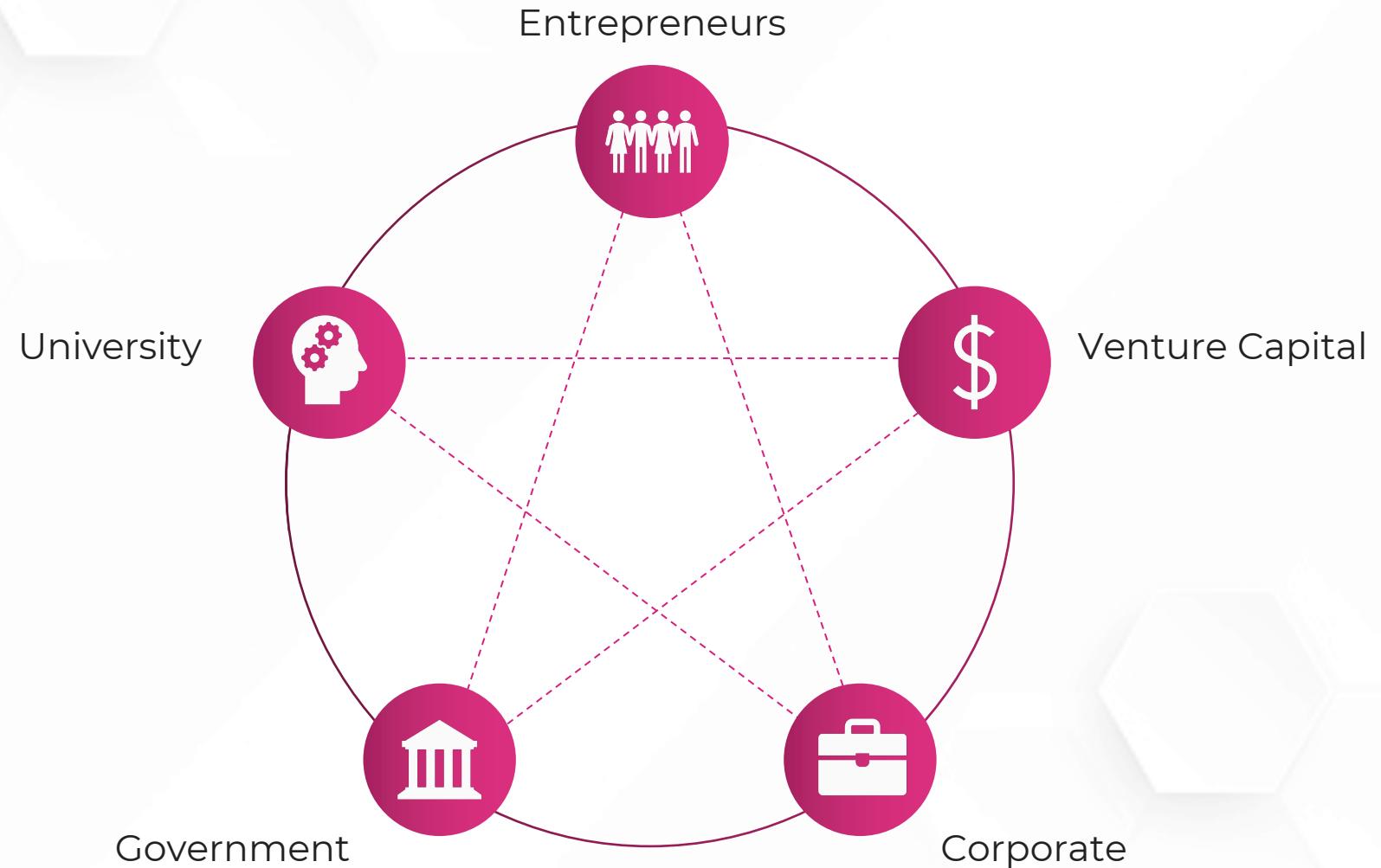


Measuring MIT REAP Impact

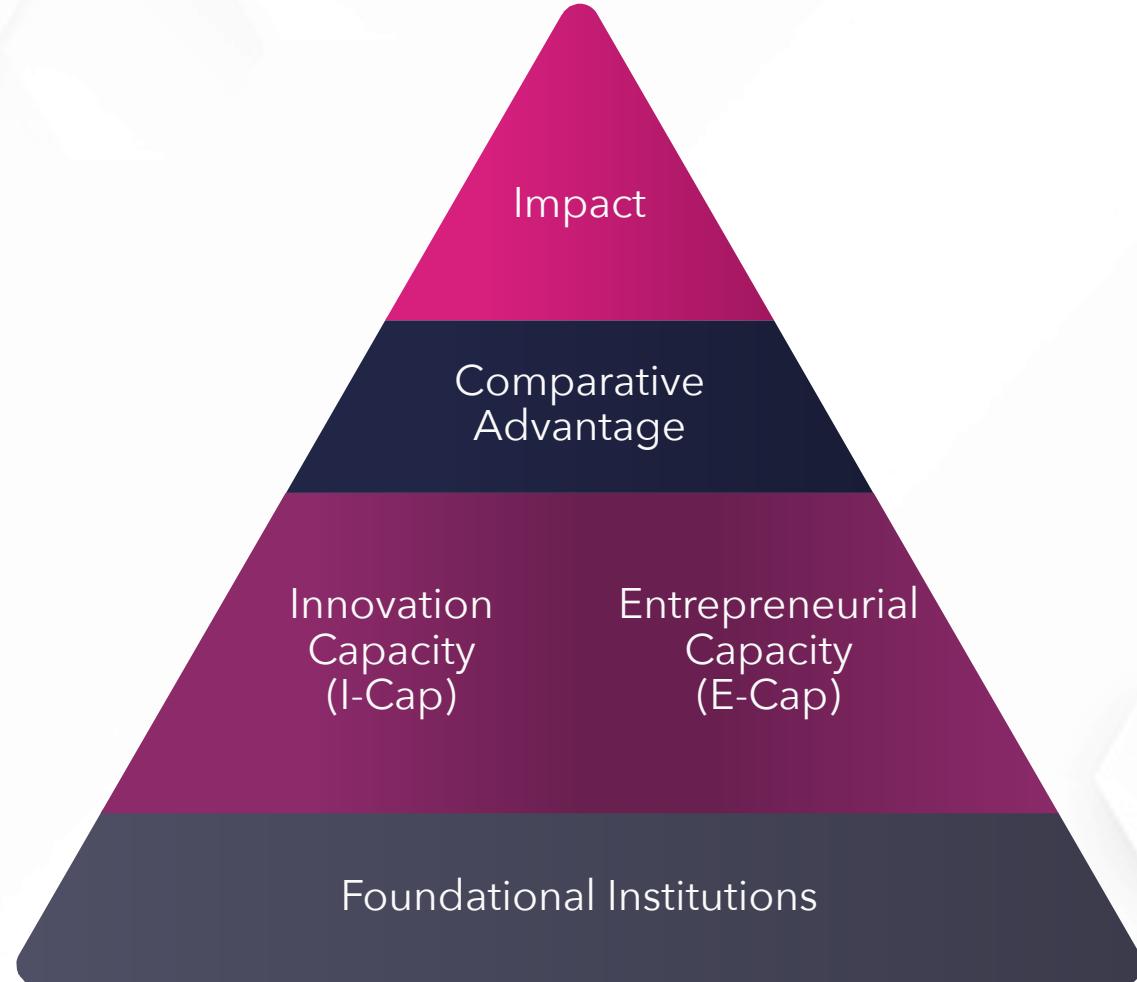
MIT Focus Mexico

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.

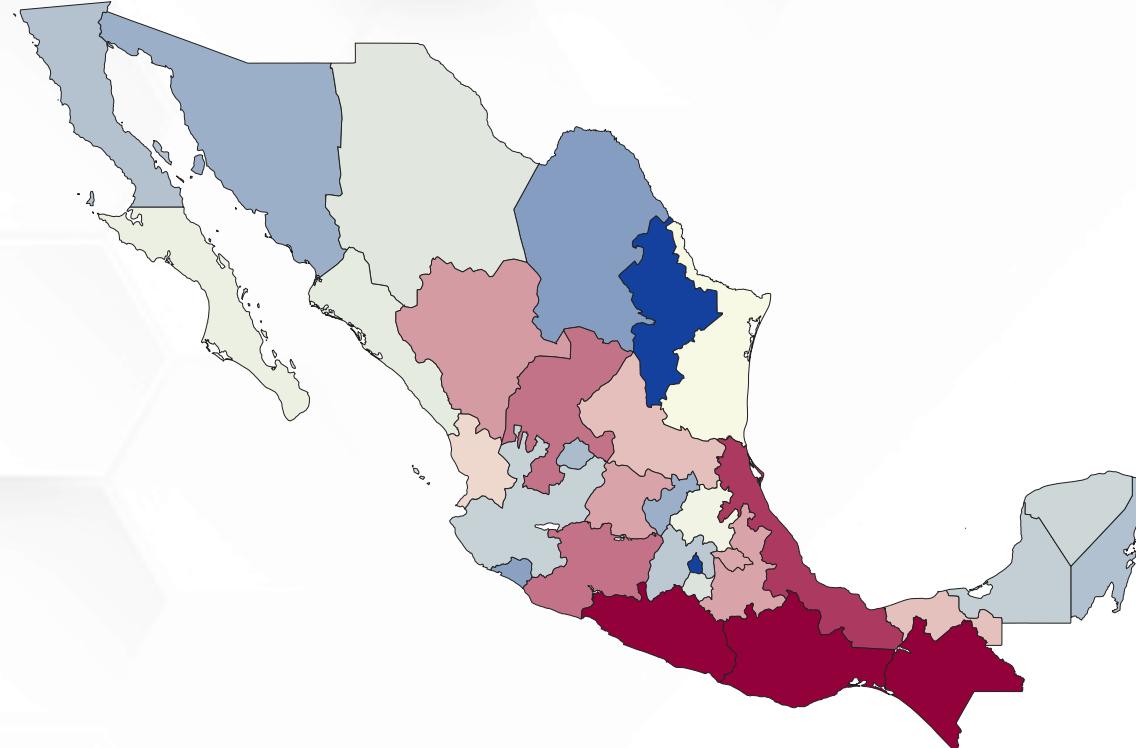
$$DP_2 = \sum_i^N \left(\frac{d_i}{\sigma_{X_i}} \right) * (1 - R_{i,-i}^2)$$

where

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

taking a reference vector X^*

Innovation Capacity Index



-1.5 -1 -0.5 0 0.5 1 1.5

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INNOVATION CAPACITY INDEX
(MEXICO CITY = 100%)

