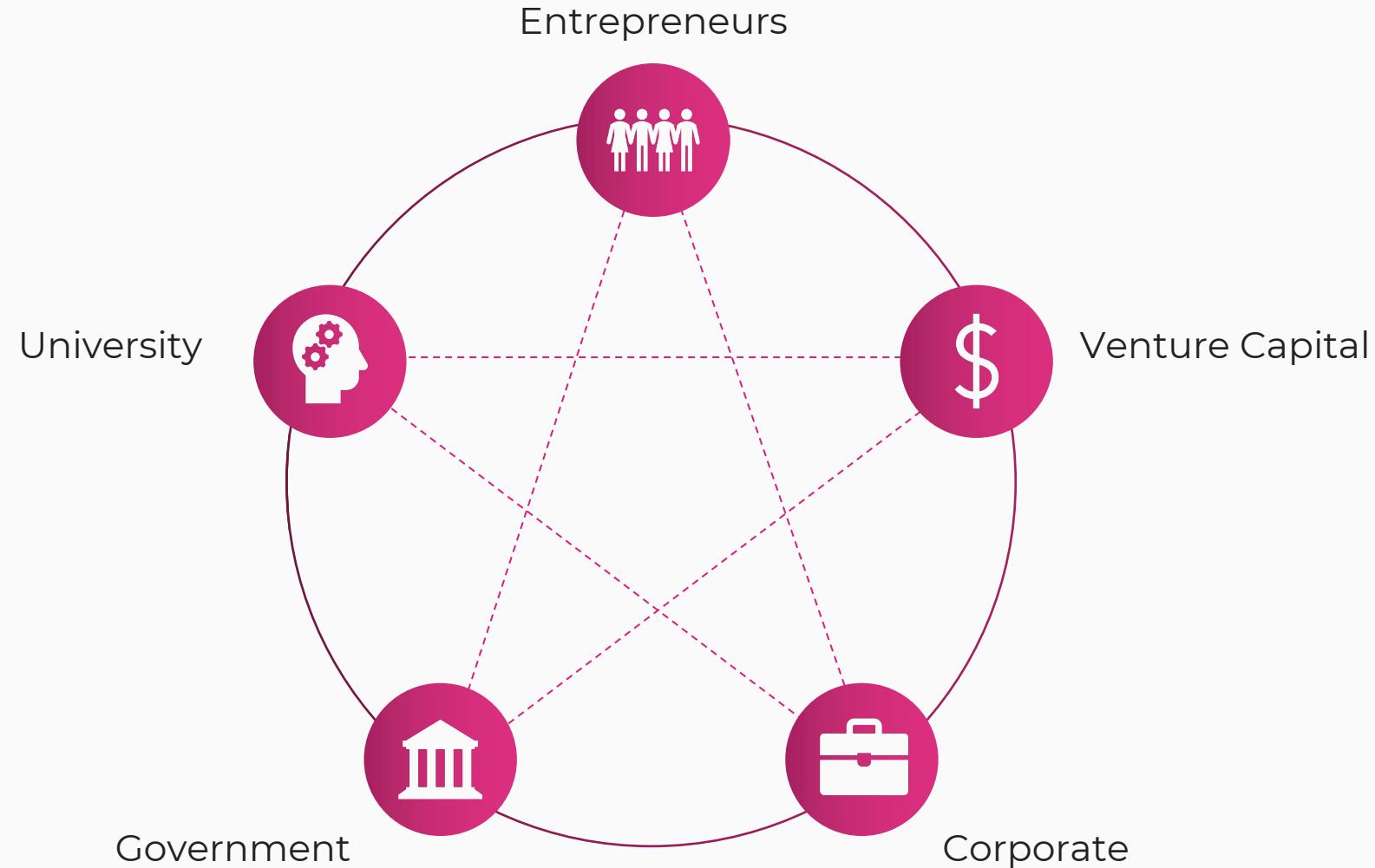


Innovation Capacity and Entrepreneurial Quality

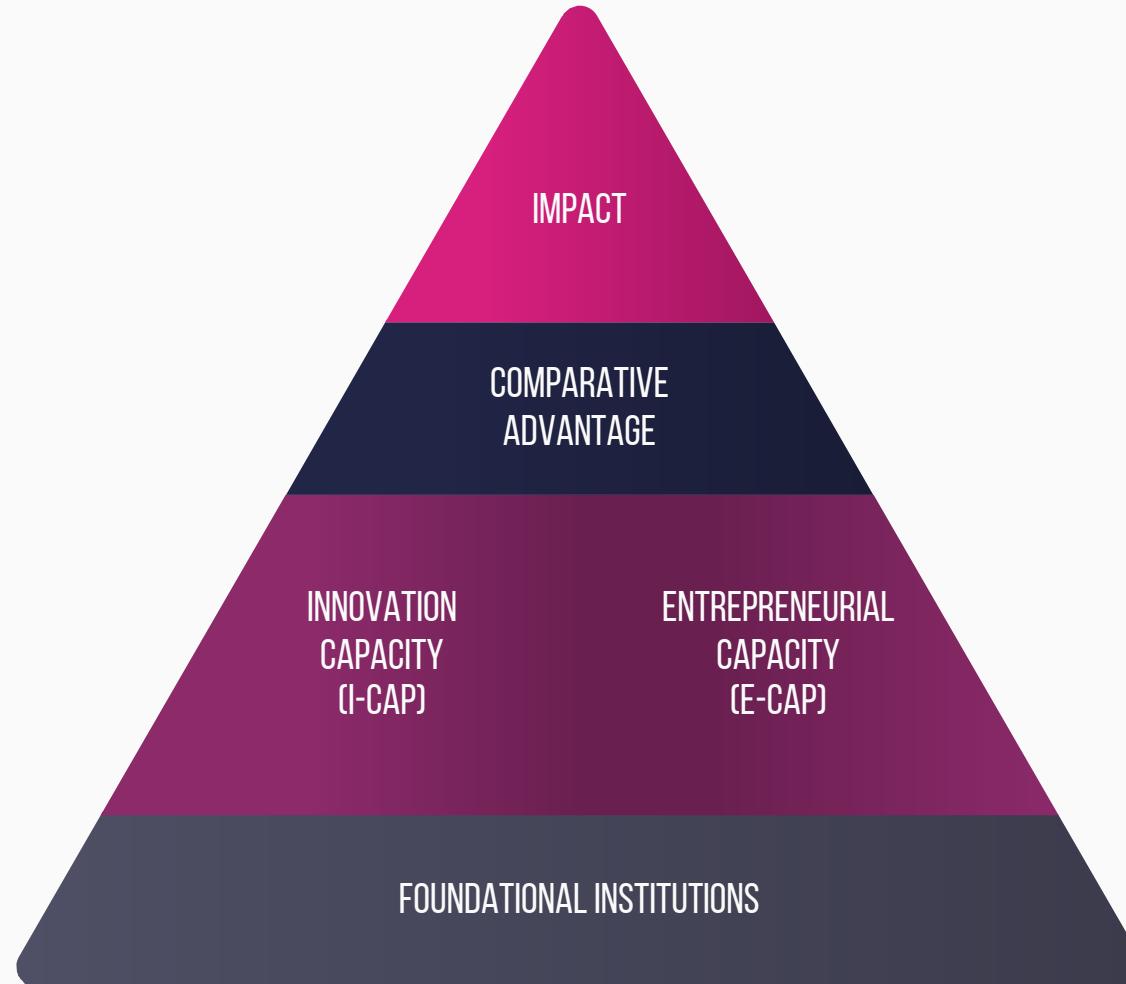
MIT Focus Mexico

MDS. René Rosado González
Program Director of Governance and Public Transformation

Innovation Ecosystem



The Innovation Model



Measuring Innovation Capacity



- 1. Institutional Environment**
 - a) Governance
 - b) Public administration
- 2. Human Capital**
 - a) Education
 - b) Social inclusion and equality
- 3. Regulatory and legal framework**
 - a) Easyness for business
 - b) IP protection
- 4. R&D**
 - a) Infrastructure
 - b) Trade marks and registered IPs
- 5. ITCs adoption**
 - a) Telecom penetration
 - b) Digital governance
 - c) Quality of infrastructure

Pena Trapero Distance(P_2)

The P2 distance is a synthetic indicator designed to make interspatial and intertemporal comparisons.

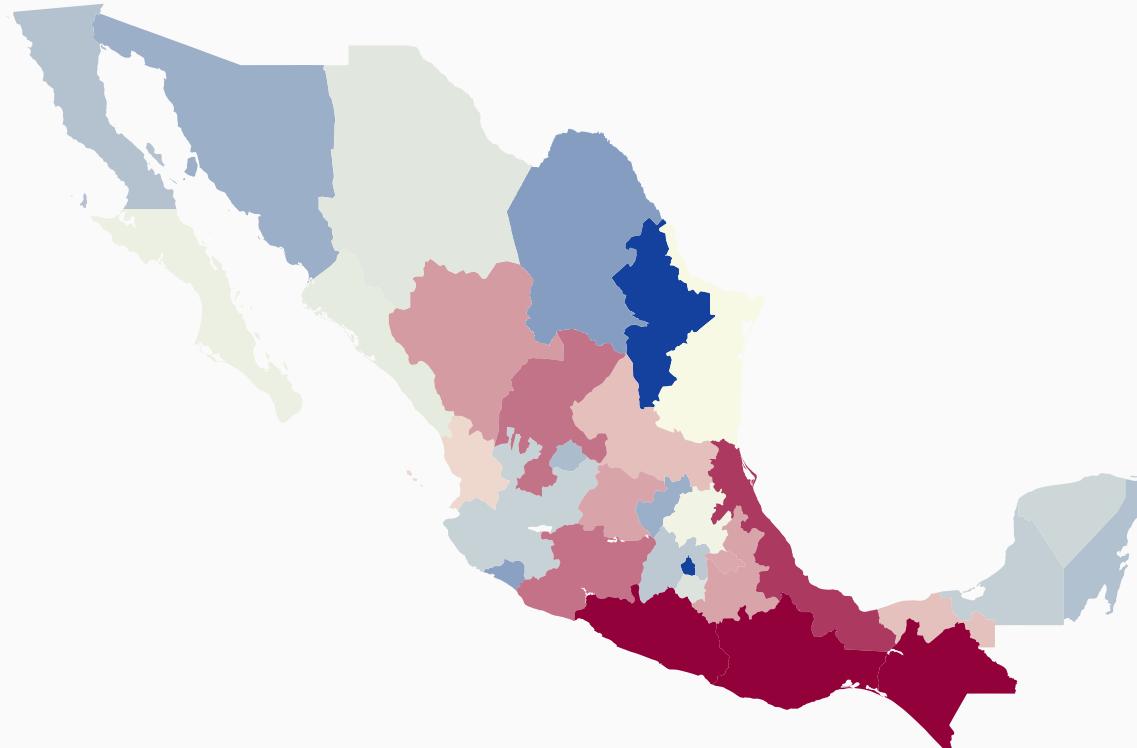
$$DP_2 = \sum_i^N \left(\frac{d_i}{\sigma_{X_i}} \right) * (1 - R_{i,-i}^2)$$

where

$$d_i = |x_i - x_i^*|$$

taking a reference vector X^*

Innovation Capacity Index



INNOVATION CAPACITY INDEX
(STANDARDIZED)

