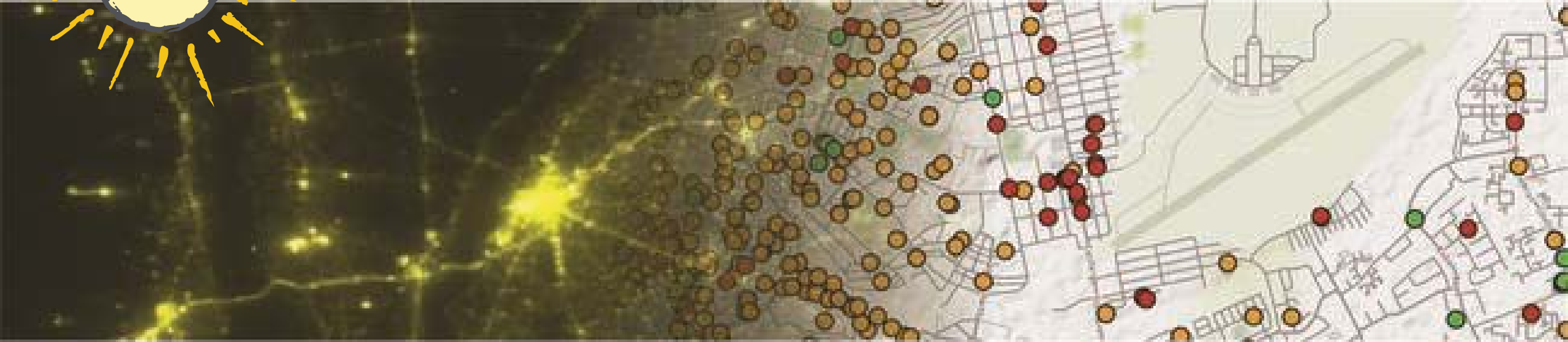




IE CONNECT FOR IMPACT

Transforming the Growth Potential
of Transport Investments

Pakistan Data System :
Capturing the effects of
transport investments from
the sky and from the ground

