



REMOTE WORK AND HIGH PROXIMITY EMPLOYMENT DURING THE COVID-19 PANDEMIC IN MEXICO

XII BIS CCA Research Conference, November 2022

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DISCLAIMER



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MOTIVATION



- ▶ The COVID-19 pandemic deeply affected service sectors that require high physical proximity between consumers
- ▶ Governments imposed capacity restrictions on restaurants and other venues, and consumers switched demand away from crowds to decrease infection risk
- ▶ As a consequence, employment in these high-proximity sectors decreased strongly during the first months of the pandemic

HIGH PROXIMITY EMPLOYMENT

POST-COVID 19



- ▶ By 2022 many restrictions are lifted, and mass vaccination has decreased the likelihood and severity of COVID-19
- ▶ However, high proximity employment remains almost 10% below pre-pandemic levels in Mexico
- ▶ Important sector - represents 4.5% of total formal employment pre-pandemic, mostly low-wage workers
- ▶ Why hasn't high proximity employment recovered?

THIS PAPER



- ▶ In this paper we study the effect of remote work on high proximity formal workers in Mexico
- ▶ We use a triple difference strategy:
 - ▶ comparing high and low-proximity sectors
 - ▶ across municipalities with different potential for remote work
 - ▶ before and after the pandemic



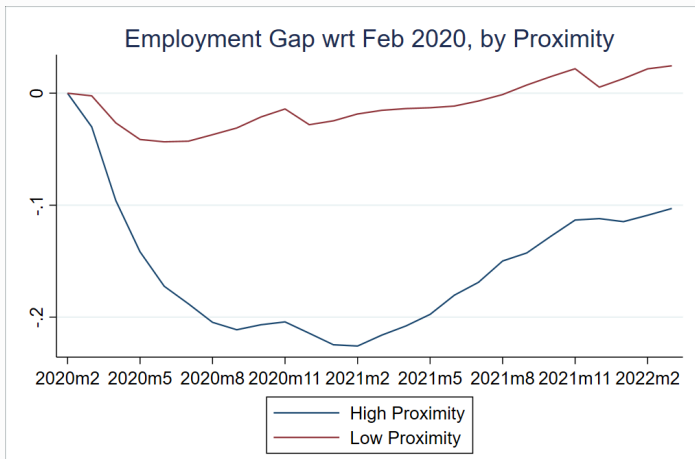
RESULTS

- ▶ 1pp more of potential remote work in a Mexican municipality implies a high proximity employment gap 0.41% greater, with respect to Feb 2020
- ▶ Precise zero effects on real wages
- ▶ Suggestive evidence of a negative demand shock for high proximity employment due to remote work
 - ▶ Consistent with Althoff et al (2022), Chetty et al (2021)
- ▶ Some evidence of higher prices in restaurants and cinemas in places with more remote work
 - ▶ Suggests lower market supply of these services as a consequence of closures, as well as higher hiring costs



HIGH AND LOW PROXIMITY EMPLOYMENT DURING THE COVID PANDEMIC

- ▶ High proximity employment defined by IMSS 2-digit sector:
 - ▶ Food and drink service
 - ▶ Entertainment
- ▶ Low proximity: rest of sectors



REMOTE WORK

AND HIGH PROXIMITY EMPLOYMENT

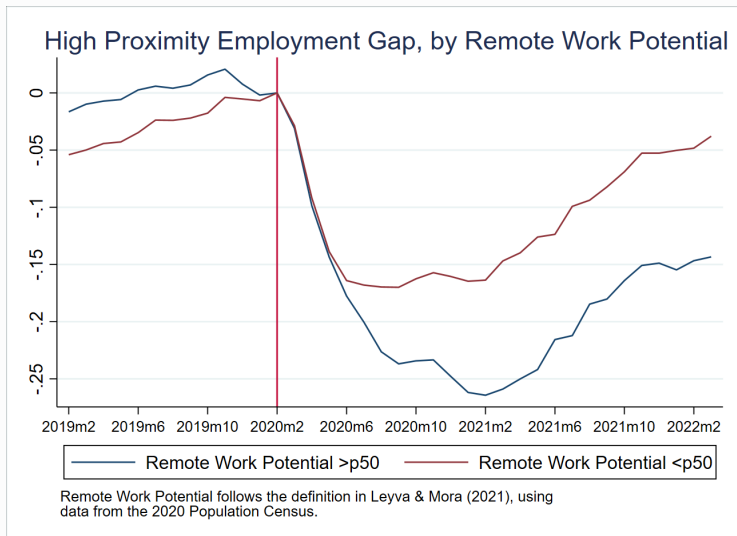


- ▶ Remote work is a feature of the post-COVID economy
- ▶ For the US, Althoff et al (2022) show evidence that remote work is associated with less high proximity employment after the pandemic.
- ▶ **Higher Exposure:** Locations where large shares of the workforce can perform work remotely tend to also have larger shares of employment in high-service sectors
- ▶ **Negative Shocks:** Remote work correlates with:
 - ▶ Larger drops in consumer service spending
 - ▶ Larger drops in hours worked by high-proximity service workers