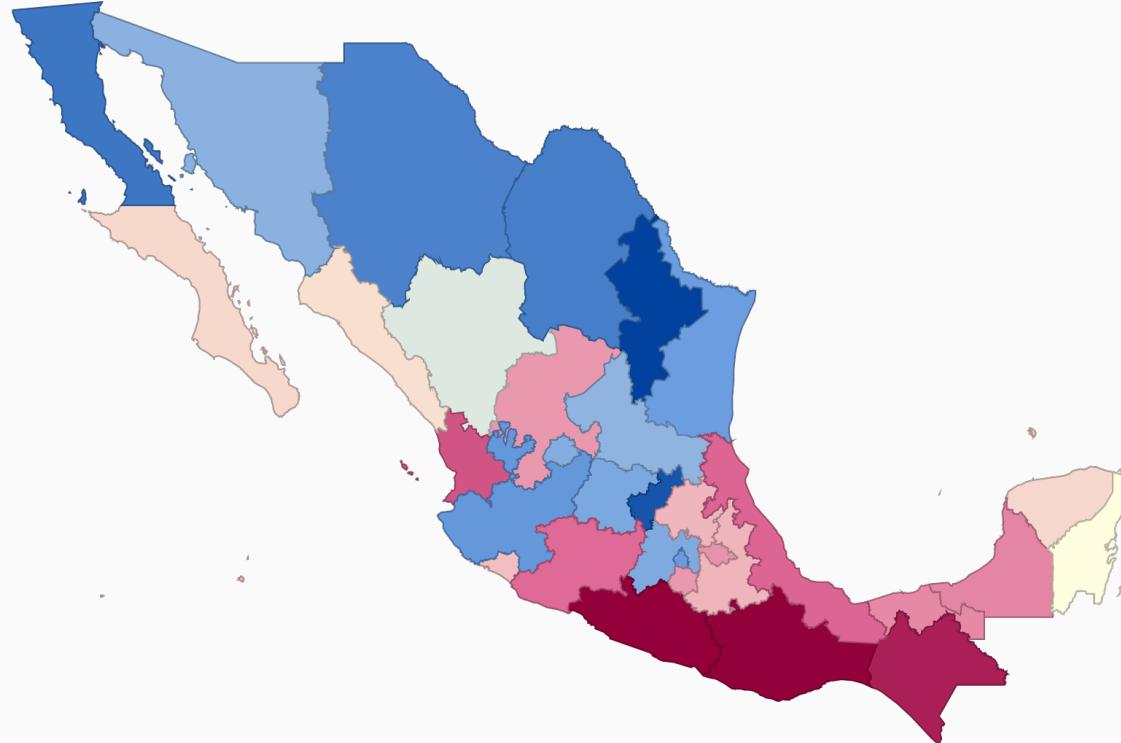
-1.5 -1 -0.5 0 0.5 1 1.5

Powered by Bing
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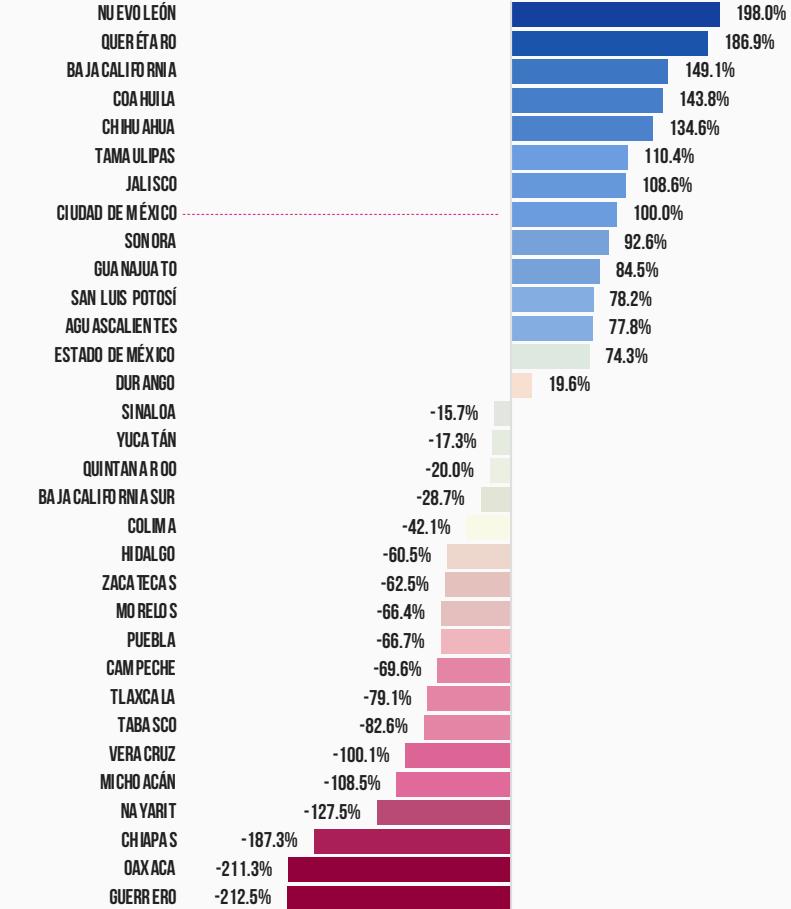
INNOVATION CAPACITY INDEX
(MEXICO CITY = 100%)

MÉXICO CITY	100.0%
NUEVO LEÓN	73.1%
COAHUILA	61.8%
COLIMA	61.4%
SONORA	59.7%
QUERÉTARO	59.7%
AGUASCALIENTES	58.2%
QUINTANA ROO	57.6%
BAJA CALIFORNIA	57.4%
ESTADO DE MÉXICO	56.6%
CAMPECHE	56.0%
JALISCO	55.6%
YUCATÁN	55.0%
MORELOS	53.6%
CHIQUAHUA	53.1%
SINALOA	52.6%
BAJA CALIFORNIA SUR	52.0%
HIDALGO	51.6%
TAMAULIPAS	51.0%
NAVARIT	46.8%
TABAÑO	44.7%
SAN LUIS POTOSÍ	44.6%
TLAXCALA	42.6%
GUANAJUATO	42.2%
PUEBLA	42.2%
DURANGO	41.3%
ZACATECAS	37.8%
MICHOACÁN	37.8%
VERACRUZ	32.7%
OAXACA	25.3%
GUERRERO	23.8%
CHIAPAS	19.7%

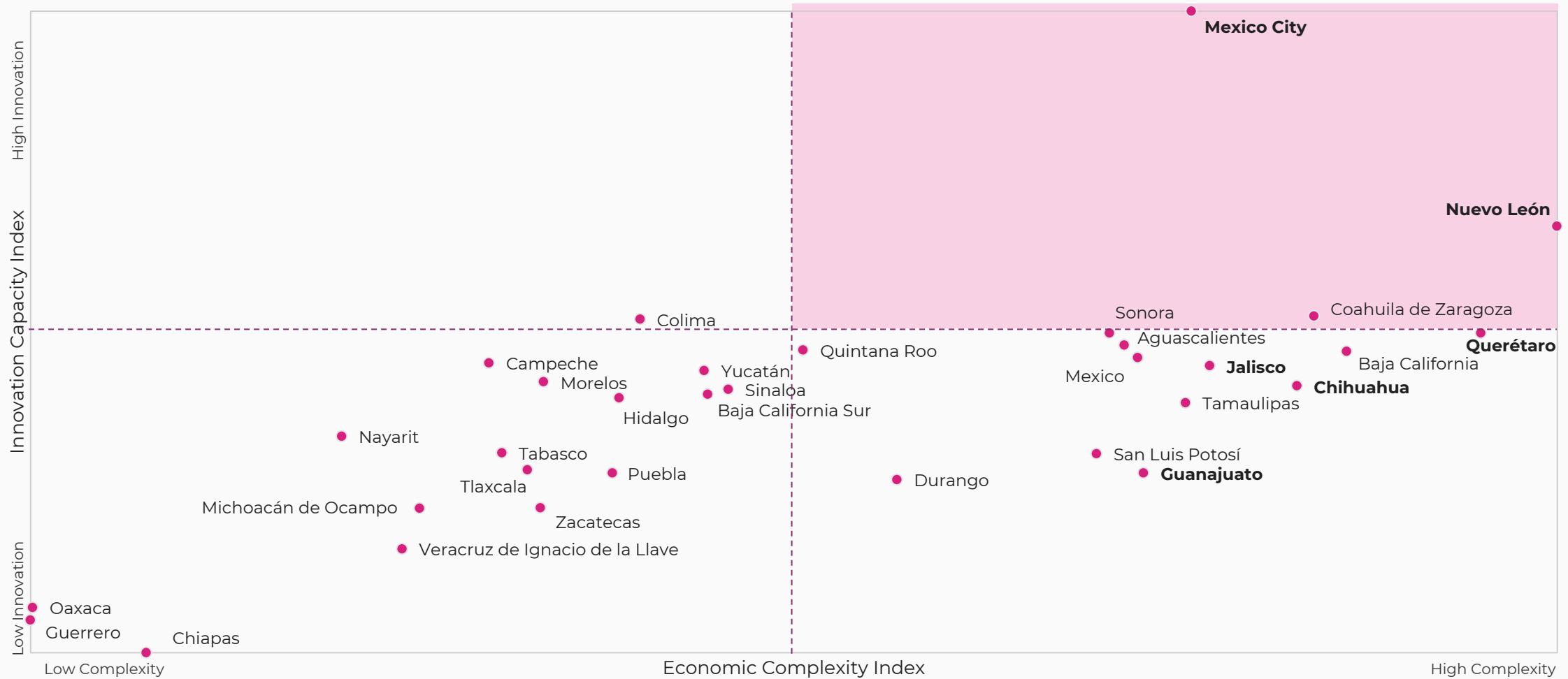
Economic Complexity Index



ECONOMIC COMPLEXITY INDEX
(MEXICO CITY= 100%)