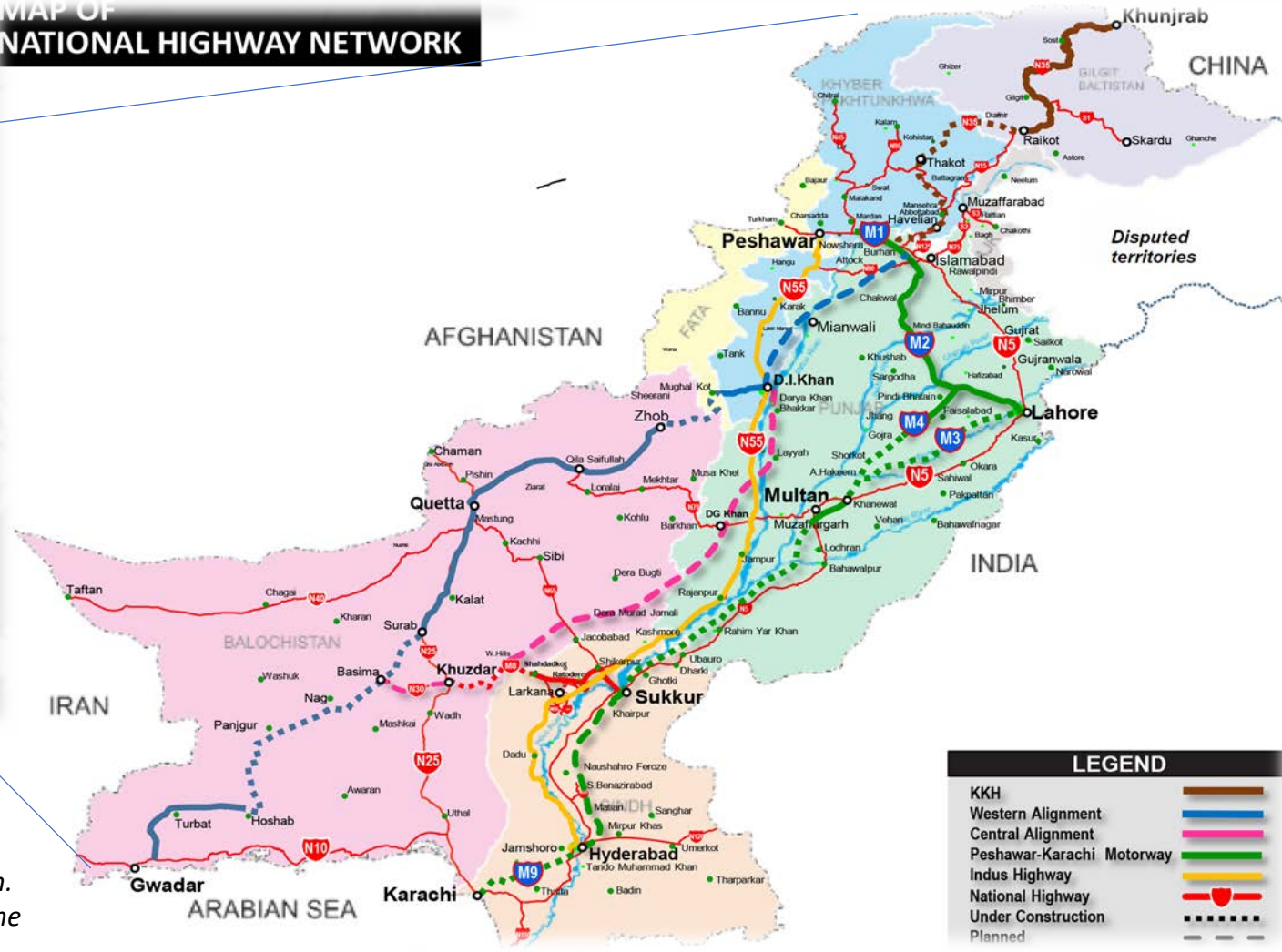
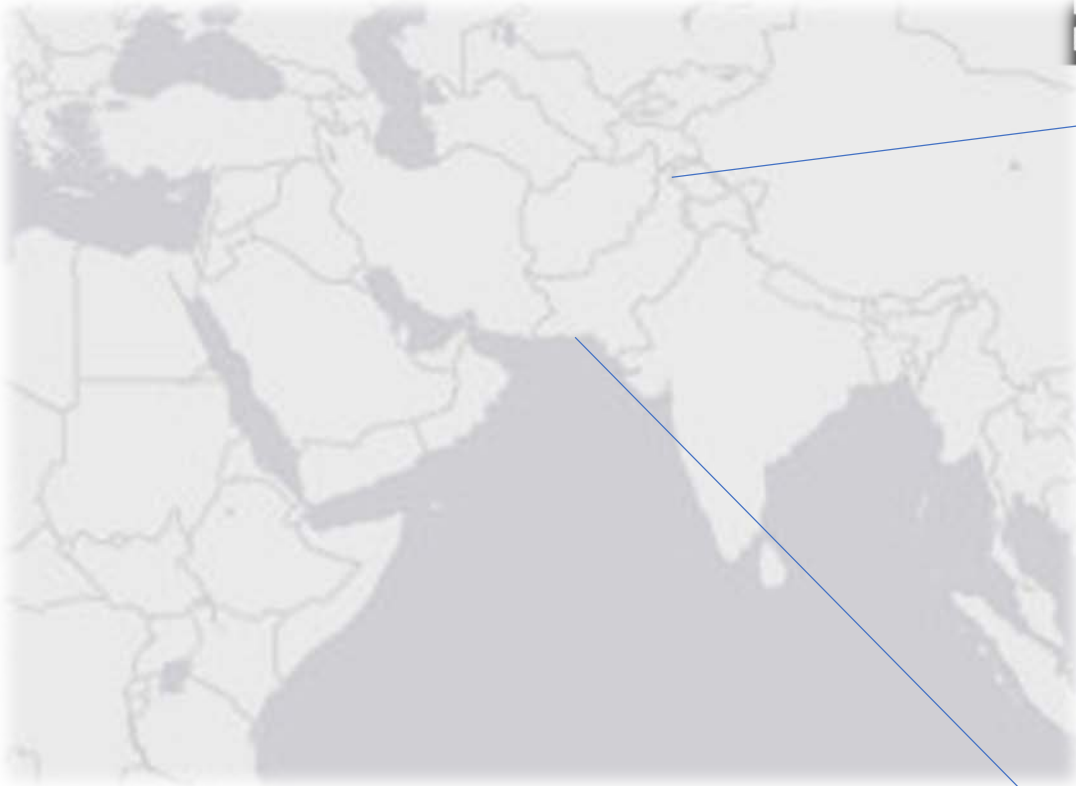


