year periods (we do a check with 2-years intervals)
- Only 2 years since Covid, low power.
- State-level data, rather than Labor Markets, Commuting Zones.

**Table 1:** Native Inter-state Mobility and Local Shocks

	OLS			2SLS		
	(1) In	(2) Out	(3) Net	(4) In	(5) Out	(6) Net
Bartik Shock	-0.062 (0.129)	0.233 (0.181)	-0.296 (0.218)	-0.090 (0.166)	0.273 (0.204)	-0.363 (0.259)
Change Immig	0.027 (0.018)	-0.009 (0.034)	0.035 (0.042)	<b>0.114</b> <b>(0.107)</b>	<b>-0.270</b> <b>(0.225)</b>	<b>0.384</b> <b>(0.273)</b>
Post x Change Immig	0.022 (0.060)	0.014 (0.045)	0.008 (0.069)	<b>0.025</b> <b>(0.231)</b>	<b>0.197</b> <b>(0.361)</b>	<b>-0.172</b> <b>(0.419)</b>
Post x Remote	0.014 (0.017)	0.040** (0.015)	-0.026 (0.025)	0.019 (0.020)	0.034 (0.021)	-0.014 (0.034)
Observations	600	600	600	600	600	600
Mean Y	0.0190	0.0193	-0.0003	0.0190	0.0193	-0.0003
R-sq	0.5782	0.4694	0.2511	-0.0314	-0.1054	-0.1479
Year FE	Y	Y	Y	Y	Y	Y
State FE	Y	Y	Y	Y	Y	Y

Standard errors in parentheses.

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Drop in immigrants associated to out-migration/no mobility of natives

**Table 2:** College Educated Native Inter-state Mobility and Local Shocks

	OLS			2SLS		
	(1) In	(2) Out	(3) Net	(4) In	(5) Out	(6) Net
Bartik Shock	-0.012 (0.070)	0.161 (0.204)	-0.173 (0.206)	-0.048 (0.090)	0.204 (0.190)	-0.252 (0.192)
Change Immig	0.009 (0.011)	0.017 (0.021)	-0.007 (0.023)	0.027 (0.061)	-0.089 (0.106)	<b>0.115</b> <b>(0.122)</b>
Post x Change Immig	0.021 (0.031)	-0.064 (0.045)	0.085* (0.045)	0.159 (0.147)	-0.114 (0.219)	<b>0.272</b> <b>(0.335)</b>
Post x Remote	0.007 (0.008)	0.004 (0.009)	0.003 (0.015)	0.014 (0.013)	-0.005 (0.018)	0.019 (0.028)
Observations	600	600	600	600	600	600
Mean Y	0.0073	0.0076	-0.0003	0.0073	0.0076	-0.0003
R-sq	0.4199	0.2531	0.1941	-0.0889	-0.0730	-0.1435
Year FE	Y	Y	Y	Y	Y	Y
State FE	Y	Y	Y	Y	Y	Y

Standard errors in parentheses.

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ 

College educated complementary to the loss in immigrants: they move out, but not significant

**Table 3:** Non-College Educated Native Inter-state Mobility and Local Shocks

	OLS			2SLS		
	(1) In	(2) Out	(3) Net	(4) In	(5) Out	(6) Net
Bartik Shock	-0.050 (0.076)	0.073 (0.164)	-0.123 (0.194)	-0.042 (0.096)	0.069 (0.172)	-0.111 (0.201)
Change Immig	0.017 (0.015)	-0.026 (0.027)	0.043 (0.029)	0.088 (0.076)	-0.181 (0.174)	<b>0.269</b> <b>(0.200)</b>
Post x Change Immig	0.001 (0.042)	0.078* (0.043)	-0.078 (0.059)	-0.133 (0.203)	0.311 (0.254)	<b>-0.444</b> <b>(0.299)</b>
Post x Remote	0.007 (0.011)	0.037*** (0.012)	-0.030* (0.017)	0.005 (0.013)	0.038** (0.016)	-0.033 (0.024)
Observations	600	600	600	600	600	600
Mean Y	0.0117	0.0117	-0.0000	0.0117	0.0117	-0.0000
R-sq	0.5849	0.4714	0.2304	-0.0373	-0.0665	-0.1156
Year FE	Y	Y	Y	Y	Y	Y
State FE	Y	Y	Y	Y	Y	Y

Standard errors in parentheses.