The expected correlation



Entrepreneurial Quality Index

Following Guzman & Stern (2020), we measure the quality of the venture as the probability that the company i in the municipality m that has the characteristics H and a level of performance g :

$$\hat{\theta}_{i,r} = P(g_{i,r} | H_{i,r}) = f(a + \beta H_{i,r})$$

From the estimated probability, we define an Entrepreneurship Quality Index (EQI)

$$EQI_r = \frac{1}{N_r} \sum_i^I \hat{\theta}_{i,r}$$

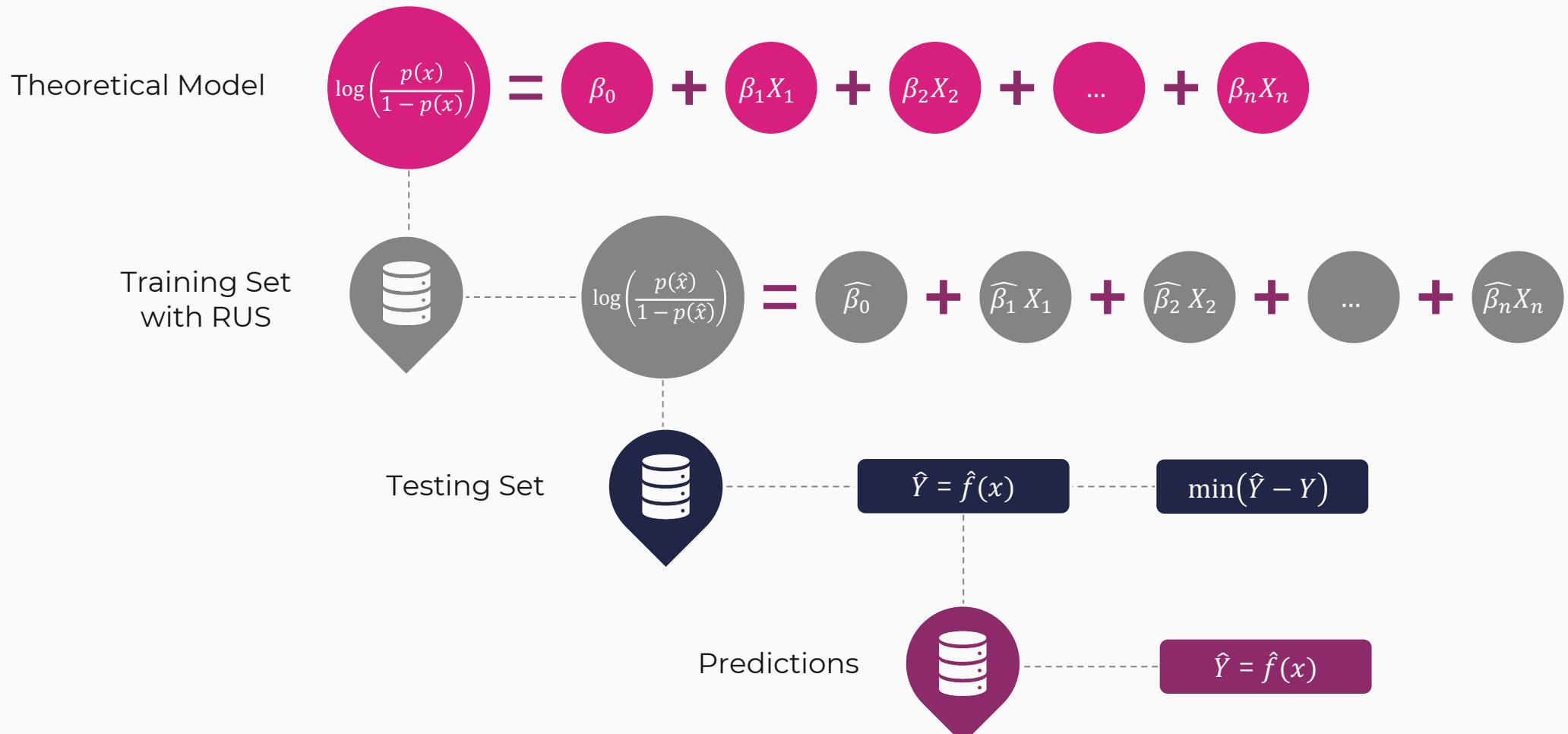
And a Regional Entrepreneurship Cohort Potential Index (RECPI)

$$RECPI_r = EQI_r * N_r$$

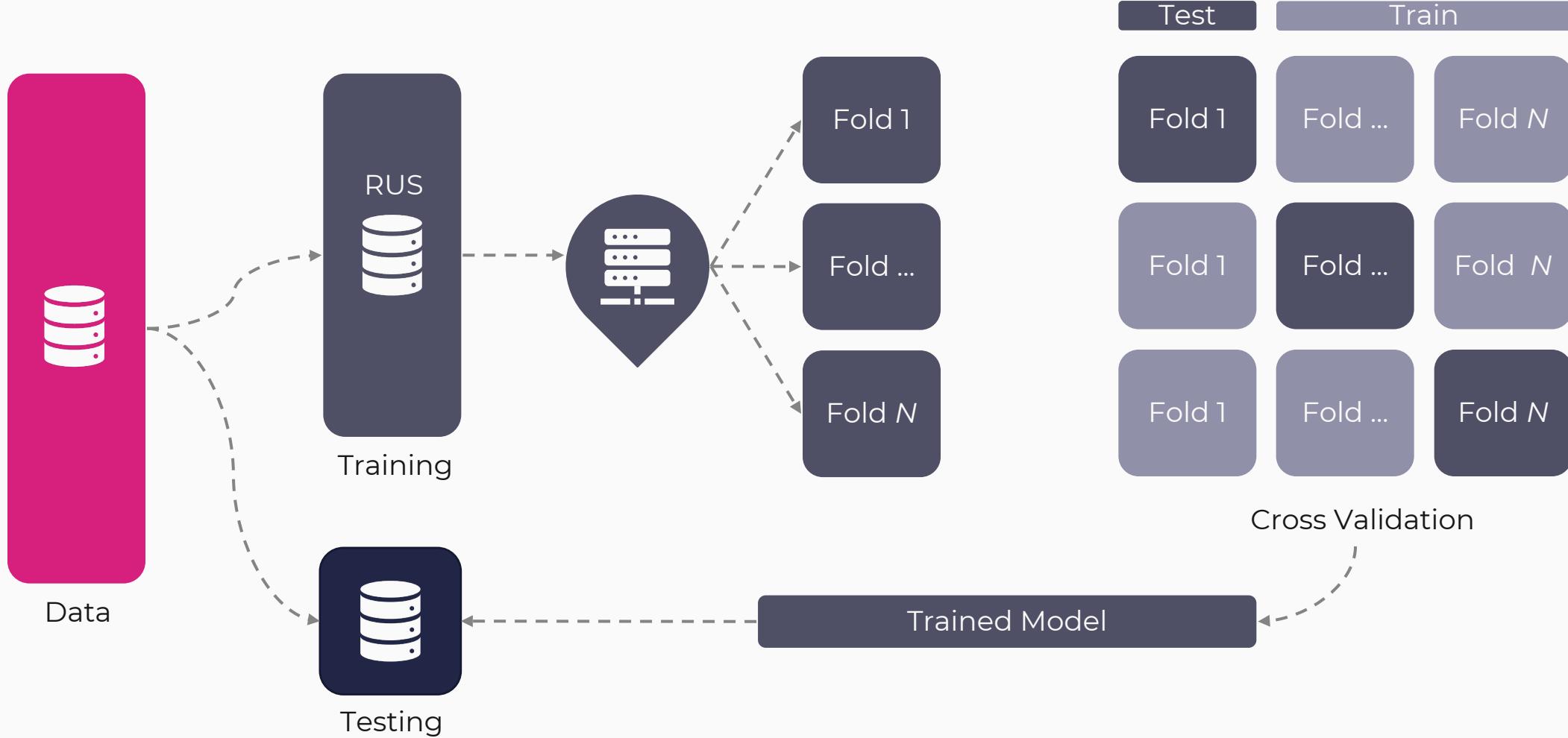
Using the National Statistical Directory of Economic Units to estimate EQI

- Contains the identification data, location, economic activity and size of more than 6 million active businesses in the national territory in the segment of large establishments.
- We dropped all establishments related to government, corporate, without fiscal registration, and registered before 2010. We ended up with 110,000 establishments at a national level.
- We consider whether establishments have 100 employees or more as our target variable to predict “success”; considering only 2% of establishments have this performance.
- Variables chosen as predictors
 - Name length
 - Year and month of registration
 - Fiscal regime
 - 4 digits NAICS 2018 group
 - Has email
 - Has telephone
 - Has webpage
 - Road location (i.e. avenue, boulevard, street, venue, etc)
 - Settlement type (i.e. residencial, comercial, ranch, etc.)
 - Is a SAPI

