

# Transformación Digital: Impacto en el Ámbito Laboral

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XVIII Jornadas Andaluzas de Enseñanza de Economía en Secundaria

Málaga, 7-8 febrero 2025

# ¿Qué es la transformación digital?

- ✓ Integración de tecnologías digitales en **todos los aspectos** de una organización.
- ✓ Impacto en su cultura, operaciones y modelo de negocio.
- ✓ **Redefinición de industrias:** Inteligencia Artificial, Large Language Models (LLM), Big data, computación en la nube y el Internet de las Cosas (IoT), entre otros.
- ✓ Adaptarse a la transformación digital **no es una opción**, sino una necesidad para las empresas.



# Iniciativas regulatorias europeas

**2016: Iniciativa sobre la Digitalización de la Industria Europea:** 2016, busca reforzar la competitividad de la UE en el ámbito de las tecnologías digitales.

**2018: Reglamento General de Protección de Datos (GPDR):** protege los datos personales de los ciudadanos de la UE.

**2023: Ley de Servicios Digitales (DSA) y Ley de Mercados Digitales (DMA):** marco para regular las grandes plataformas tecnológicas en Europa.

# Iniciativas regulatorias europeas



**2024: Directiva sobre el trabajo en plataformas digitales:** mejorar las condiciones laborales de las personas que trabajan a través de plataformas digitales.

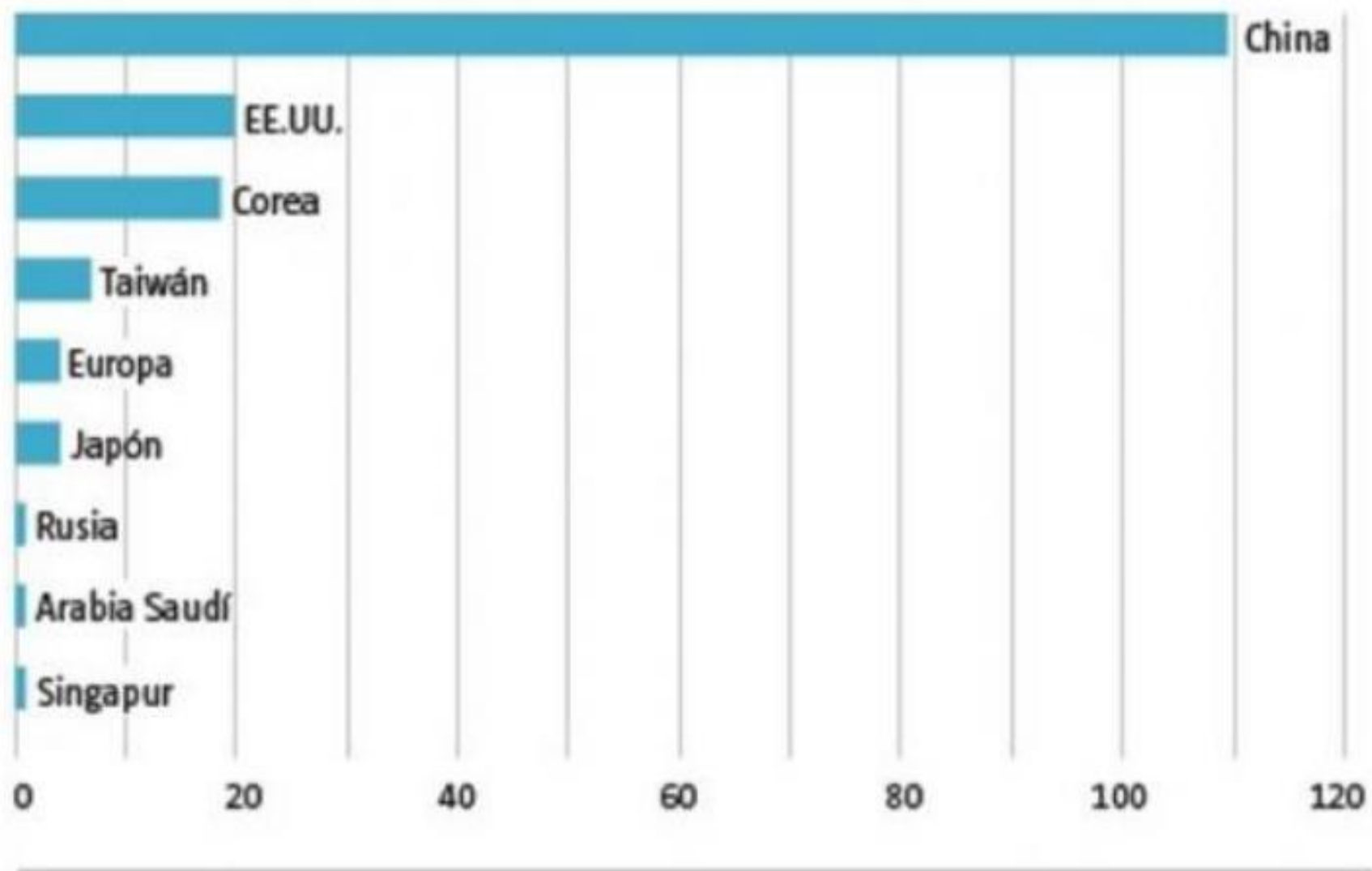
**2024: Reglamento Europeo de Inteligencia Artificial:** 2024, la **primera** normativa exhaustiva **a nivel mundial** en este ámbito. Este reglamento establece un marco armonizado para el desarrollo y uso de la IA en la UE.