HIGH PROXIMITY EMPLOYMENT GAP

BY MUNICIPAL REMOTE WORK



EMPIRICAL STRATEGY



- ▶ We want to compare high-and low remote work municipalities before and after the start of the pandemic
- ▶ However, both groups of municipalities show different trends in employment even before the pandemic
- ▶ To take care of these pre-trends, we use low-proximity employment as a comparison group within each municipality
- ▶ Strategy then is triple differences



EMPIRICAL STRATEGY

Let $g = \{\text{High Proximity, Low Proximity}\}$ index groups of sectors, j municipalities, and t months

$$\begin{aligned}
 \text{Employment_Gap}_{gjt} = & \mu_j + \alpha_1 \text{HiProx}_g + \alpha_2 \text{Pandemic}_t \\
 & + \delta_1 \text{RW}_j \times \text{HiProx}_g \\
 & + \delta_2 \text{RW}_j \times \text{Pandemic}_t \\
 & + \delta_3 \text{HiProx}_g \times \text{Pandemic}_t \\
 & + \beta \text{RW}_j \times \text{HiProx}_g \times \text{Pandemic}_t \\
 & + \Theta X_{jt} + \epsilon_{gjt}
 \end{aligned}$$

- ▶ HiProx_g is an indicator for high proximity
- ▶ Pandemic_t is an indicator for $t \geq \text{Feb 2020}$
- ▶ RW_j is the share of municipality employment that can be performed remotely, according to Leyva and Mora's classification
- ▶ X_{jt} includes lagged COVID cases and deaths, and interactions of time with share of population in school age and share of employment in secondary sectors.



DATA

- ▶ **Employment and wages:** IMSS monthly data, by 2 digit sector, municipality level
- ▶ **Remote Work Potential:** Constructed from 2020 Census data on occupations and Leyva & Mora's 2021 catalog of remote-work occupations for Mexico, municipality level
- ▶ **COVID cases and deaths:** Secretaría de Salud, municipality-month level
- ▶ **Municipality level controls:** Internet access, sector composition, school-age population from INEGI's 2020 Census



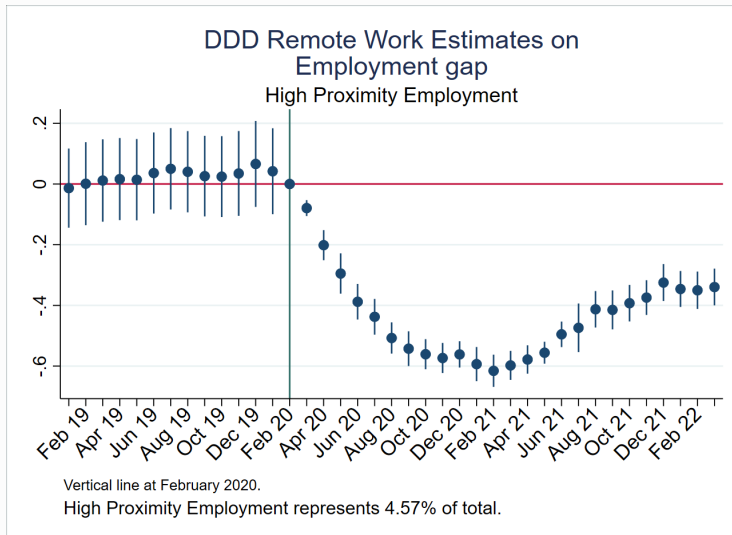
TRIPLE DIFFERENCE ESTIMATES

EMPLOYMENT

	Employment gap		
$HiProx_g \times RW_j \times Pandemic_t$	-0.414*** (0.053)	-0.414*** (0.053)	-0.416*** (0.055)
$HiProx_g \times RW_j$	0.141** (0.047)	0.200* (0.092)	0.202* (0.097)
$RW_j \times Pandemic_t$	-0.243*** (0.036)	-0.243*** (0.036)	-0.164* (0.082)
$HiProx_g \times Pandemic_t$	-0.001 (0.021)	-0.001 (0.021)	-0.002 (0.021)
$HiProx_g$	-0.052*** (0.015)	-0.071* (0.031)	-0.070* (0.032)
RW_j	0.069*** (0.014)		
$Pandemic_t$	0.067*** (0.012)	0.067*** (0.012)	0.063 (0.033)
Observations	779240943	779240943	759260406
MunFE	No	Yes	Yes
Controls	No	No	Yes