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ 

Non-College educated natives could replace to the loss in immigrants: not in a significant way



## Alternative Adjustment: Cross-Sector mobility of natives

- We construct a dependent variable which captures mobility of natives across 17 broad sectors
- We construct a second variable that captures mobility of natives in or out- of the 4 broad sectors with high immigrants/low remote work options (food, non-durable, transportation, construction, other services)
- We analyze this sector-mobility across states in response to immigration, controlling for remote-work intensity and demand

**Table 4:** Native Sector-Mobility and Local Shocks

	OLS			2SLS		
	(1) Mobility Rate	(2) In-Mobility	(3) Out-Mobility	(4) Mobility Rate	(5) In-Mobility	(6) Out-Mobility
Bartik Shock	0.387 (0.275)	0.159** (0.065)	0.126 (0.077)	0.579* (0.300)	0.190** (0.078)	0.150* (0.088)
Change Immig	0.031 (0.048)	0.003 (0.014)	0.025 (0.020)	<b>0.418</b> <b>(0.328)</b>	<b>0.028</b> <b>(0.090)</b>	<b>0.151</b> <b>(0.126)</b>
Post x Change Immig	0.063 (0.141)	0.026 (0.045)	-0.025 (0.037)	<b>-1.335*</b> <b>(0.675)</b>	<b>-0.148</b> <b>(0.180)</b>	<b>-0.306</b> <b>(0.185)</b>
Post x Remote	-0.063 (0.047)	-0.027** (0.013)	-0.025** (0.013)	<b>-0.104*</b> <b>(0.062)</b>	<b>-0.034**</b> <b>(0.014)</b>	<b>-0.031**</b> <b>(0.014)</b>
Observations	600	600	600	600	600	600
Mean Y	0.0924	0.0193	0.0210	0.0924	0.0193	0.0210
R-sq	0.7751	0.6477	0.6596	-0.2238	-0.0223	-0.1089
Year FE	Y	Y	Y	Y	Y	Y
State FE	Y	Y	Y	Y	Y	Y

Standard errors in parentheses.

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ 

Some evidence of increase in native sector-mobility in places where immigrants dropped after Covid.

No evidence of Native net inflow in the 4 high immigrant sectors

## Overall, drop in immigration and lack of native cross-state response

- Was it associated to increase in vacancies? especially where remote work was less available?
- Use Vacancies as dependent variable (alternative outcome), 2SLS estimation
- right sign coefficients but no significance

**Table 5:** Job Openings and Local Shocks

	(1)	(2)
	OLS	2SLS
Bartik Shock	0.097 (0.076)	0.109 (0.085)
Change Immig	-0.012* (0.006)	<b>-0.015</b> <b>(0.039)</b>
Post x Change Immig	0.018 (0.023)	<b>-0.030</b> <b>(0.129)</b>
Post x Remote	-0.009 (0.011)	<b>-0.011</b> <b>(0.015)</b>
Observations	600	600
Mean Y	0.0343	0.0343
R-sq	0.9662	-0.0027
Year FE	Y	Y
State FE	Y	Y

Standard errors in parentheses.

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

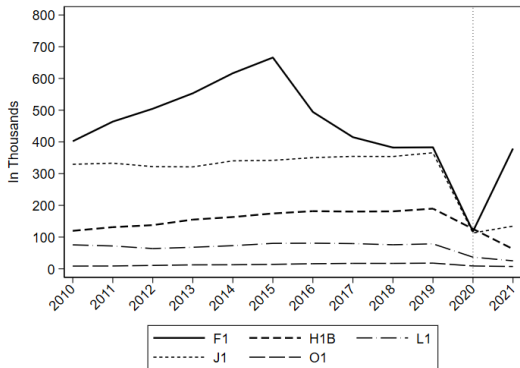
Very weak evidence of increase in Vacancies across states associated to drop in immigrants and low remote work possibilities. Immigrant drop of 2 percent of population only explains vacancy growth by 0.1 percent of employment