Logistic Regression Model



Cross Validation

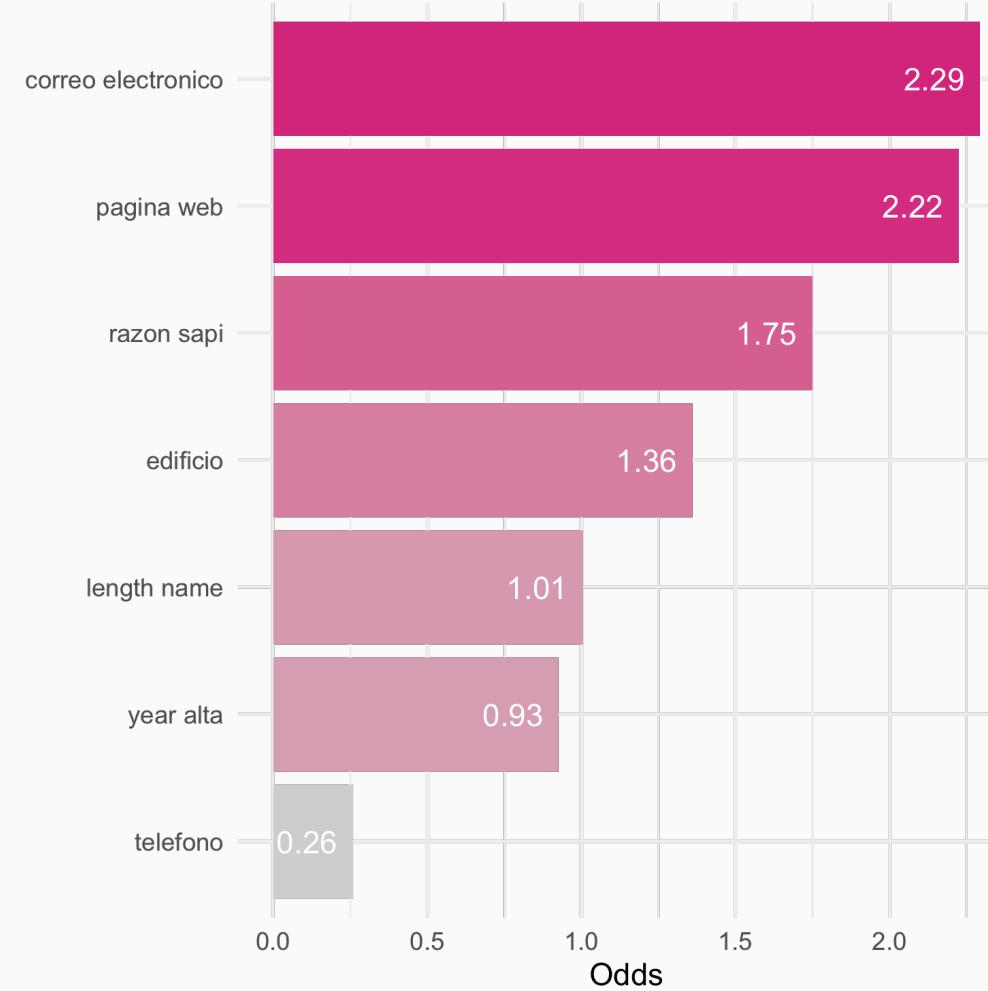


Area Under the Receiver Operating Characteristic Curve (ROC Curve)