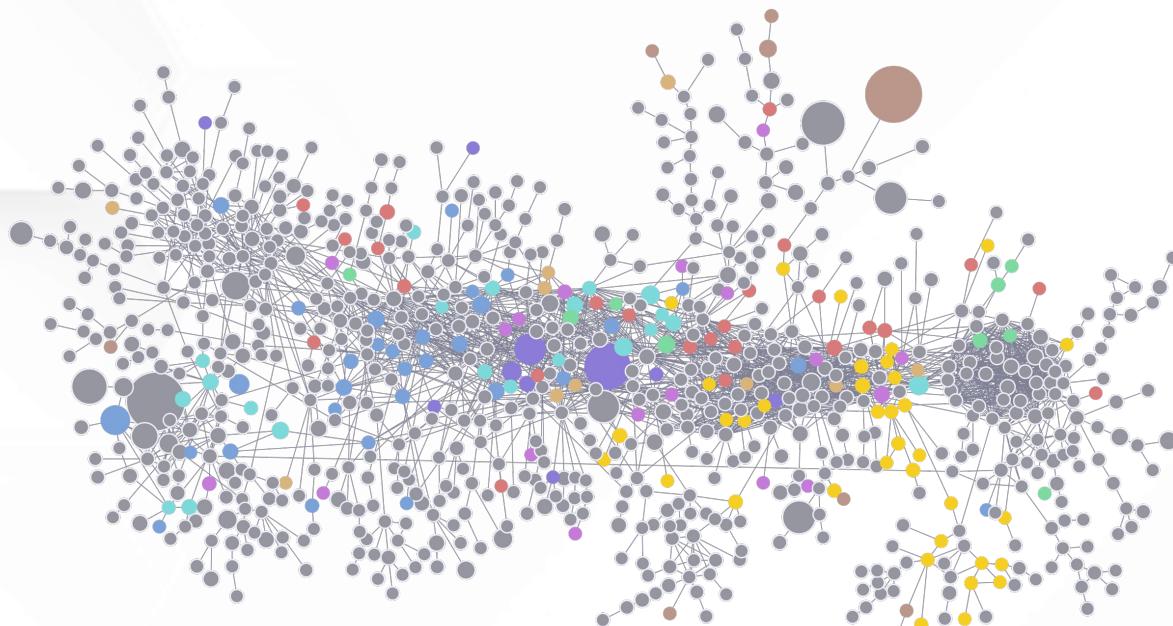
MÉXICO CITY	100.0%
NU EVO LEÓN	73.1%
COAHUILA	61.8%
COLIMA	61.4%
SONORA	59.7%
QUERÉTARO	59.7%
AGUASCALIENTES	58.2%
QUINTANA ROO	57.6%
BAJA CALIFORNIA	57.4%
ESTADO DE MÉXICO	56.6%
CAMPECHE	56.0%
JALISCO	55.6%
YUCATÁN	55.0%
MORELOS	53.6%
CHIHUAHUA	53.1%
SINALOA	52.6%
BAJA CALIFORNIA SUR	52.0%
HIDALGO	51.6%
TAMAULIPAS	51.0%
NA YARIT	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%

Measuring Comparative Advantage



Comparative
Advantage

Mexico – Product Space 2021



Source: Atlas of Economic Complexity

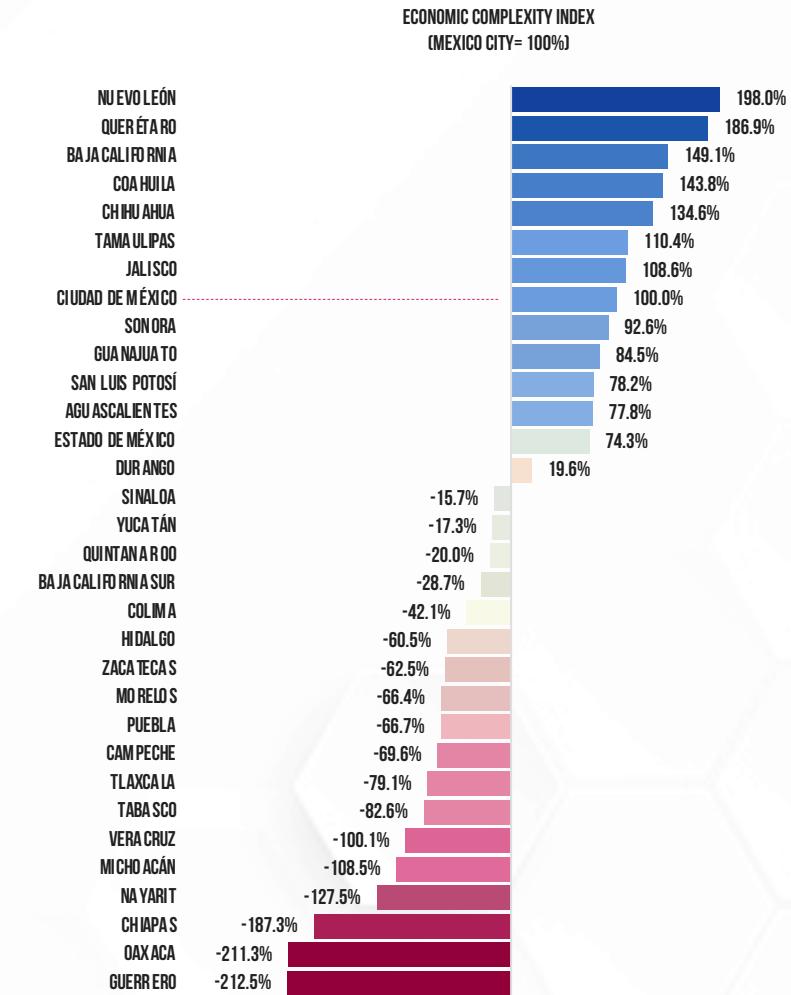
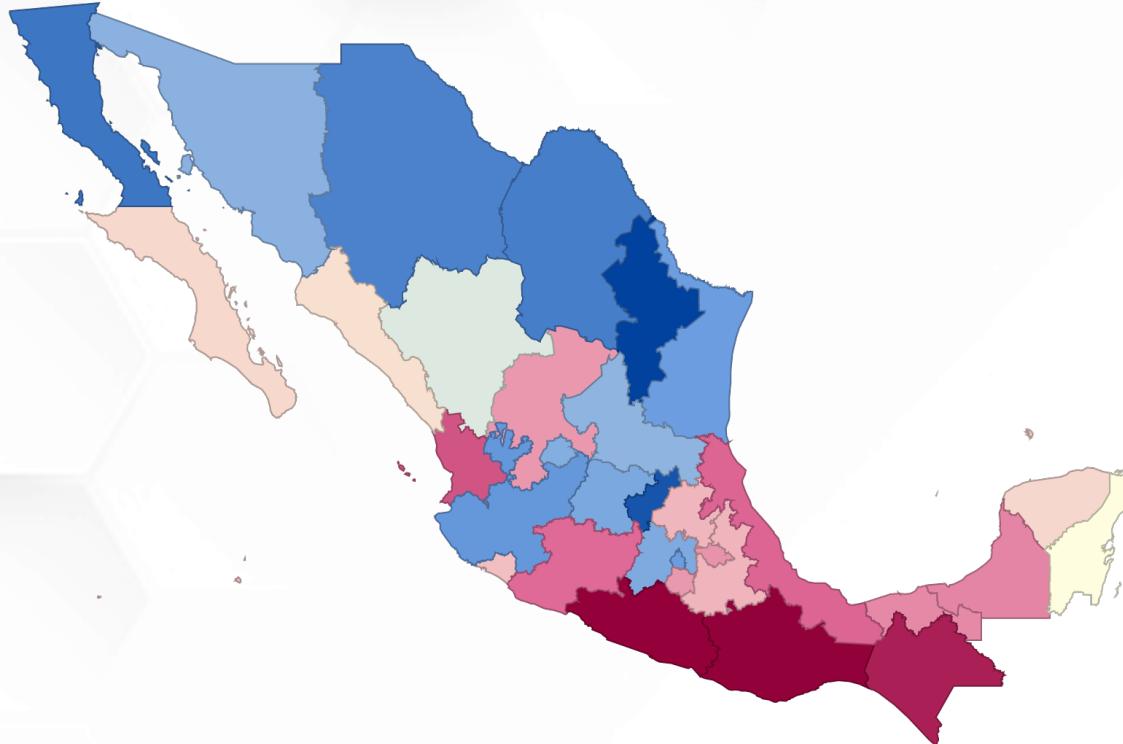
Economic complexity is a methodology to measure the skills and technical capabilities that exist in an economy or in an economic activity.