# Conclusions

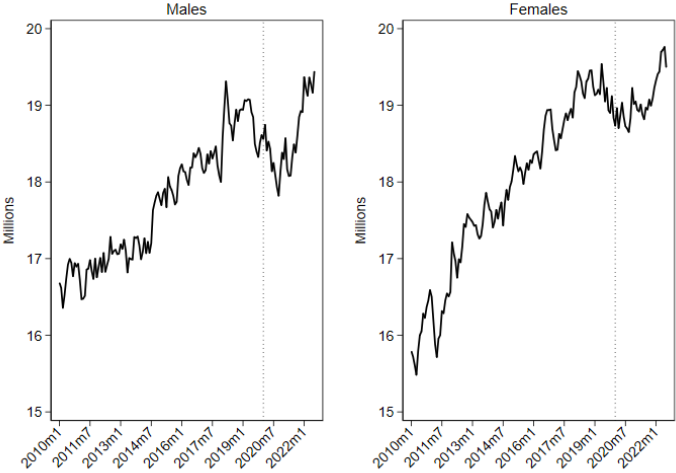
- **Finding 1** Big drop in Immigrants from late 2019 to mid 2021, especially non-college and young in manual-intensive sectors.
- **Finding 2** No significant changes to inter-state native mobility, post Covid or in response to the drop in immigrants.
- **Finding 3** Drop of immigration small response of natives could contribute to explain vacancies, especially in sectors with low remote work options. However preliminary evidence on that is weak.