**2025: Brújula de Competitividad:** aumentar la autonomía de la UE mediante la productividad y la innovación. Propone desregular y unificar normas.



## *Europa, a la cola de la inteligencia artificial*

Principales grupos de investigadores en un ranking de 500, por países



Ámbito laboral

# Retos para el mercado laboral

- **Automatización y nuevos procesos:** Aumento de eficiencia, reducción de tareas manuales.
- **Nuevos modelos de trabajo:** Trabajo remoto, equipos globales. Metaverso.
- **Reestructuración de empleos:** Creación de nuevos roles y desaparición de otros.
- **Necesidad de capacitación constante:** Competencias digitales como prioridad.





# THE CHANGING NATURE OF WORK

AND SKILLS IN THE DIGITAL AGE

EXECUTIVE SUMMARY



## Research and innovation

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# The future of work

What this policy is, strategy, funded projects, latest news.

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[What is the future of work?](#)

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## What is the future of work?

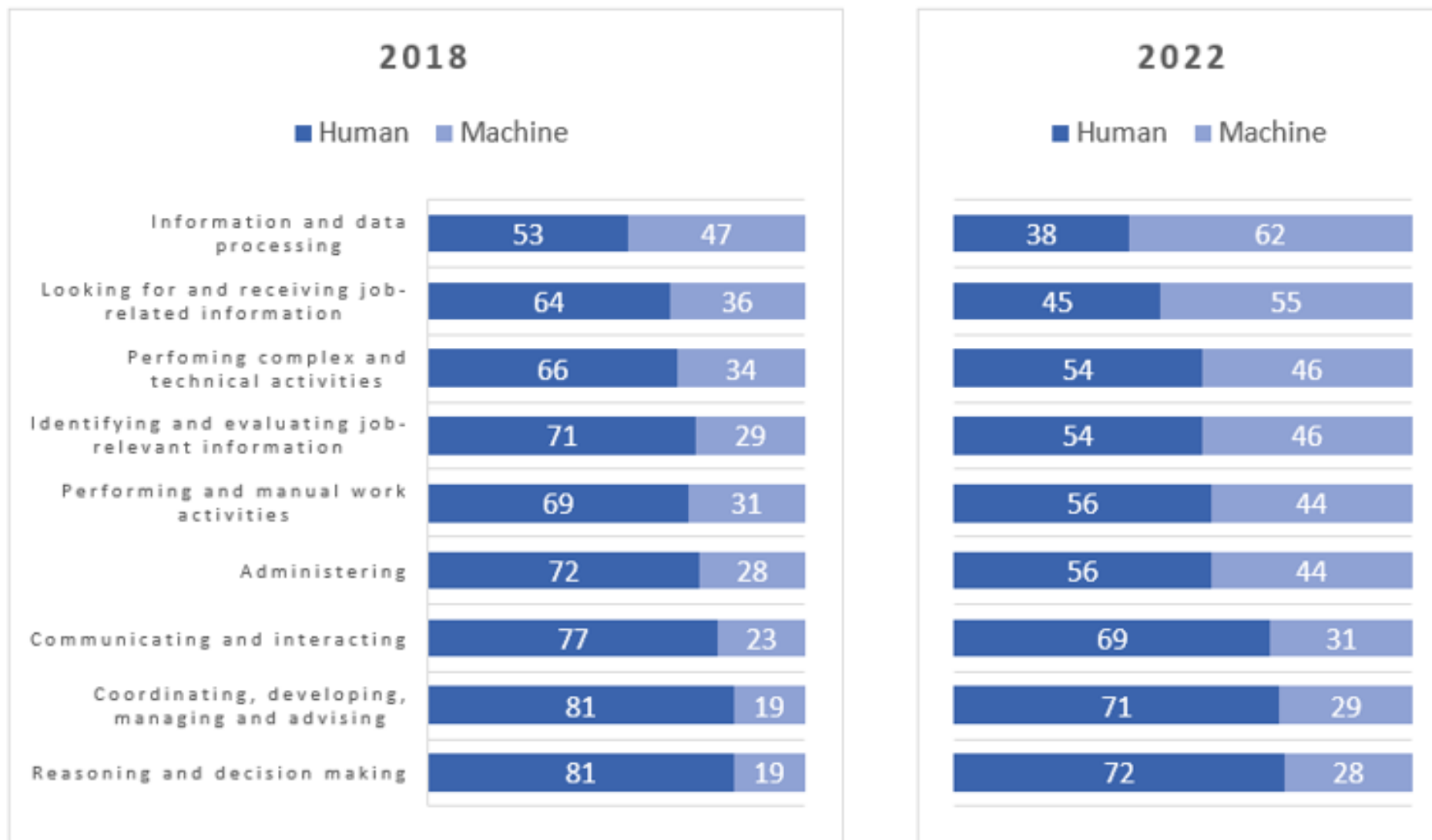
The future of work, workers and workplaces is at the focal point of public and policy interest. The world of work is changing fast and we want to make the most of economic opportunities while mitigating social risks.