Alice Duhaut



New roads for economic growth

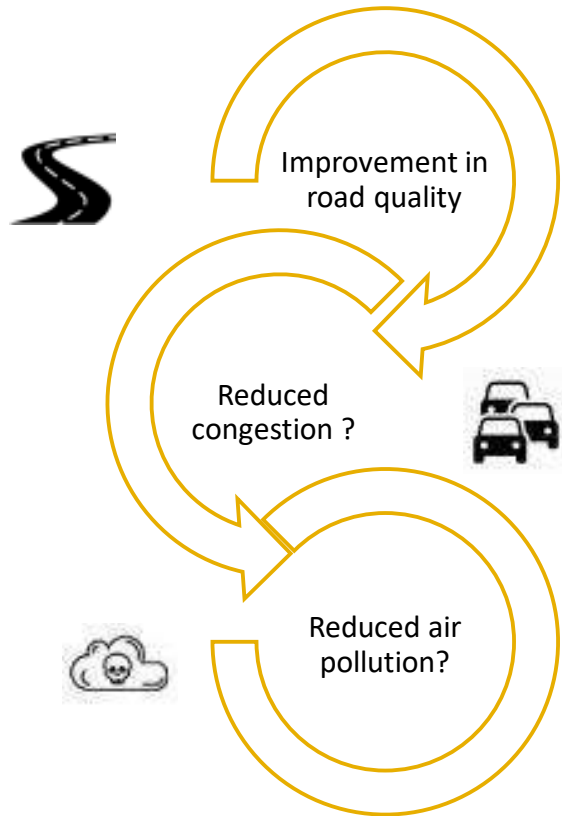
MAP OF NATIONAL HIGHWAY NETWORK



Map as shared by the Government of Pakistan. This map does not do not necessarily reflect the official policy or position of the World Bank concerning Pakistan borders.