The main idea behind is:

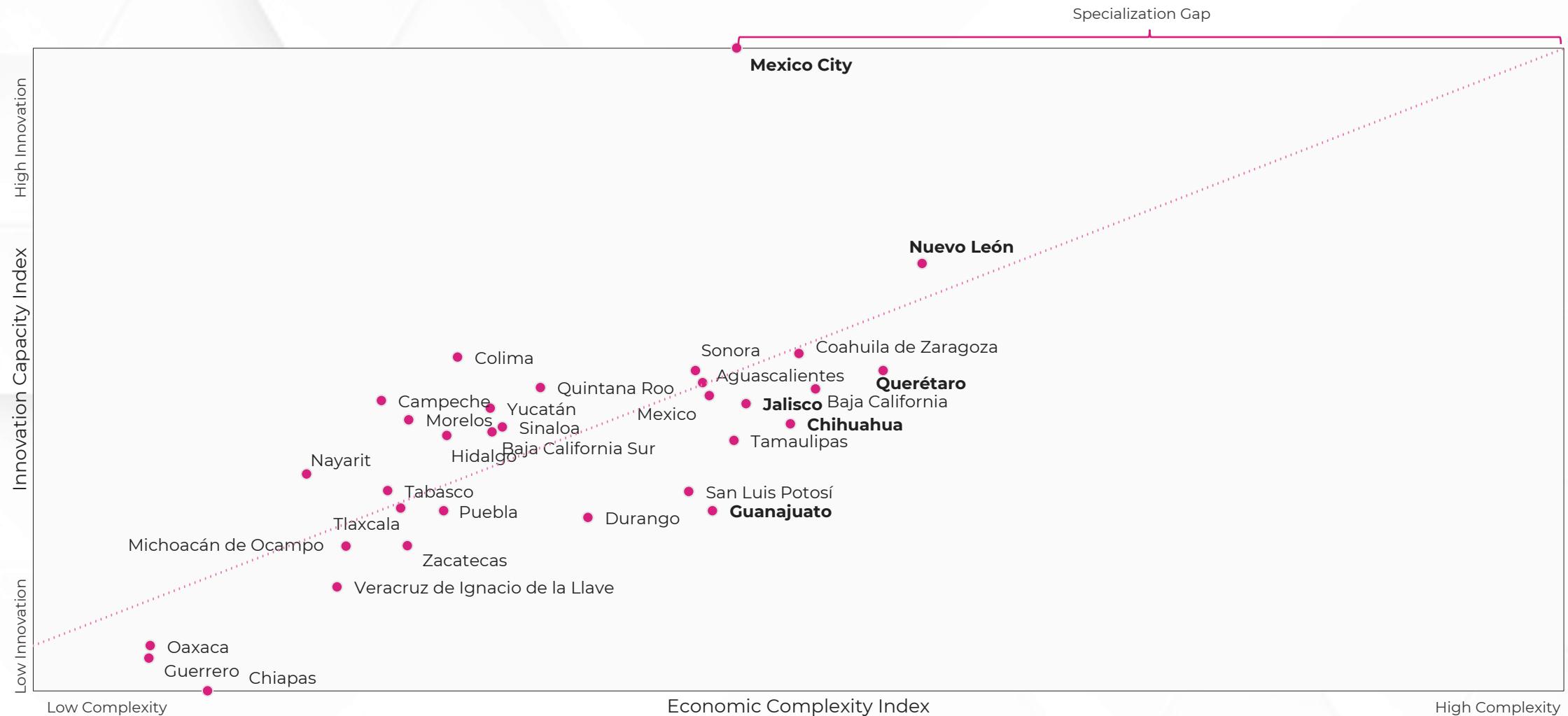
Regions that are able to sustain productive know-how, including sophisticated, unique know-how, are found to be able to produce a wide diversity of goods, including complex products that few other regions can make.

The **Economic Complexity Index** (ECI) captures how complex an economy is by identifying both the activities it can successfully carry out and where else those activities are present.