# Appendix

**Figure A1:** Visa Issuance by Class and Year

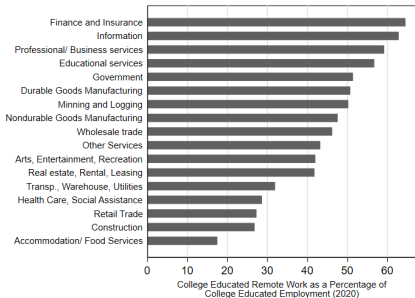


**Figure A2:** Working-age Foreign-born Population by Sex

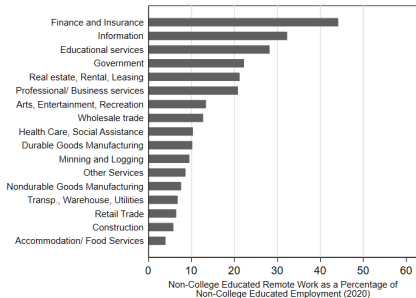




**Figure A3:** Remote Employment by Sectors and by College Education in 2020

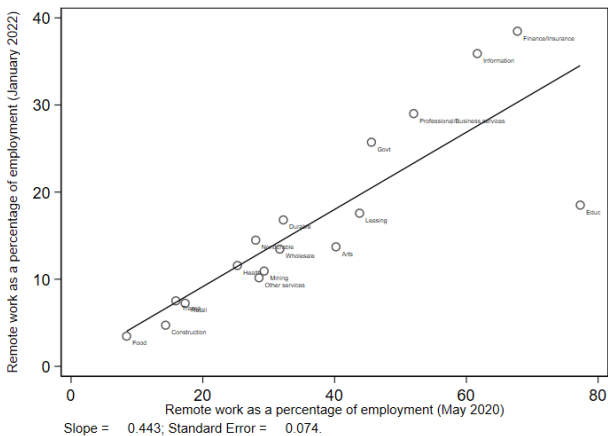


(a) College Educated

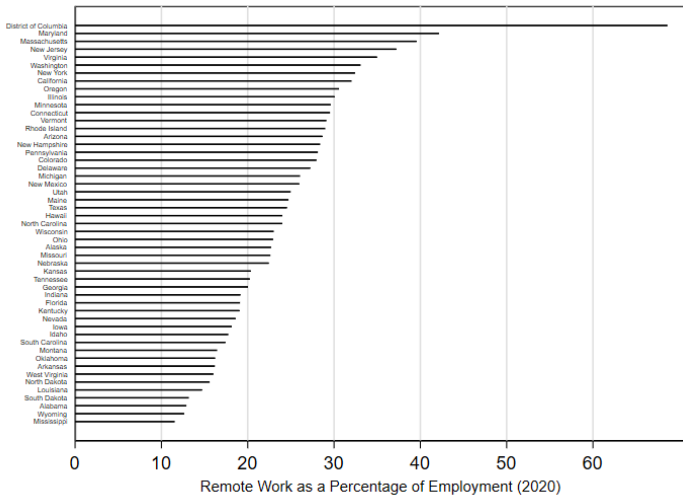


(b) Non-College Educated

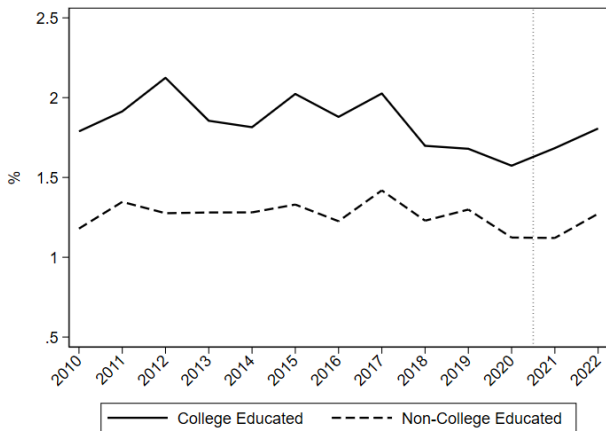
**Figure A4:** Persistence of Remote Employment across Sectors



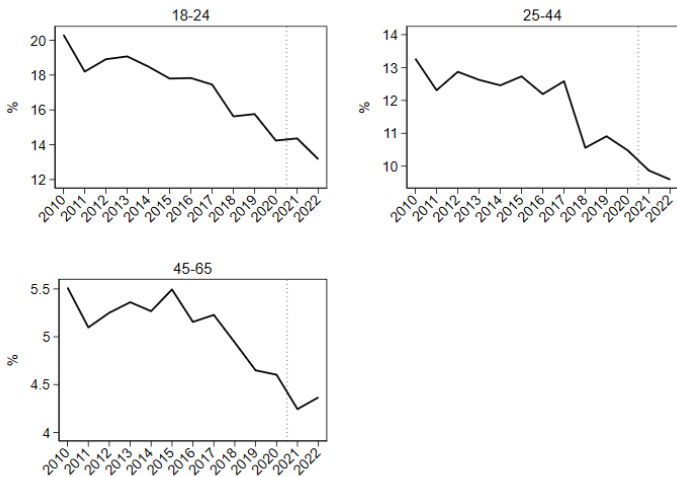
**Figure A5:** Remote Employment by State (2020)



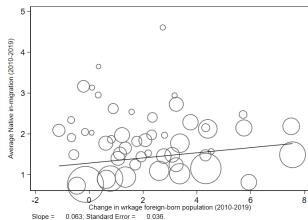
**Figure A6:** Working-age Native-born Mobility Rates by College Education



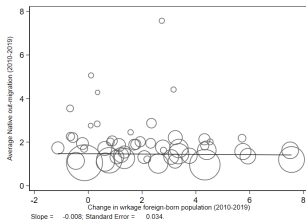
**Figure A7:** Working-age Native-born Mobility Rates by Age Categories



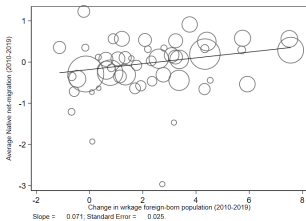
**Figure A8:** Working-age Native-born Migration Patterns vs Change in Foreign-born Population by State (Pre-Covid Pattern)



In-migration



Out-migration



Net-migration

**Figure A9:** Change in Immigration versus the Shift-share Instrument