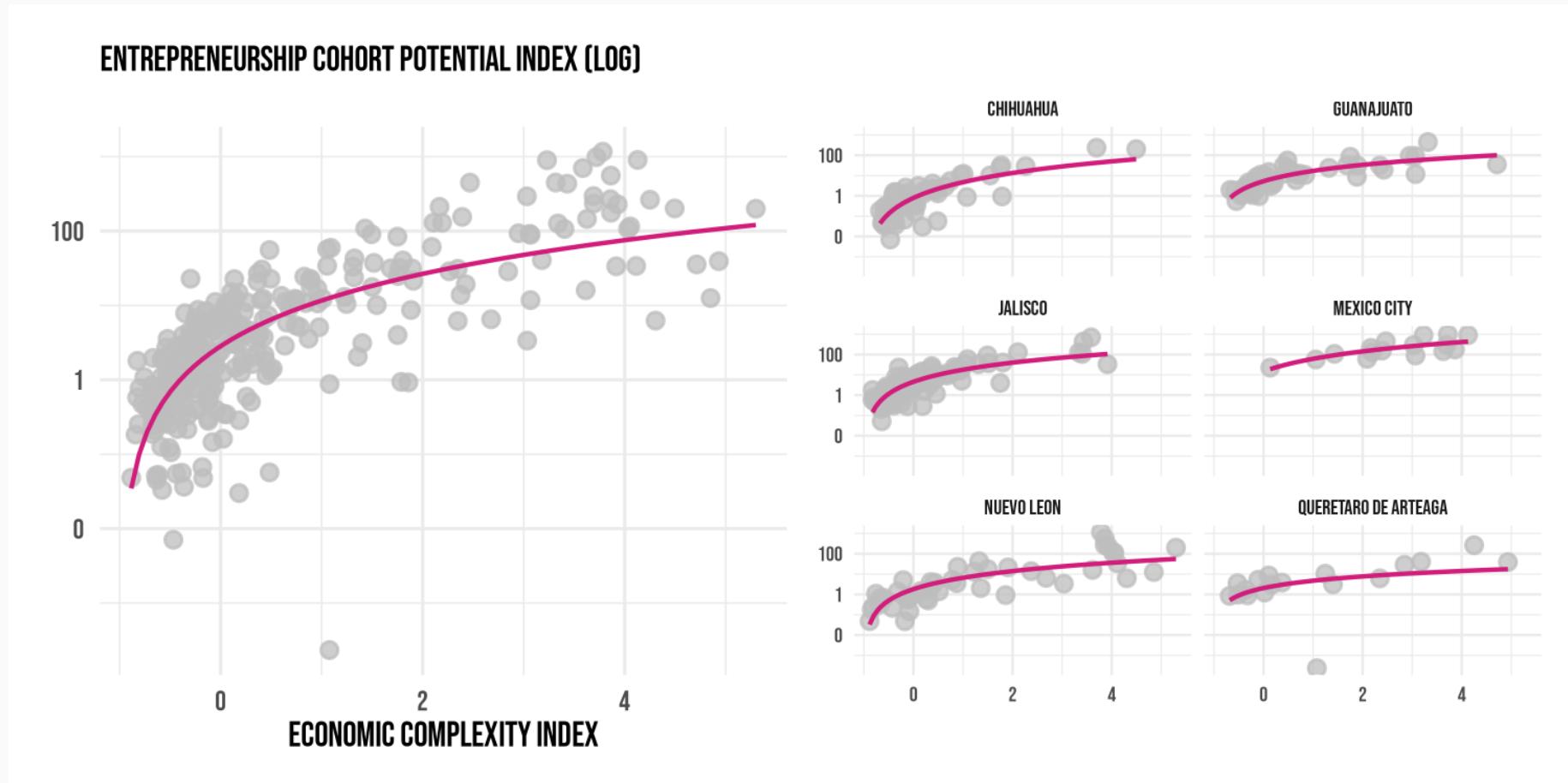
We got ROC Curves between 82% and 84%



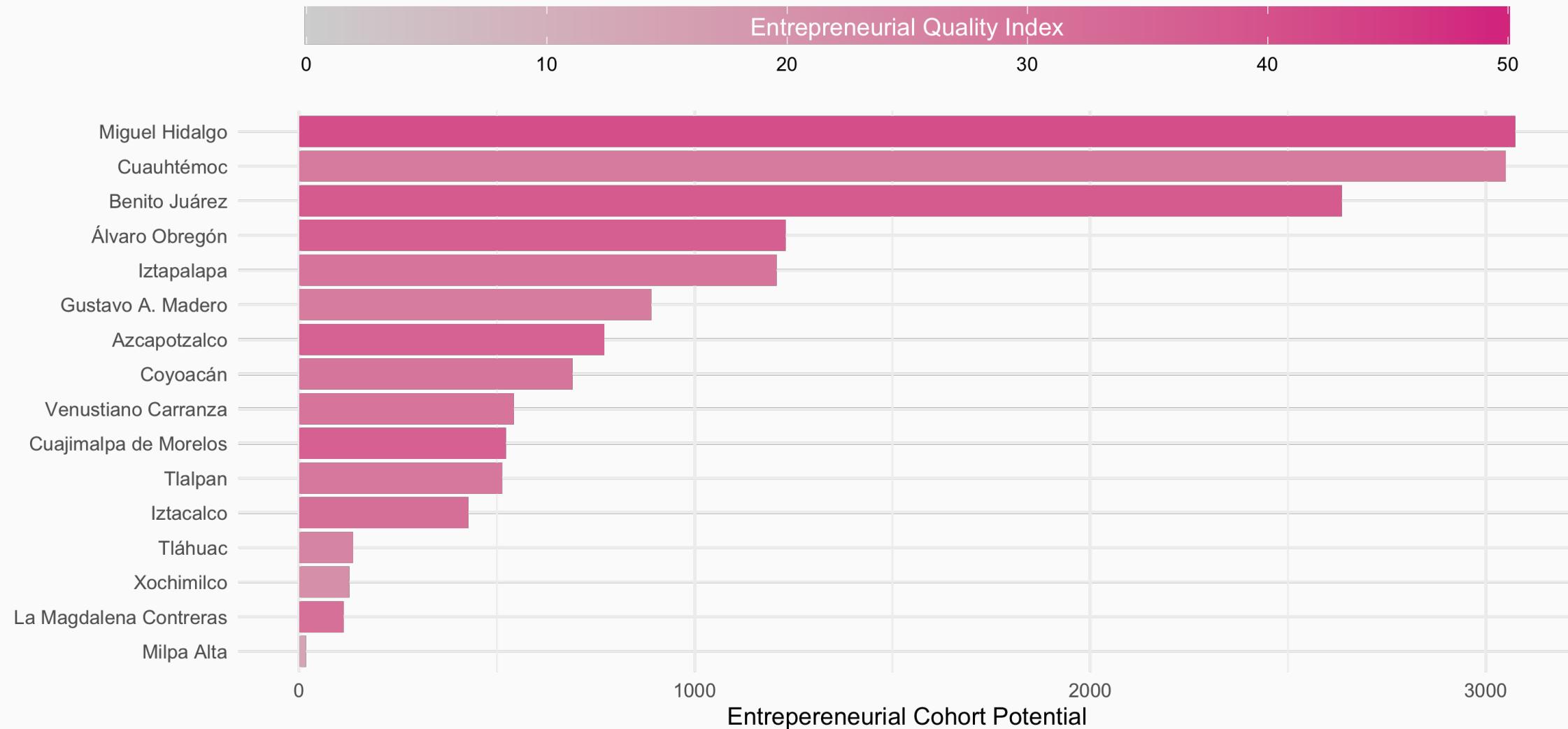
Digital Transformation is important



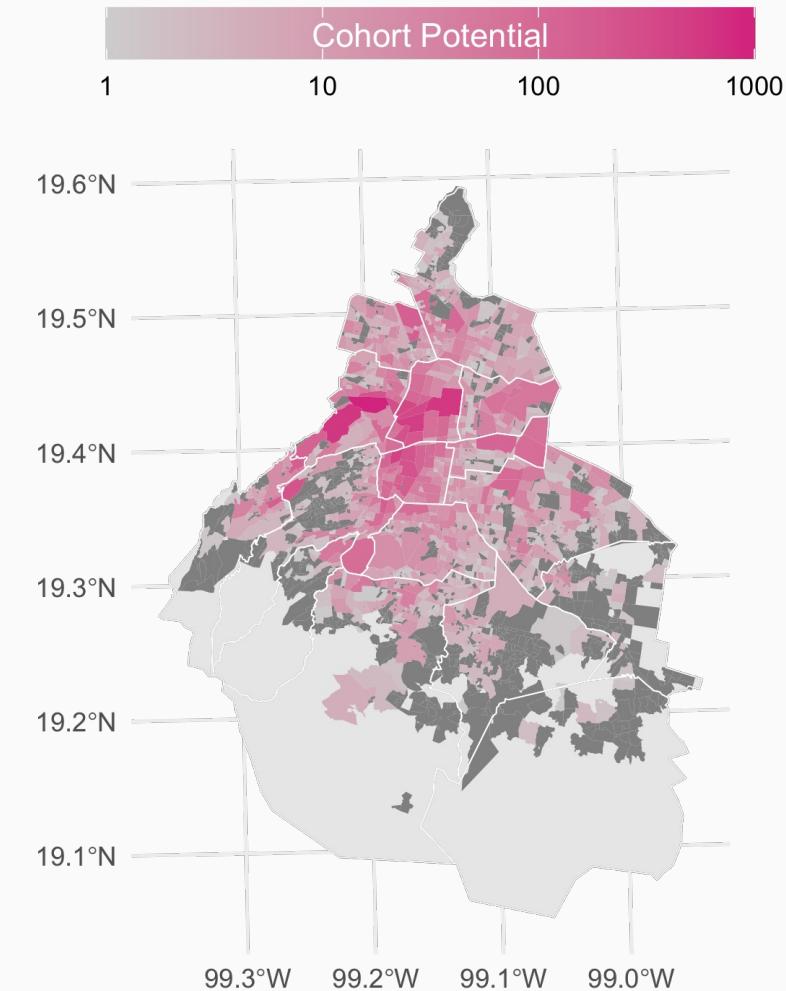
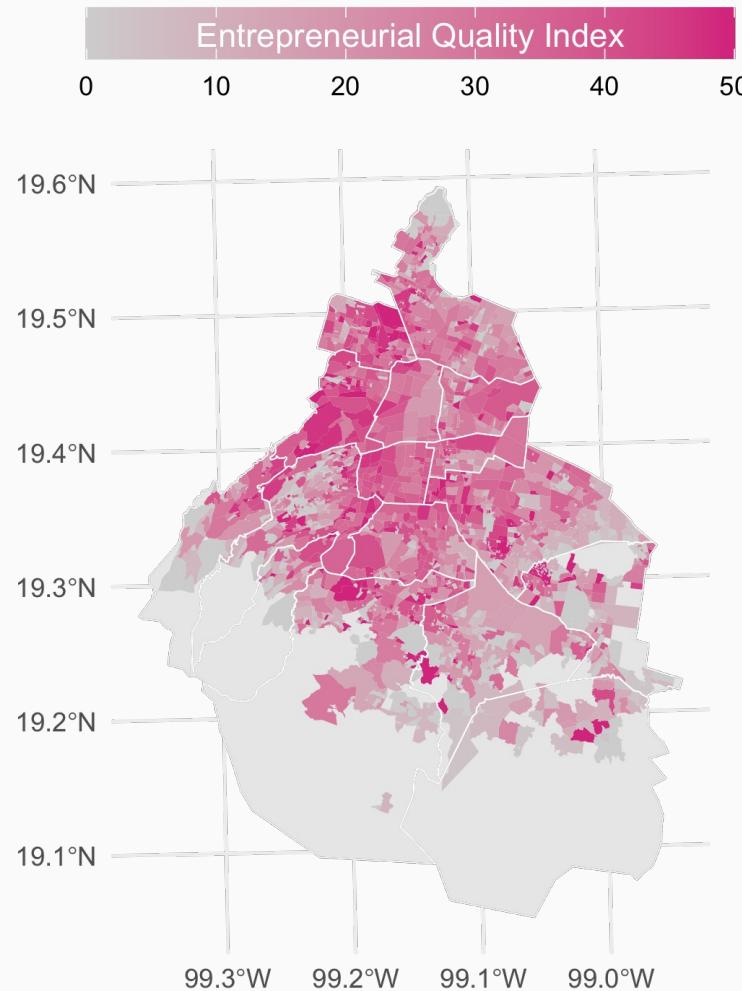
ECPI is positively correlated with more sophisticated industries



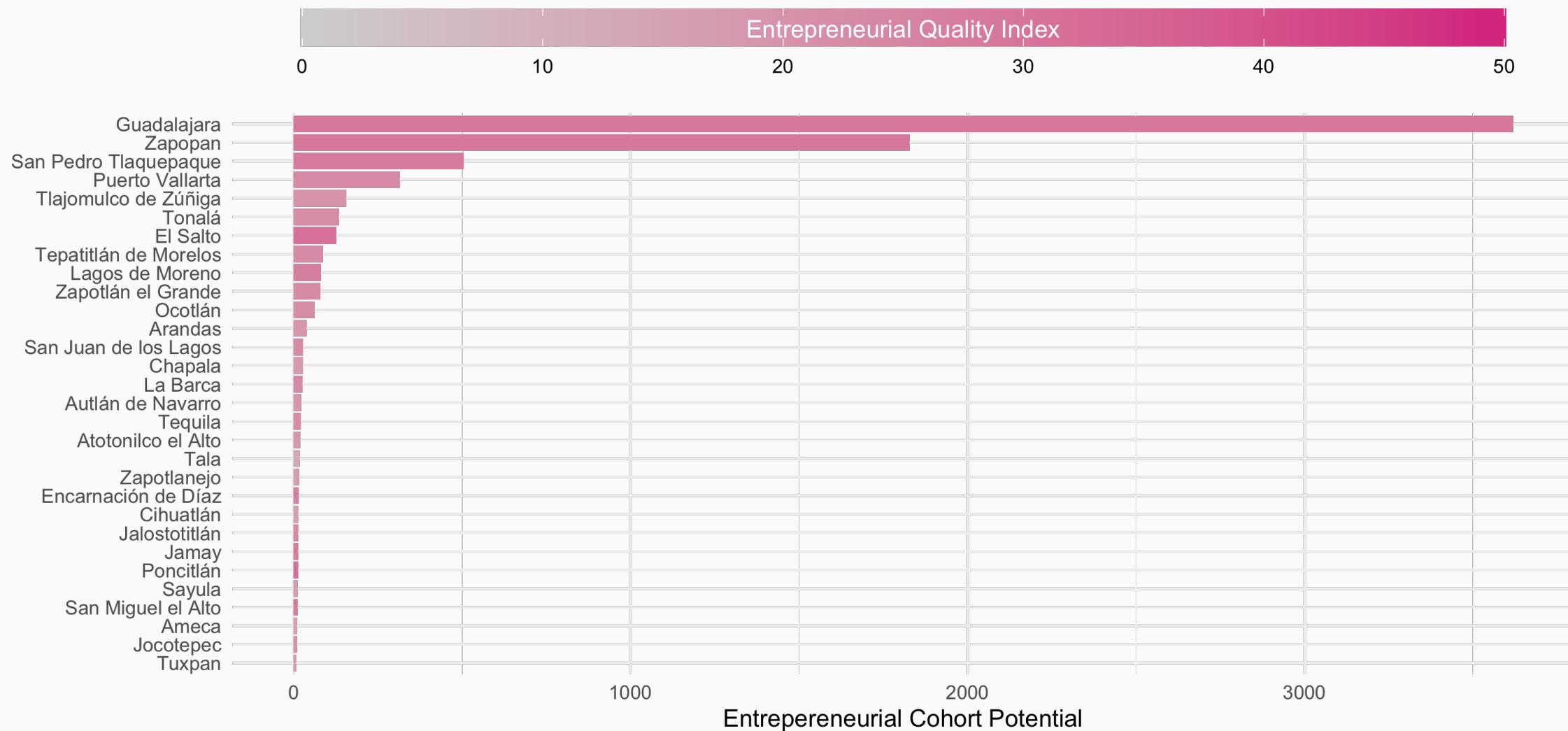
Mexico City



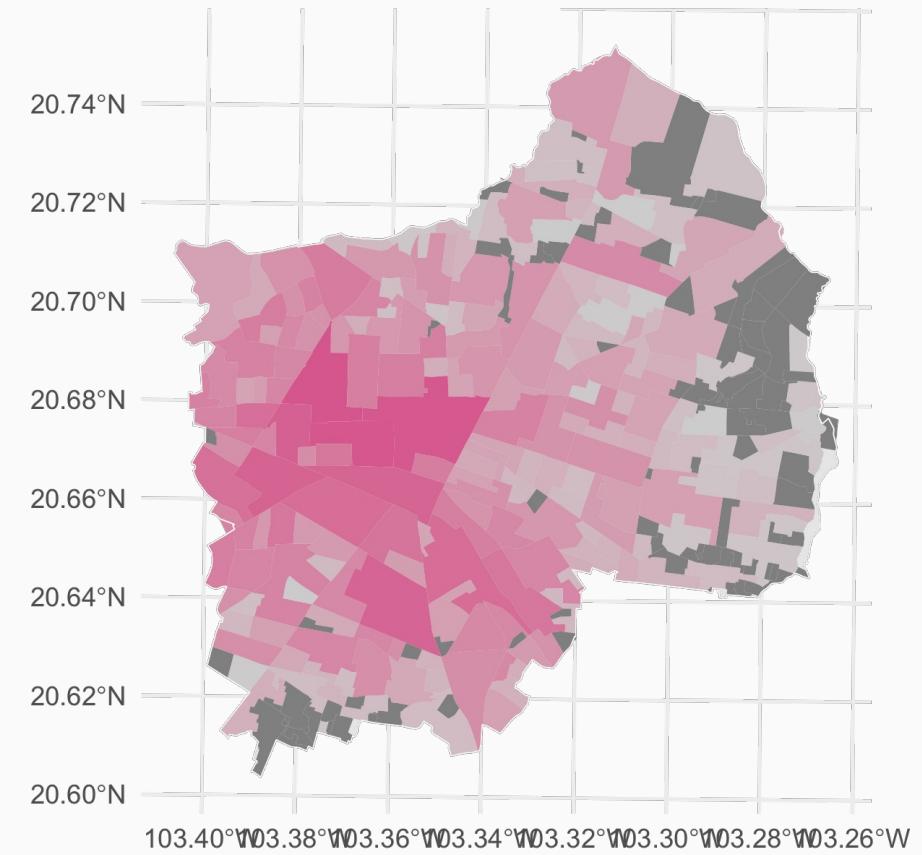
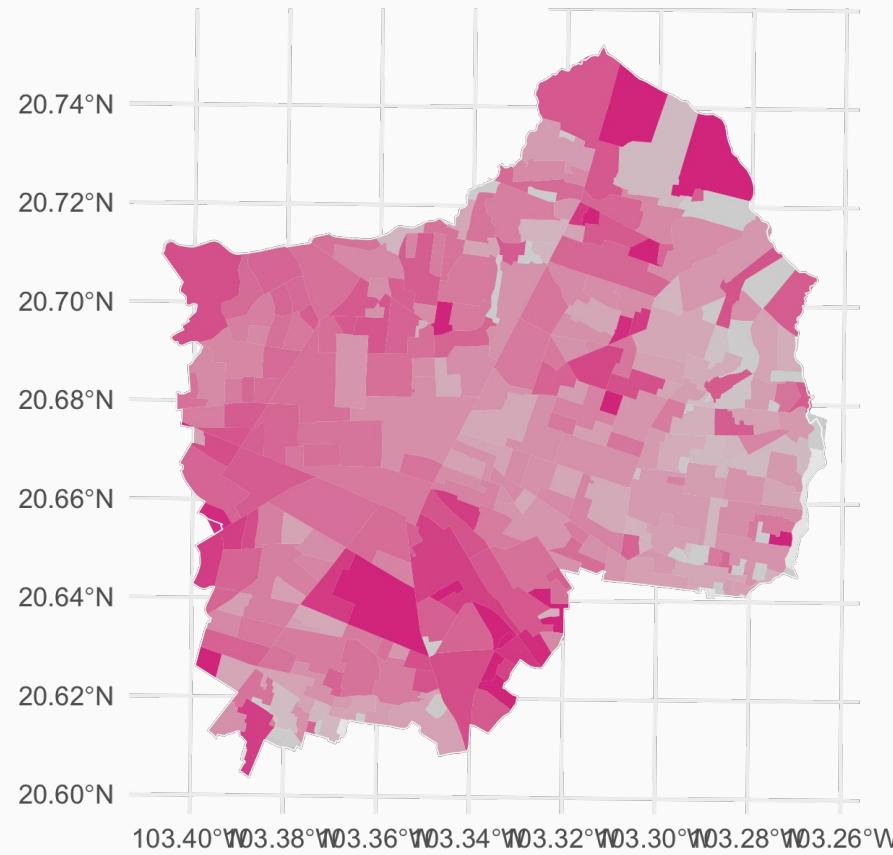
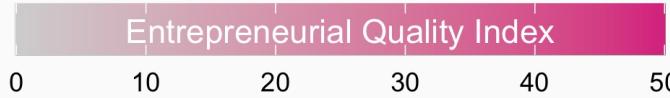
Mexico City