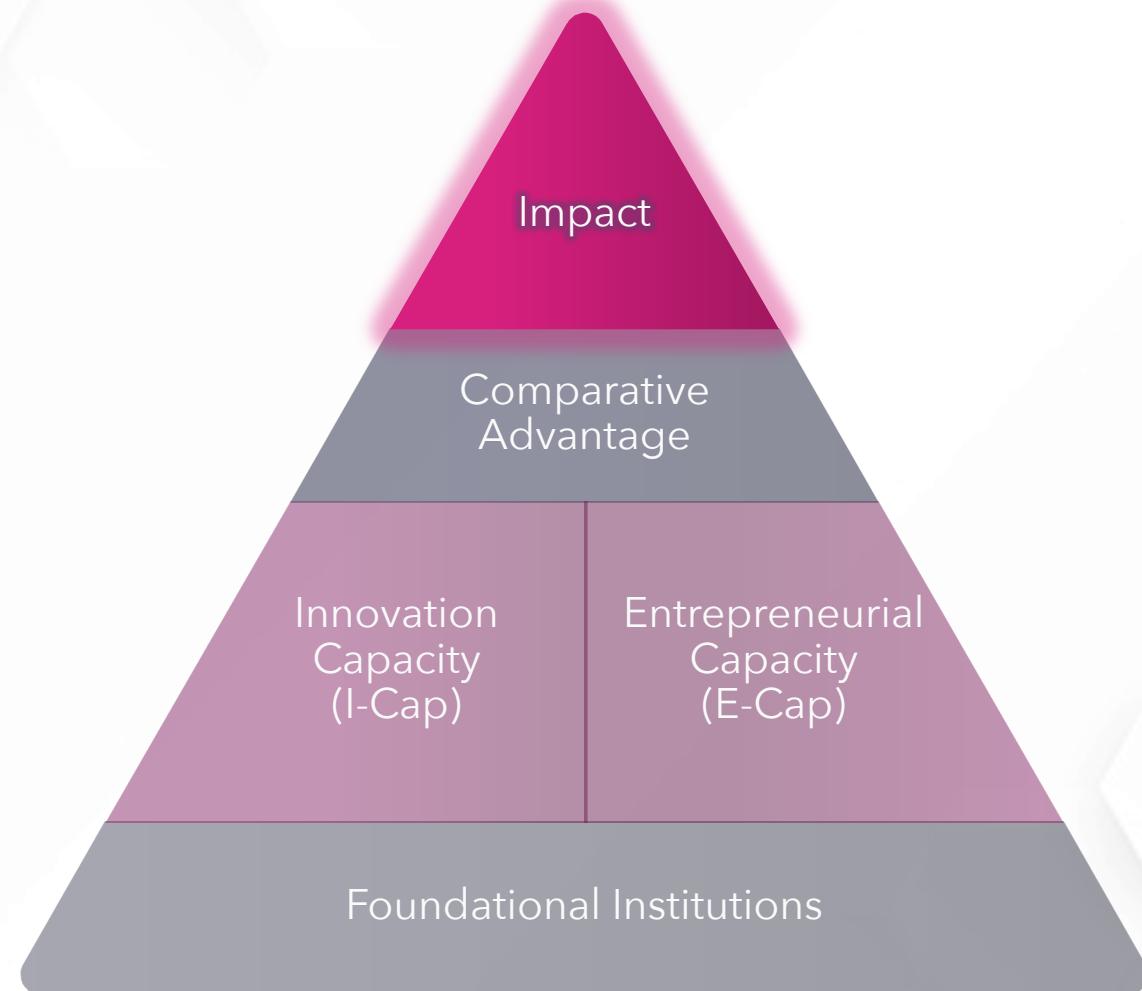
Economic Complexity Index



Mexico City is wasting its innovation capacity



The Innovation Model



Business 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 a Business Quality Index (BQI)

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

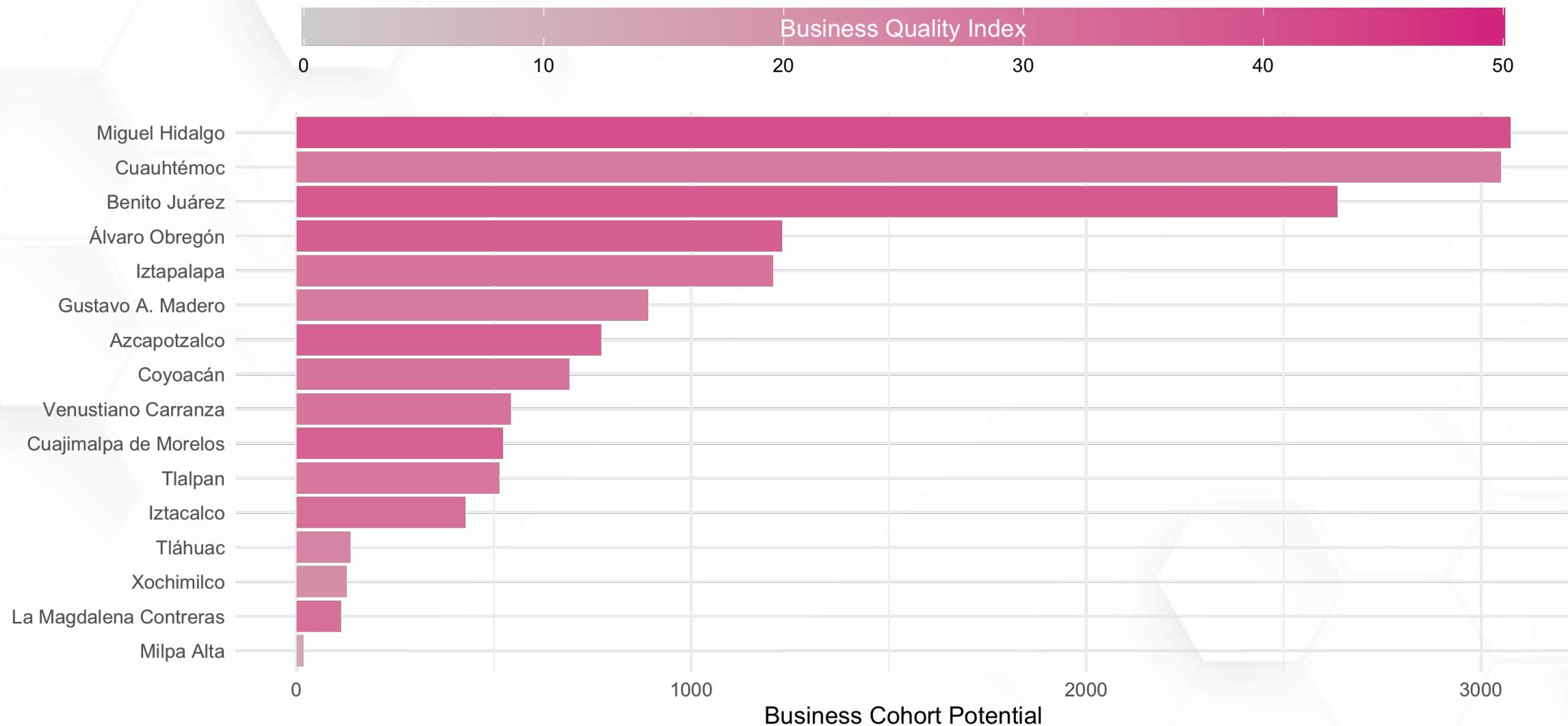
And a Regional Business Cohort Potential Index (RBCPI)