The consequences of the COVID-19 pandemic have put a renewed focus on the core question: What will be the future of work, workers and workplaces?

There are many different aspects to the future of work:

- quality of jobs and employment
- social protection and next-generation manufacturing
- the intersection of health and employment, as well as the platform economy
- inclusive workplaces
- reskilling and upskilling
- human-machine collaboration

**Figure 3 | Ratio of human vs machine working hours, 2018 vs. 2022**



Fuente: WEF



VS.



# Transformación del empleo

## Demanda esperada:

- **Creciente** para analistas de datos, científicos, directores de proyectos, ingenieros en robótica, desarrolladores de software, etc.
- **Decreciente** para los empleados de entrada de datos, contables, mecánicos o trabajadores de la construcción.

# Transformación del empleo

**Cambio en las necesidades de habilidades:** Evidencia empírica de escasez de talento (IBM, 2019; Duch-Brown et al. 2021, Anderson et al. 2020).

La falta de habilidades en IA podría socavar las perspectivas industriales de Europa.

Los niveles de adopción de la IA dependen de la **recapacitación efectiva** de su población.

La asimilación está **muy ligada a la educación**.

# Transformación del empleo

**Se requiere orientación política para:**

- Definir las ocupaciones con mayor riesgo de sustitución.
- Proporcionar el conjunto adecuado de habilidades necesarias para las ocupaciones recién creadas.
- Ayudar a grupos en potencial riesgo de exclusión.

# ¿Qué esperamos de la IA?

- ✓ Aumentos en la productividad económica.
- ✓ Mejores condiciones para los trabajadores.
- ✓ Posibilidad en orientarse a tareas más gratificantes.
- ✓ Reducción del tiempo de trabajo (¿?).