Jalisco



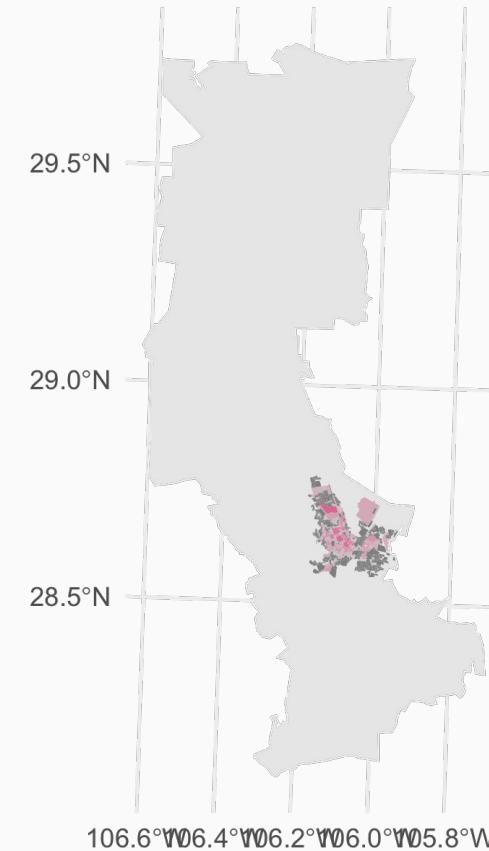
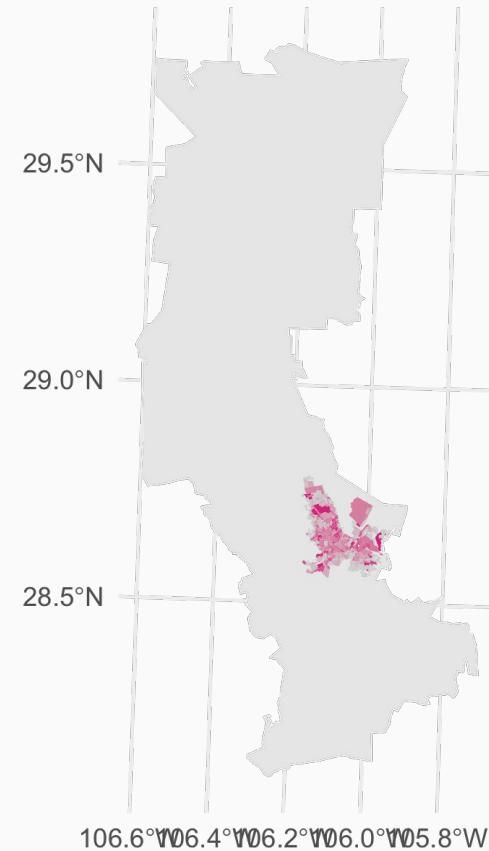
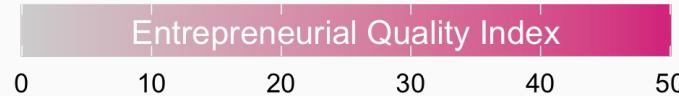
Guadalajara