TRIPLE-DIFF EVENT STUDY

EMPLOYMENT





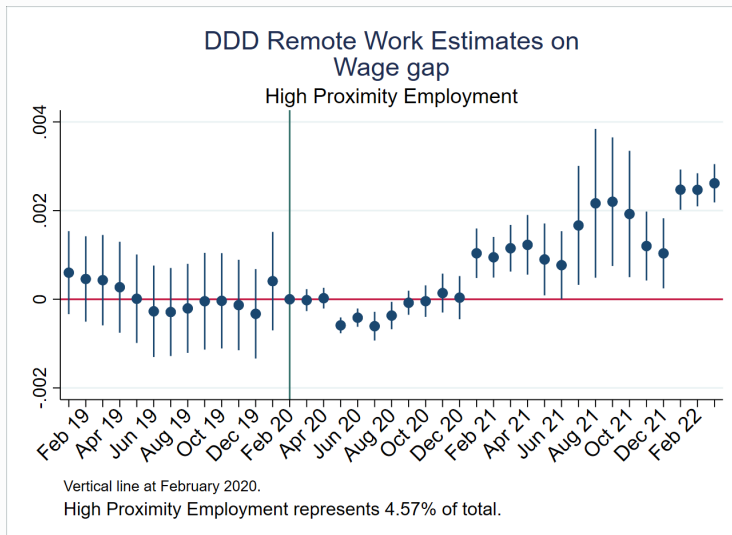
TRIPLE DIFFERENCE ESTIMATES

WAGES

	Wage gap		
$HiProx_g \times RW_j \times Pandemic_t$	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)
$HiProx_g \times RW_j$	0.001* (0.000)	0.001 (0.000)	0.001 (0.000)
$RW_j \times Pandemic_t$	0.000 (0.000)	0.000 (0.000)	-0.001 (0.001)
$HiProx_g \times Pandemic_t$	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
$HiProx_g$	-0.000** (0.000)	-0.000* (0.000)	-0.000* (0.000)
RW_j	-0.000** (0.000)		
$Pandemic_t$	0.000*** (0.000)	0.000*** (0.000)	0.001*** (0.000)
Observations	779220187	779220187	759240747
MunFE	No	Yes	Yes
Controls	No	No	Yes

TRIPLE-DIFF EVENT STUDY

WAGES

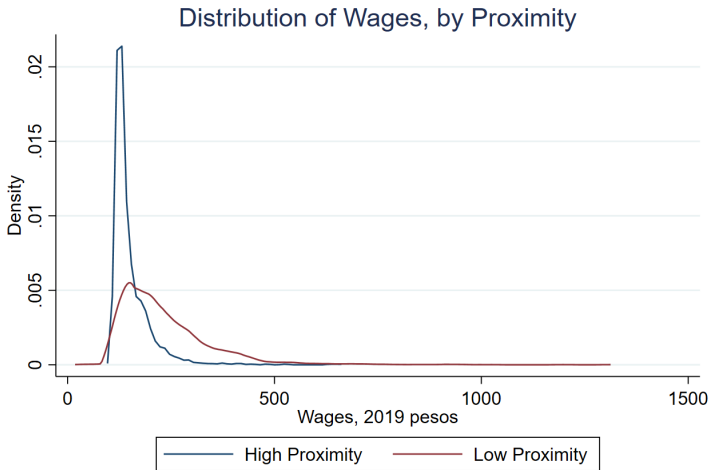




DISCUSSION

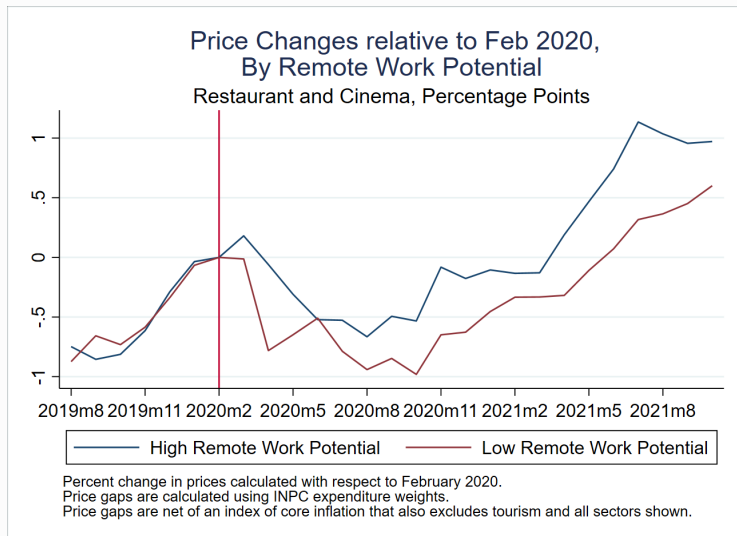
- ▶ Strong effects of remote work on employment but not on wages
- ▶ Possible explanations:
 - ▶ Negative labor demand shock with rigid wages
 - ▶ Negative labor demand shock offset by negative labor supply shock
- ▶ Find evidence of the first: high proximity employment is concentrated close to the lower bound of wages
- ▶ Also, legal restriction against nominal wage decreases
- ▶ Without wage responses it is otherwise difficult to test for changes in supply