$$RBCPI_r = BQI_r * N_r$$

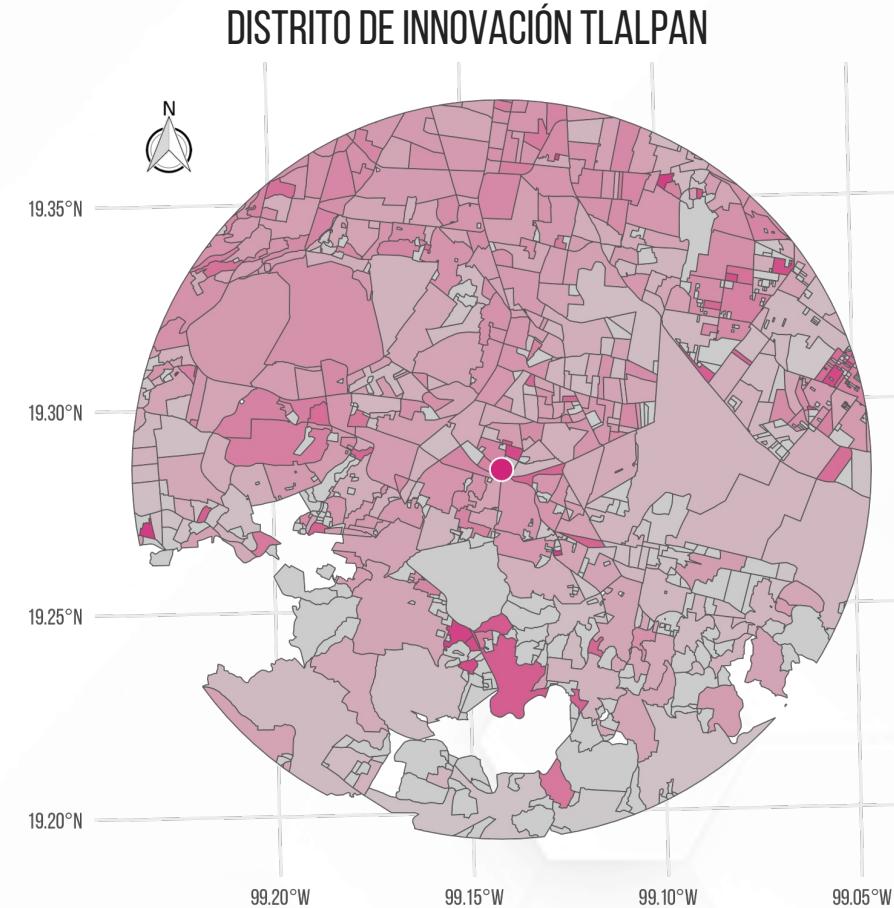
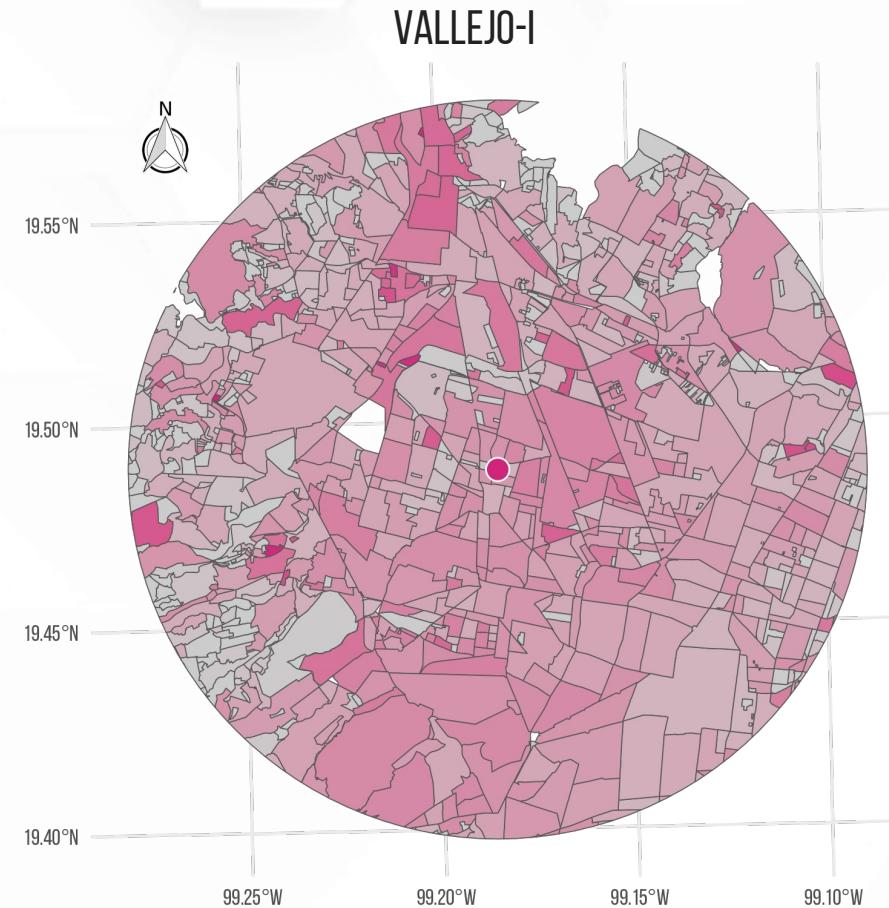
A measurement for Business and Entrepreneurial Quality