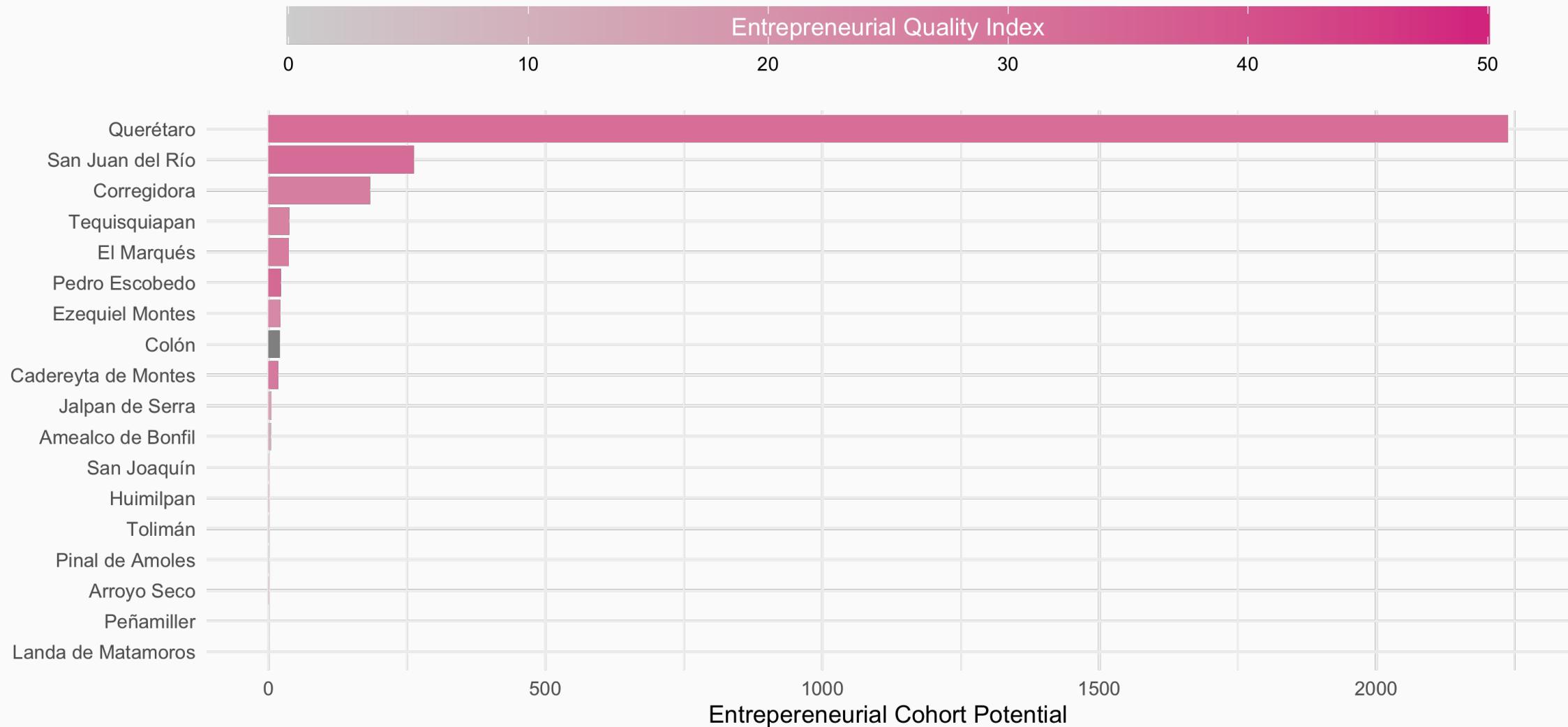
Chihuahua



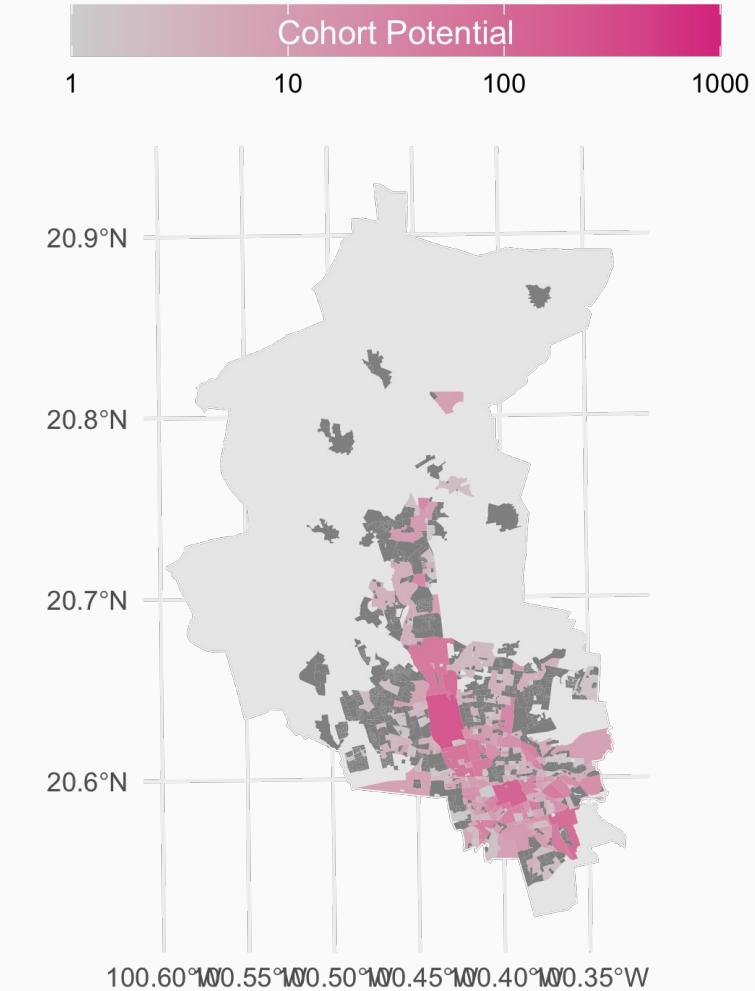
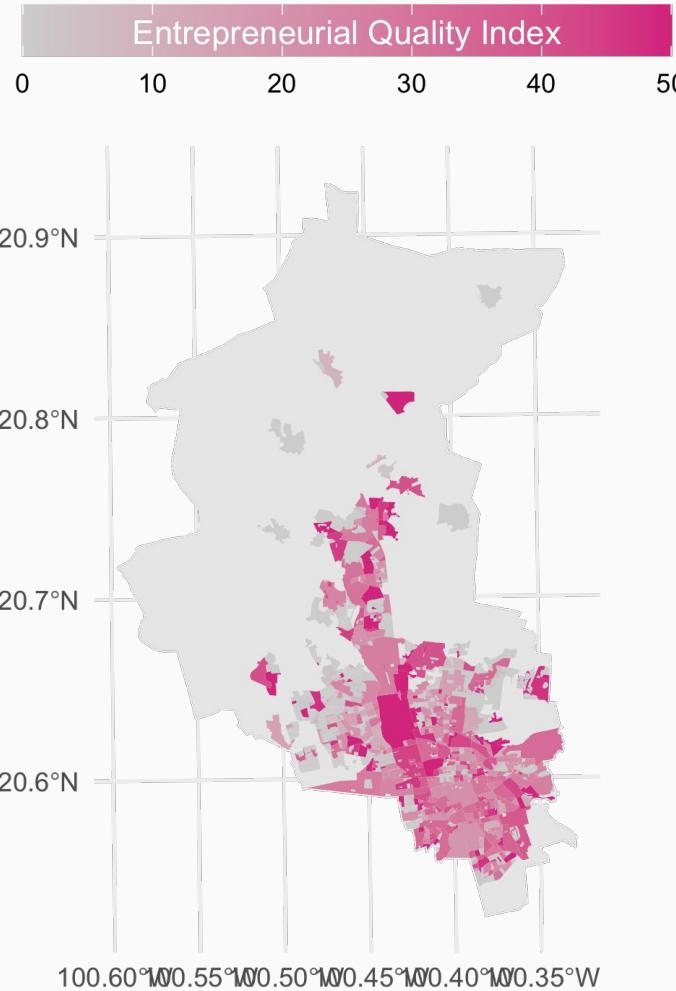
Chihuahua



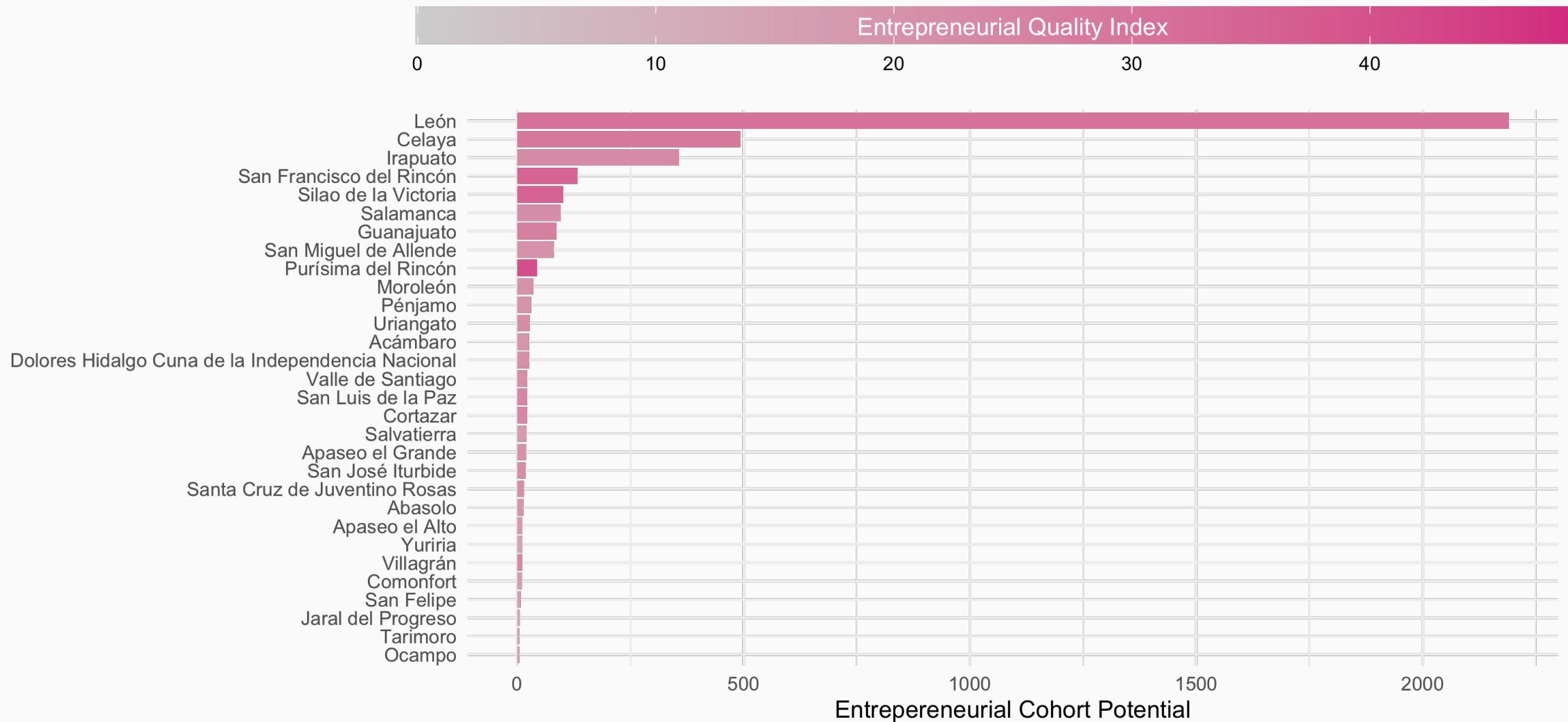
Querétaro



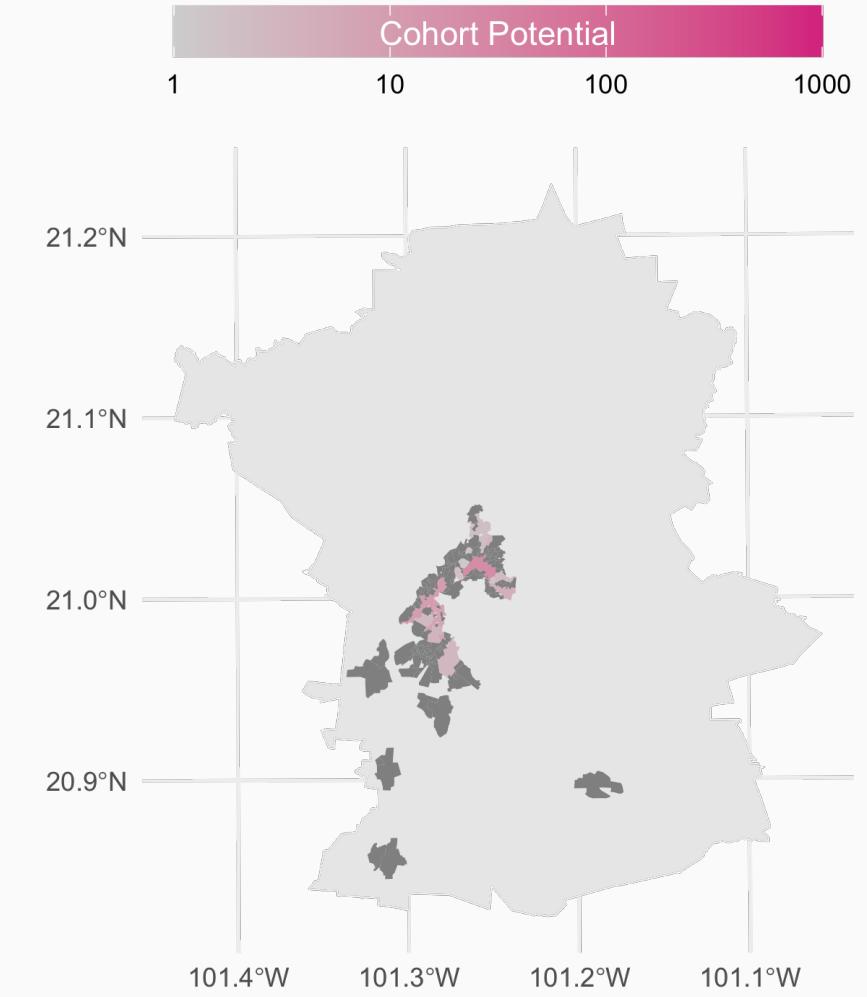
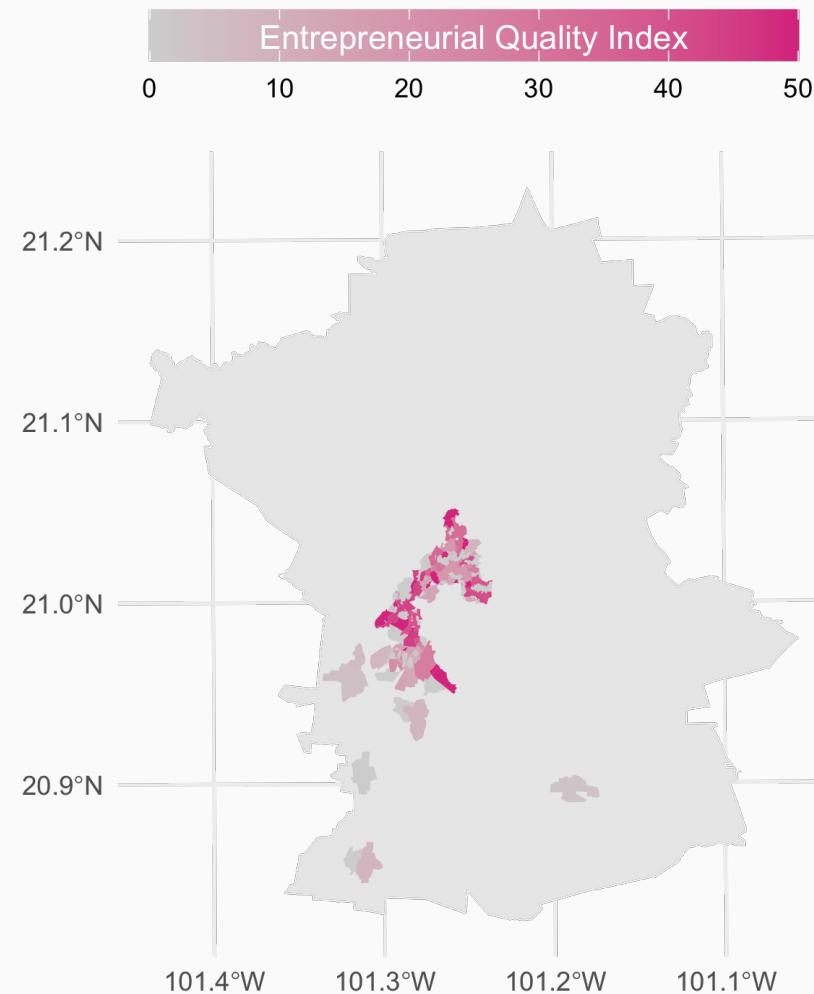
Querétaro