# Plataformas de empleo digital

## IT



## GENERAL



## GRAPHIC DESIGN



## TRANSLATION



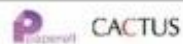
## E-LEARNING



## HEALTHCARE



## ACADEMIC



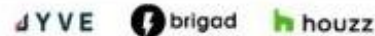
## WEB DESIGN & DEVELOPMENT



## MARKETING



## HOSPITALITY



## MEDIA



## E-COMMERCE



## ENGINEERING



## GOVERNMENT



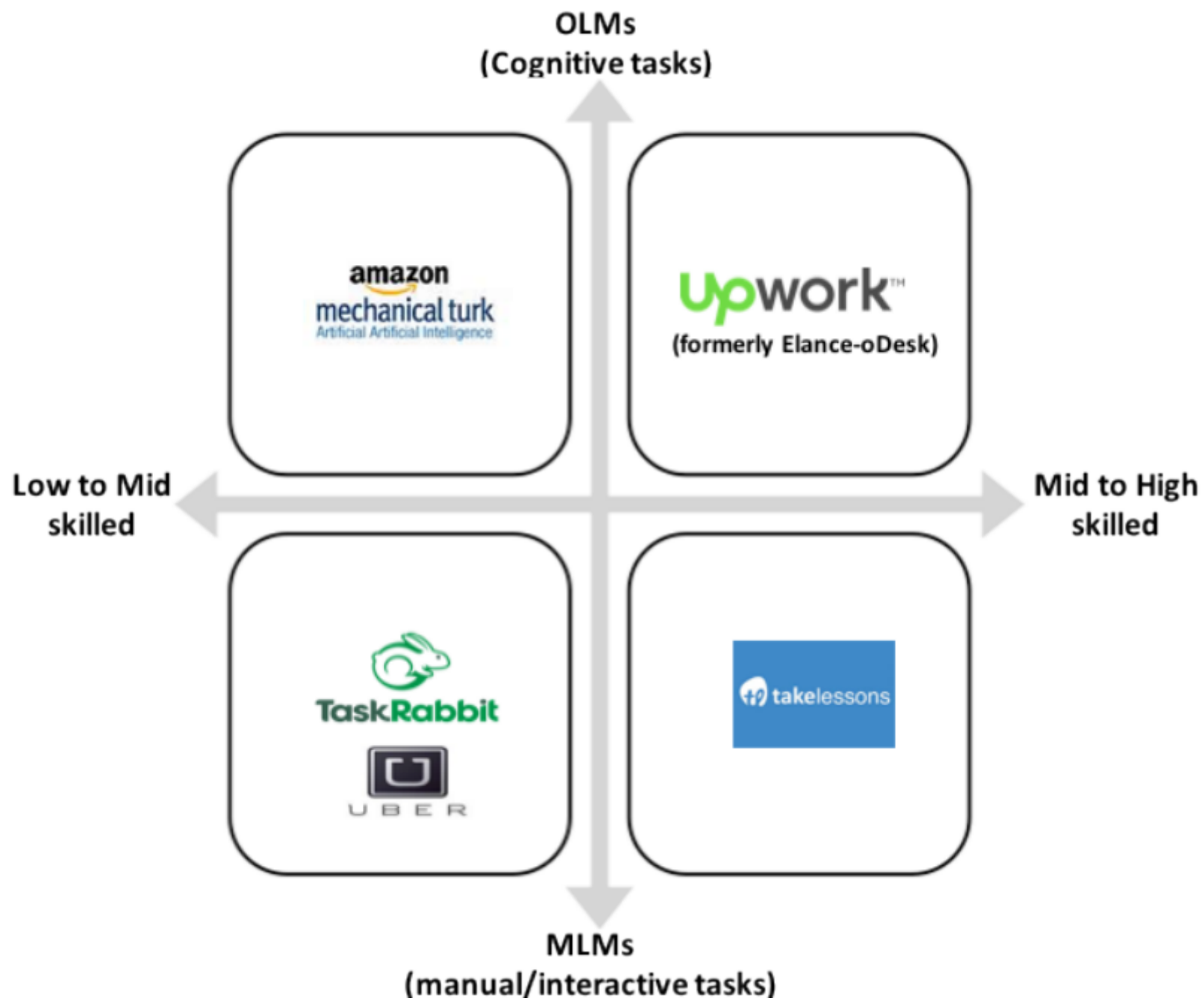
## BUSINESS



**Fig. 1 |** Labor demand (#projects posted) on top 5 OLMs has more than doubled within the last six years



Source: Online Labour Index: Stephany et al., 2021





Filters

- Completed projects
  - More than 5 (10,000+)
  - More than 50 (3,281)
- CERT score
  - Top cert (500)
  - Cert 5 and higher (5,273)
  - Cert 4 and higher (10,000+)
- Hourly rate
  - Under \$15 (10,000+)
  - \$15 to \$35 (10,000+)
  - \$35 to \$60 (10,000+)
  - Over \$60 (4,884)

\$ min \$ max SET

Sort: Recommended

10,000+ results



Harshvardhan L.