- 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

Mexico City



The current state of our innovation poles



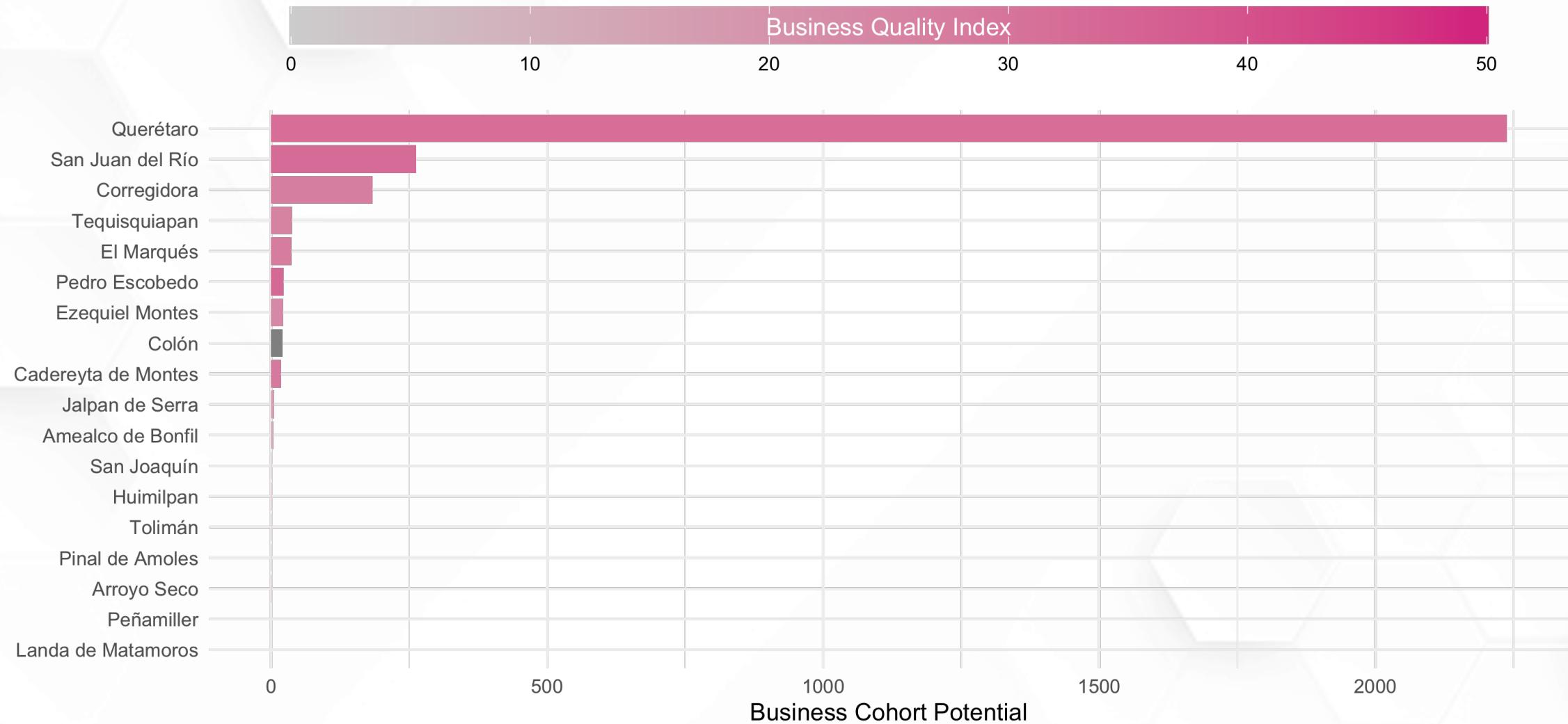
Jalisco