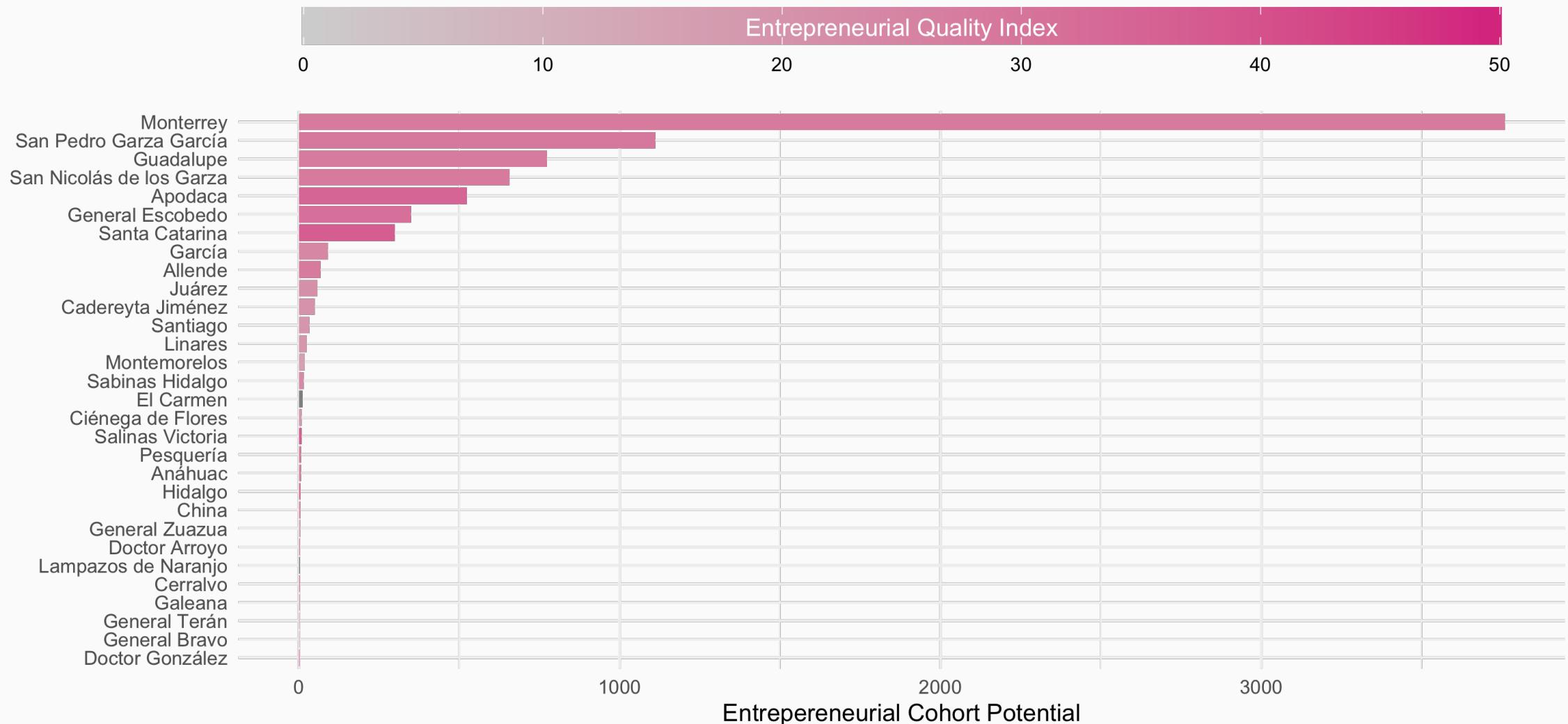
Guanajuato



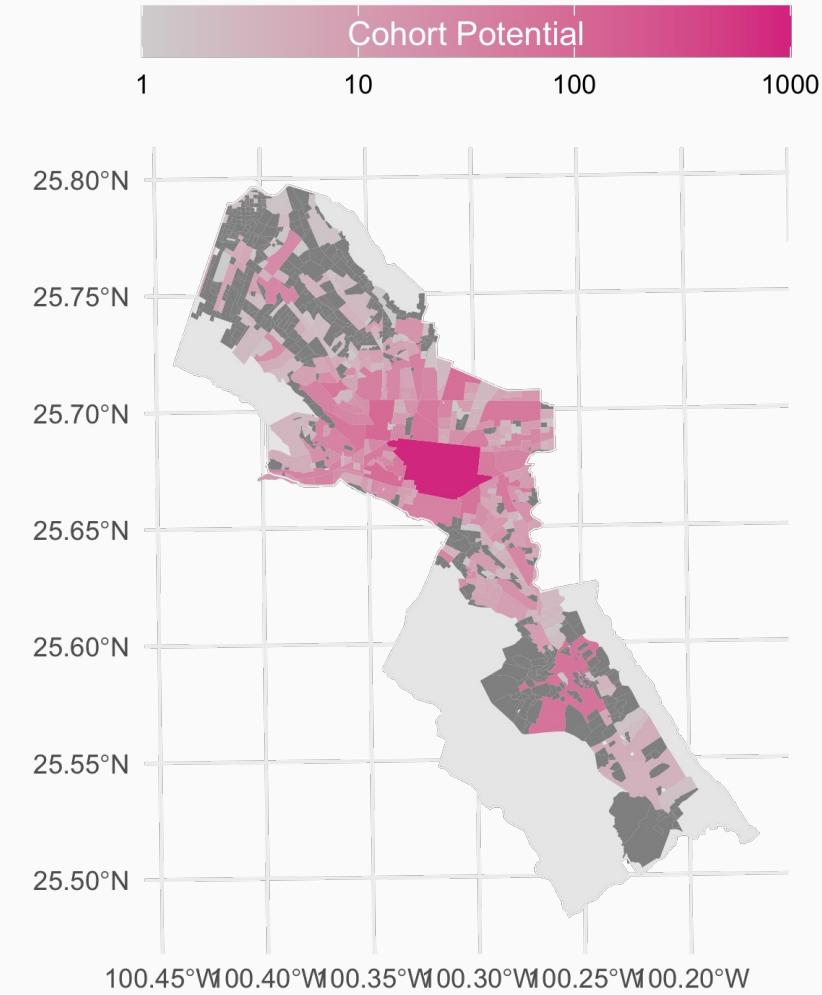
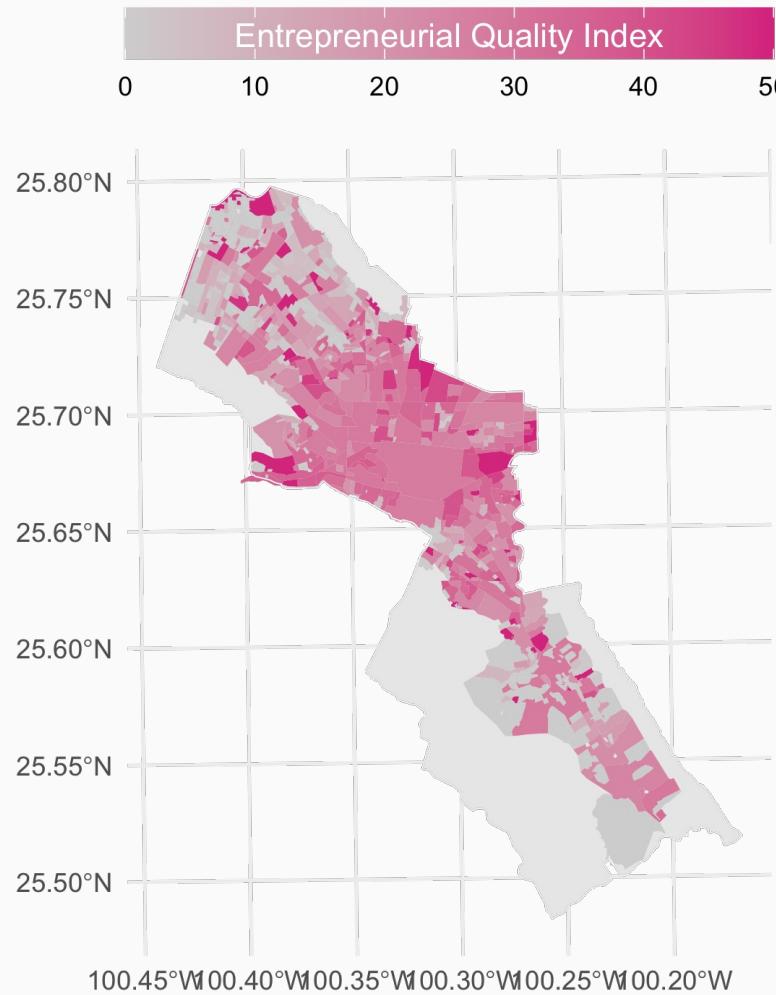
Guanajuato



Nuevo Leòn



Monterrey



Thank you for your attention