React, PHP, Laravel, WordPress, Logo design, App Developer, AWS expert on PPH.

United Kingdom

4.9 (813) TOP CERT

wordpress design ios development

519 projects \$21/hr

responds within a day Featured



Maria H.

Experienced Team of Graphic Designers, Web Developers, Content Writers and Digital Marketing Specialists

United Kingdom

4.9 (4826) TOP CERT

animation graphics design

6,628 projects \$35/hr

responds within a few hours Featured



Globex IT Solutions

Internet Marketer, SEO Professional & Online Consultant

Pakistan

5.0 (778) TOP CERT

graphics design link building

405 projects \$10/hr

responds within two days Featured

# Technology & Programming Projects — 415 found

CLEAR ALL

Search projects...

In: Technology & Programming

Saved Searches



Filters

Experience

Location

Project Type

Price

Sort By

Latest

## Simple single we page to send info

€9

FIXED PRICE

Posted 4 minutes ago Remote Proposals 3 1

SEND PROPOSAL

## Migrate wordpress websites and ensure they work on PHP8 OPPORTUNITY

€581

FIXED PRICE

Posted an hour ago Remote Proposals 45 2

SEND PROPOSAL

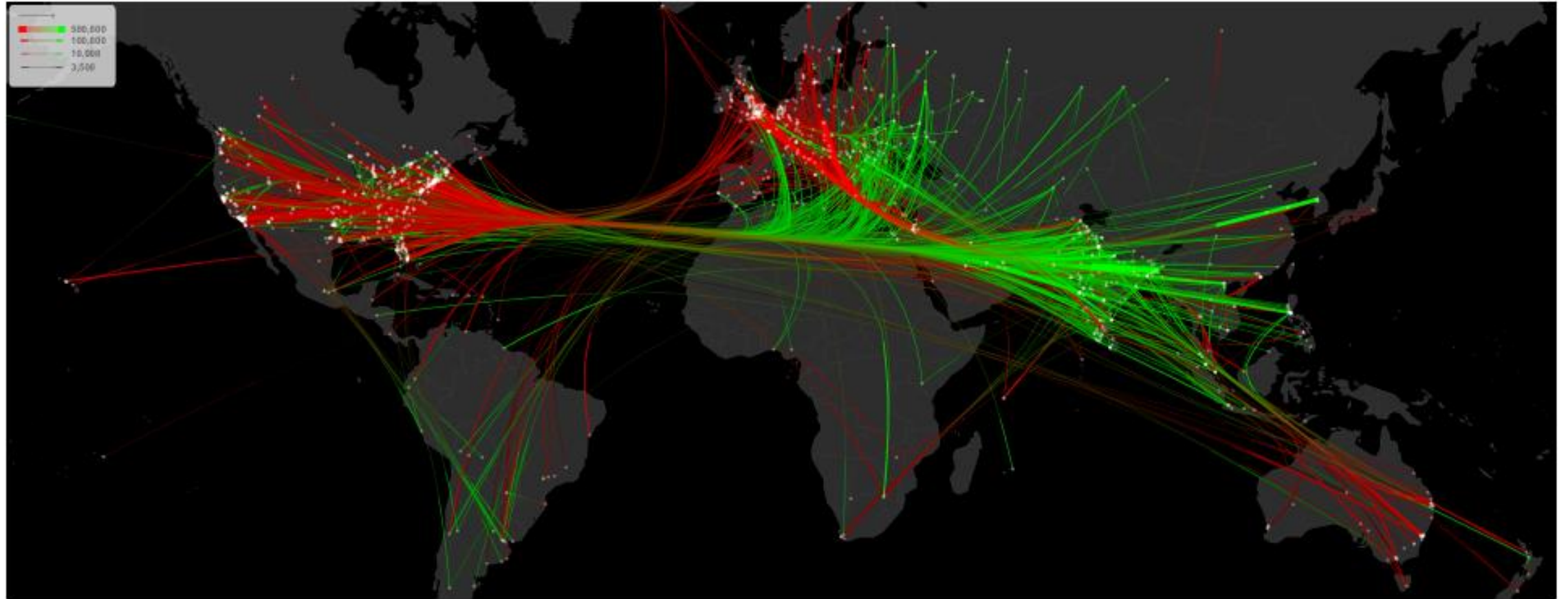
## Website fix and update

€20

FIXED PRICE

Posted 24 minutes ago Remote Proposals 16 3

Figure 2: City-level flows of services



Note: the green part of every curved line stands for the origin of the service while the red part of the line stands for the destination. All city-pairs with overall project volume of at least \$3500 are given a line in width proportional to the volume of trade.