WAGE DISTRIBUTION BY PROXIMITY



kernel = epanechnikov, bandwidth = 6.7951

RESTAURANT AND CINEMA PRICES AND REMOTE WORK



ROLE OF INTERNET



- ▶ So far find similar results to Althoff et al (2020)
- ▶ Possible criticism: our setting is different
 - ▶ Internet access is much lower in US and México: 63% of households in Mexico have internet access, vs 93% in US
 - ▶ The pandemic may have changed how consumers use the Internet e.g. increasing demand for online food orders and entertainment
 - ▶ In Mexico Internet access and remote work potential are correlated but not perfectly



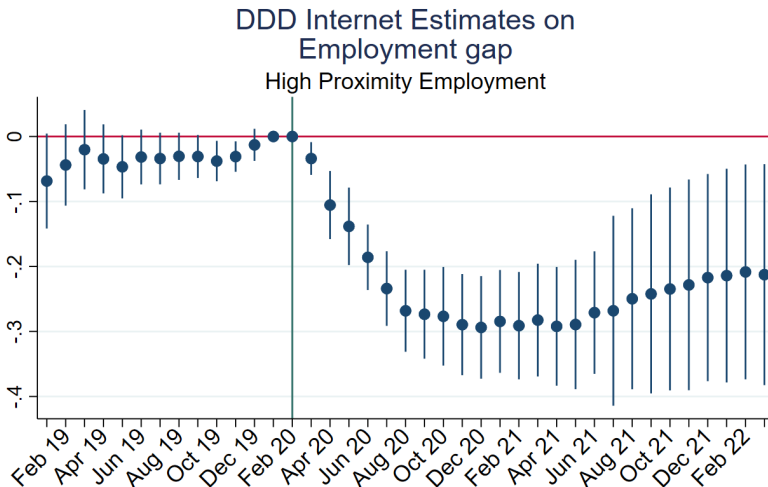
INTERNET AND REMOTE WORK

- We now include share of population with Internet access in the regression, as a DDD term

$$\begin{aligned}
 \text{Employment_Gap}_{gjt} = & \mu_j + \alpha_1 \text{HiProx}_g + \alpha_2 \text{Pandemic}_t + \alpha_3 \text{Internet}_j \\
 & + \delta_1 \text{RW}_j \times \text{HiProx}_g + \lambda_1 \text{Internet}_j \times \text{HiProx}_g \\
 & + \delta_2 \text{RW}_j \times \text{Pandemic}_t + \lambda_2 \text{Internet}_j \times \text{Pandemic}_t \\
 & + \delta_3 \text{HiProx}_g \times \text{Pandemic}_t \\
 & + \beta_1 \text{RW}_j \times \text{HiProx}_g \times \text{Pandemic}_t \\
 & + \beta_2 \text{Internet}_j \times \text{HiProx}_g \times \text{Pandemic}_t \\
 & + \Theta X_{jt} + \epsilon_{gjt}
 \end{aligned}$$

TRIPLE-DIFF EVENT STUDY

INTERNET



Vertical line at February 2020.

High Proximity Employment represents 4.57% of total.

DISCUSSION



- ▶ Effect of remote work is halved, to about -0.24 .
- ▶ Internet access relates negatively to high-proximity employment - effects is the other half the size those of remote work
- ▶ This suggests that Internet access may be a contributing factor to the decrease in high proximity employment in locations with high remote work potential
- ▶ A natural explanation is that consumers have also substituted away from in-person services and towards services over the Internet



CONCLUSION

- ▶ We find a negative, persistent effect of potential remote work on high-proximity employment in the municipalities of Mexico
- ▶ We find evidence of lower demand for high-proximity employment, which is both large and tends to be low-wage - so important in distributive terms
- ▶ Prices have increased in these sectors, suggesting that a lower number of restaurants and cinemas may also be a factor in lower employment
- ▶ Finally, we see part of the persistent effect is due to Internet access, suggesting that consumers are substituting away from high-proximity sectors towards services provided over the Internet