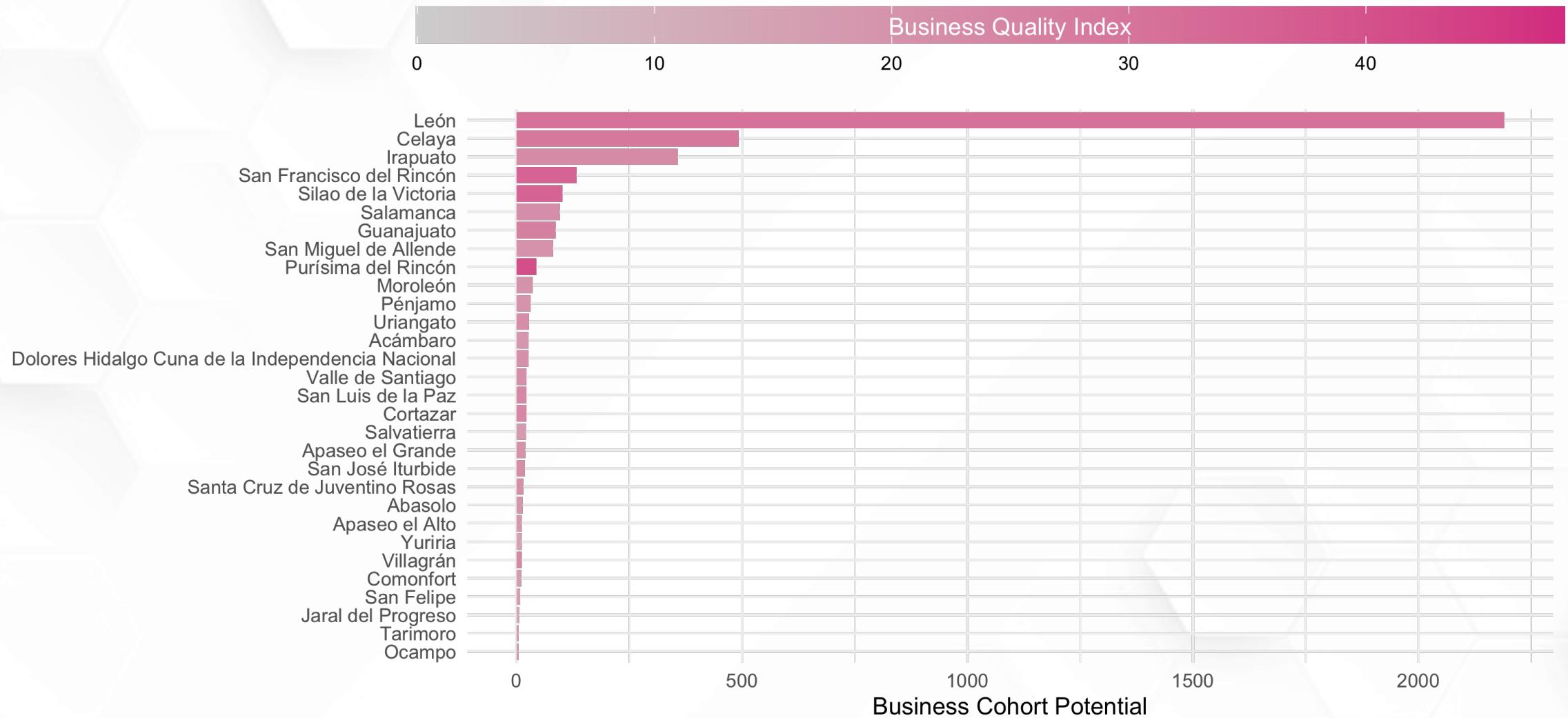
Chihuahua



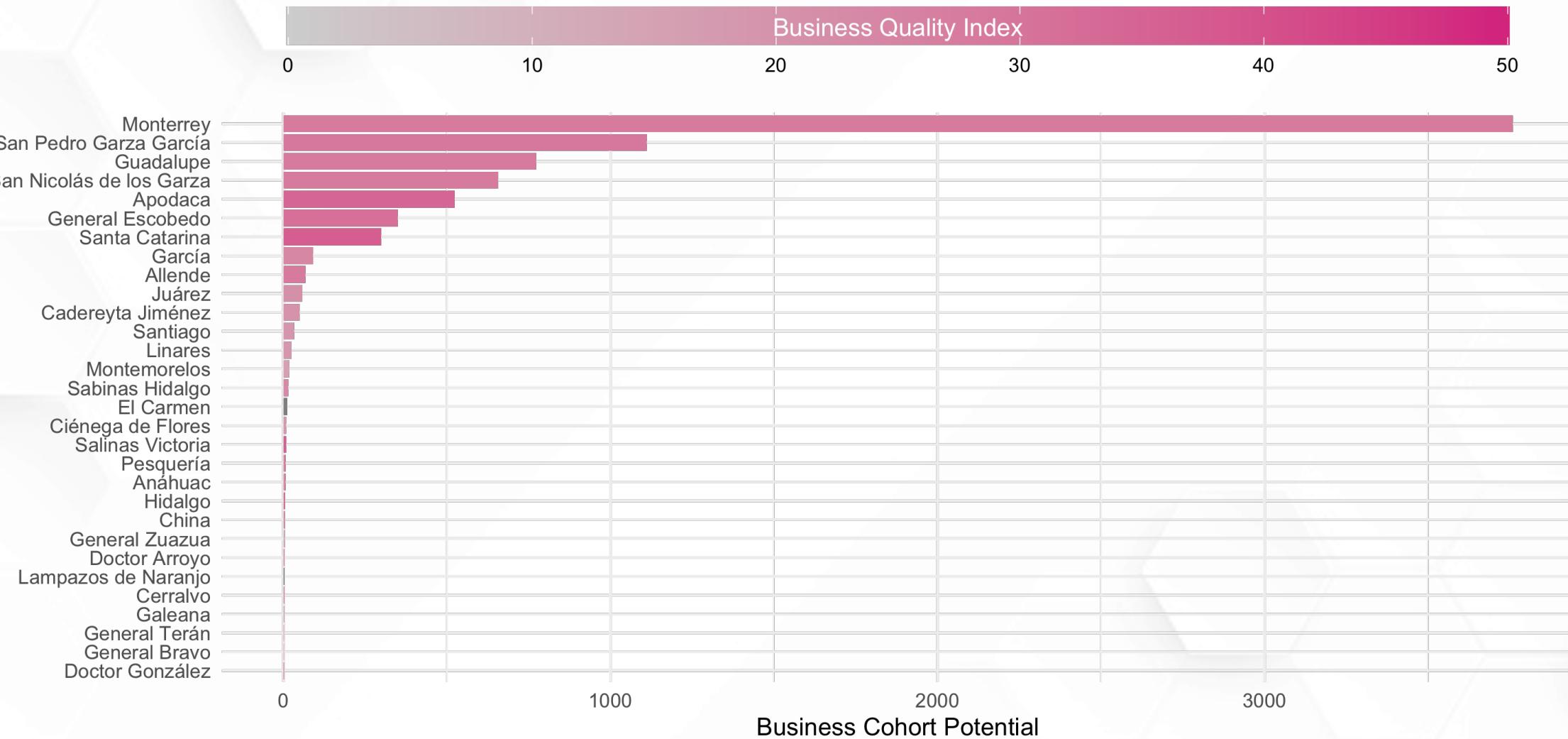
Querétaro



Guanajuato



Nuevo León



It would look something like this...