# Retos para Europa

- Fiscalidad
- Protección del trabajador
- Competencia en salarios
- Deslocalización



Brecha salarial

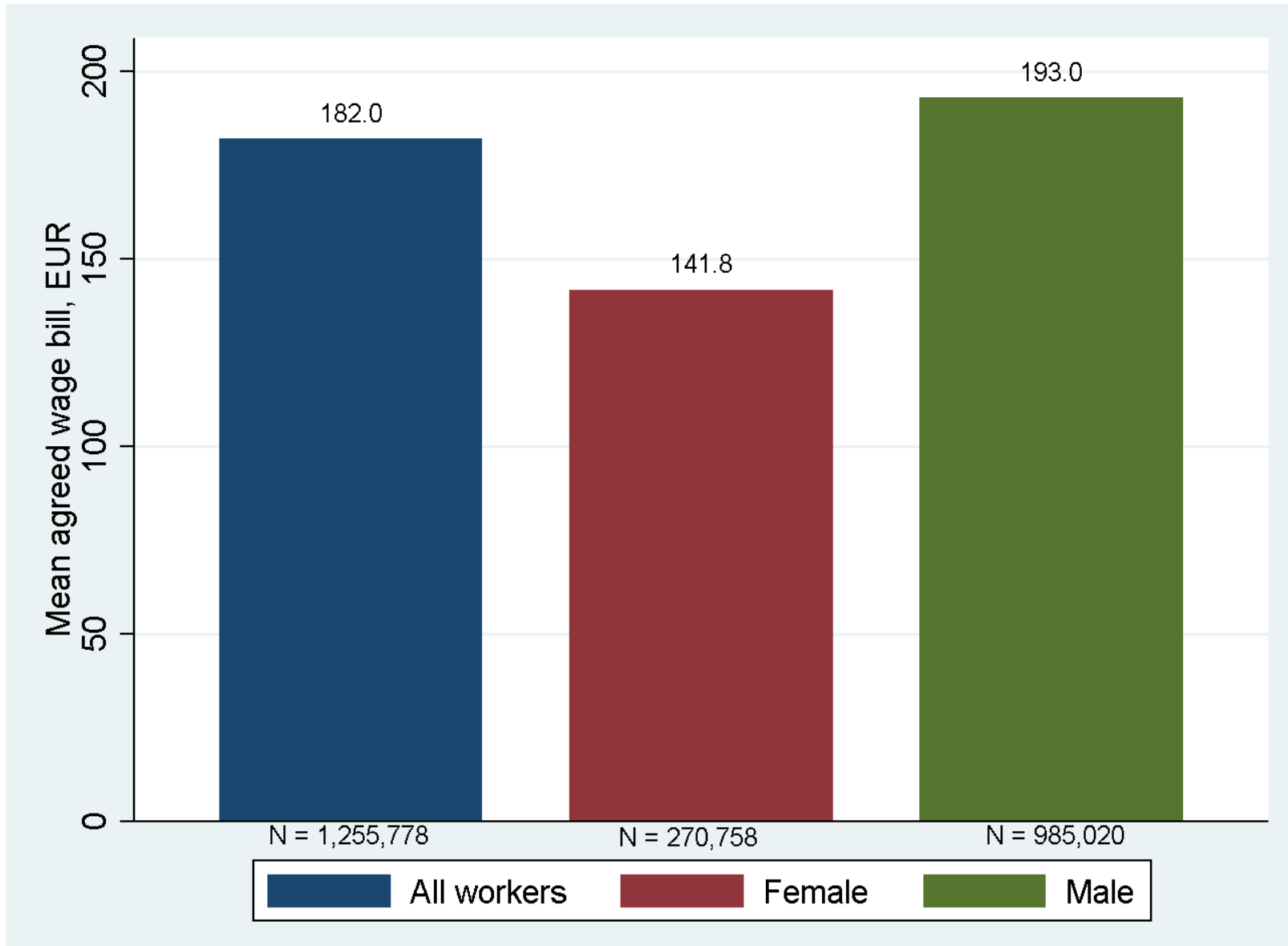


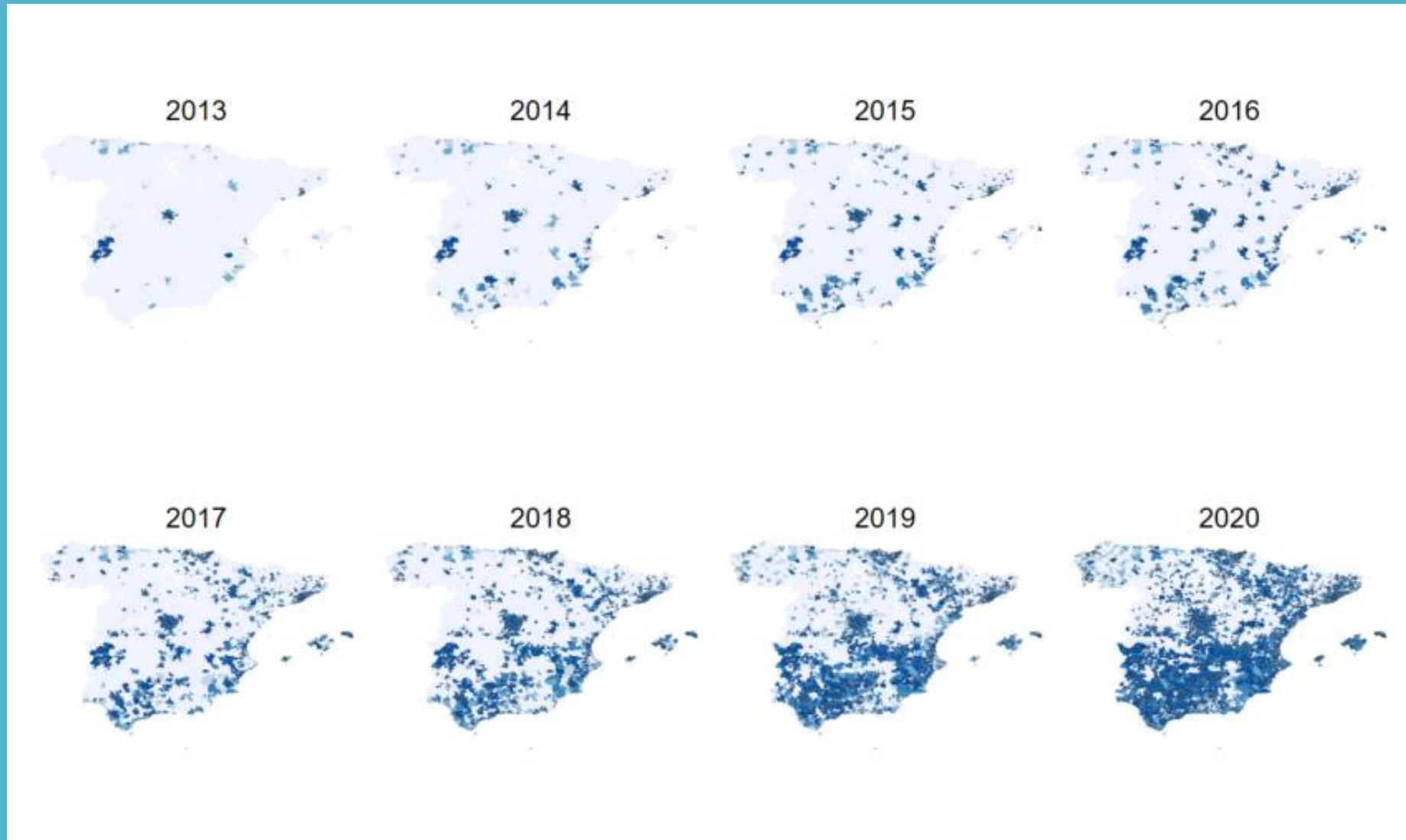
Fig. 2 | Mean Agreed Wage Bill By Gender of Workers

# Fig. 7 | Wage Bill Proposals, Winning Probabilities and Expected Revenues, by Gender



Cohesion territorial

# Deployment of FTTH – 2013-2020





# The Donut Effect of Covid-19 on Cities

Arjun Ramani & Nicholas Bloom

WORKING PAPER 28876

DOI 10.3386/w28876

ISSUE DATE May 2021

REVISION DATE December 2022

Using data from the US Postal Service and Zillow, we quantify the effect of Covid-19 on migration patterns and real estate markets in US cities. We find three key results. First, within large US metro areas, households, businesses and real estate demand shift from central business districts (CBDs) to lower density suburbs and exurbs. We label this the “Donut Effect”, reflecting the hollowing out of city centers and growth of suburban outer rings. Second, we observe sizeable donuts in large cities, smaller donuts for mid-sized cities and essentially nothing for small cities, on average. Third, most households leaving city centers move to suburbs of the same city, some move to small metros and few move to rural areas. To rationalize these findings we note that post-pandemic working patterns will typically be hybrid, with workers commuting a few days a week. This is less than pre-pandemic, making longer commutes more common, but is frequent enough to keep most, though not all, workers near their place of work.

# IMPACT ON DIGITAL LABOR AND INCOME

Table 2. Impact of the PEBA program on digital labor and income

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable:	Log nb online workers	Log nb online workers	Log nb online jobs	Log nb online jobs	Log online income	Log online income
Control group:	Not yet treated SPEs	Not yet treated and never treated SPEs	Not yet treated SPEs	Not yet treated and never treated SPEs	Not yet treated SPEs	Not yet treated and never treated SPEs
Broadband internet (PEBA treatment)	0.121*** (0.029)	0.083*** (0.027)	0.105*** (0.028)	0.076*** (0.025)	0.305*** (0.109)	0.169* (0.100)
SPE FE	YES	YES	YES	YES	YES	YES
Province-time FE	YES	YES	YES	YES	YES	YES
Observations	3,041	3,245	3,041	3,245	3,041	3,245
R-squared	0.783	0.782	0.626	0.623	0.569	0.577

*Notes:* Observations are at the SPE-year level. OLS regression coefficients reported. Robust standard errors in parentheses. Constant not reported.

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

# TERRITORIAL COHESION (I): WAGES

Table 3. Wage expectations and actual wages of online workers in urban and rural areas

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent variable:	Log worker expected wage				Log actual wage			
Main city	0.175*** (0.001)	0.351*** (0.031)	0.134*** (0.004)	0.098*** (0.002)	0.438*** (0.020)	0.539** (0.063)	0.064*** (0.002)	-0.006 (0.006)
FE included <sup>a</sup>	NO	NO	YES	YES	NO	NO	YES	YES
Control variables included <sup>b</sup>	NO	NO	NO	YES	NO	NO	<b>NO</b>	YES
Constant	5.199*** (0.004)	5.206*** (0.035)	5.385*** (0.003)	4.919*** (0.033)	5.940*** (0.016)	5.921*** (0.068)	6.312*** (0.001)	5.966*** (0.032)
Observations	107,265	3,409	3,409	3,409	22,007	3,408	3,408	3,408
R-squared	0.019	0.086	0.917	0.931	0.009	0.016	0.892	0.897

Notes: Observations are at the worker-day level. Robust standard errors clustered at worker-country level in parentheses. Going from column (1) to (4), and from (5) to (8), the number of observations is dropped because of missing values in the control variables. To check the robustness of our results, we replicate the estimation of the raw effect in column (2) using the same sample as in columns (3) and (4), and in column (6) using the same sample as in columns (7) and (8), respectively. Constant not reported.

<sup>a</sup> Fixed effects included: Day, Job Category, Job Family, Employer.

<sup>b</sup> Control variables included: Certification badge, Worker female, Worker experience, Frequency, Ratings, Proposal is locked, Employer is new client, Worker Initiative, Contract is new, Job subchannel.

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



# TERRITORIAL COHESION (II): POPULATION

Table 4. Impact of the PEBA program on population

	(1)	(2)
Dependent variable:	Log population	Log population
Control group:	Not yet treated SPEs	Not yet treated and never treated SPEs
Broadband internet (PEBA treatment)	0.005*** (0.001)	0.005*** (0.001)
SPE FE	YES	YES
Province-time FE	YES	YES
Observations	106,081	124,210
R-squared	0.998	0.998

*Notes:* Observations are at the SPE-year level. OLS regression coefficients reported. Robust standard errors in parentheses. Constant not reported.

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

# Conclusiones

La transformación digital **no es una opción**.

Impacto en el empleo por determinar.

Cambios en la demanda laboral. **Rol clave de la IA.**

Necesidad de **adaptar la educación** y capacitación.

**Oportunidad** para evolucionar.