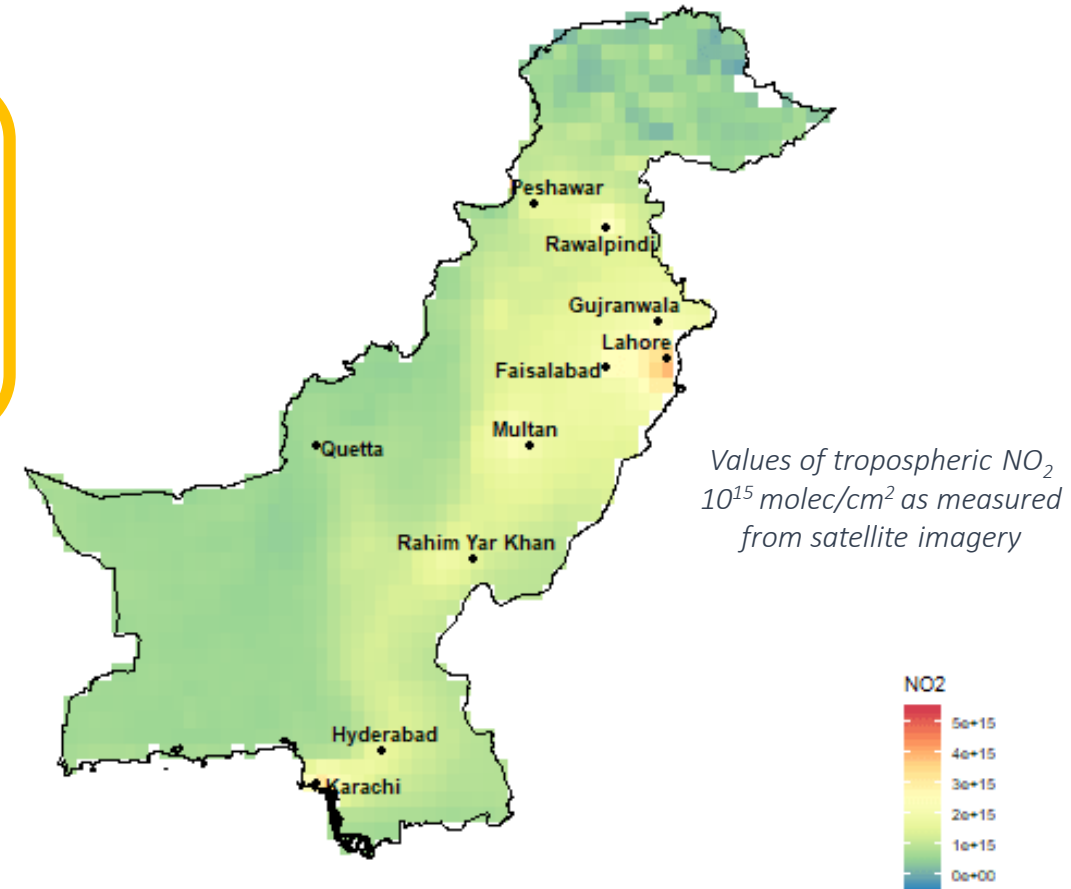
From the sky

Measuring air pollution from satellite images



Uncover the link between air quality and transport sector

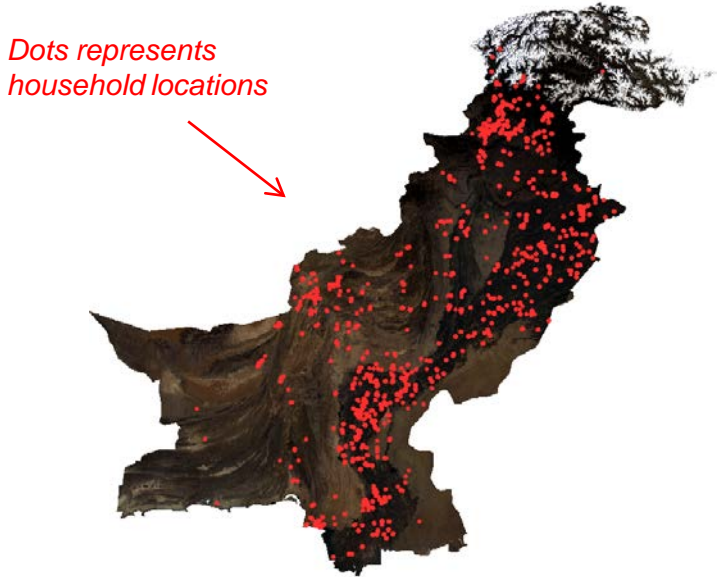
NO₂ in Pakistan
Year:2005



From the sky

Predicting poverty with satellite imagery

- Can we measure *levels*?
- Can we measure *changes* ?
- Calibration and ground truthing with households level data



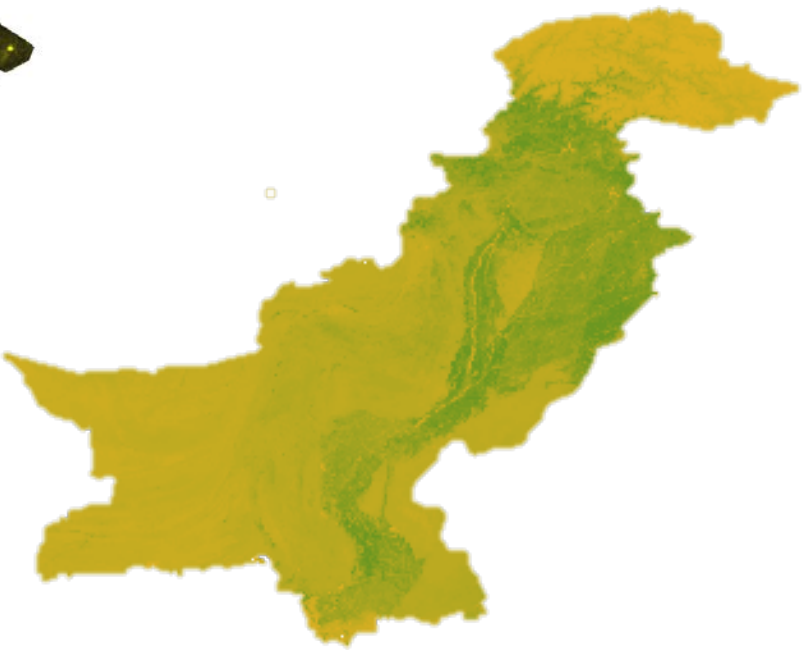
1992



Nighttime Imagery
The radiance of nighttime lights along the constructed roads shows variations in poverty levels

Daytime Imagery

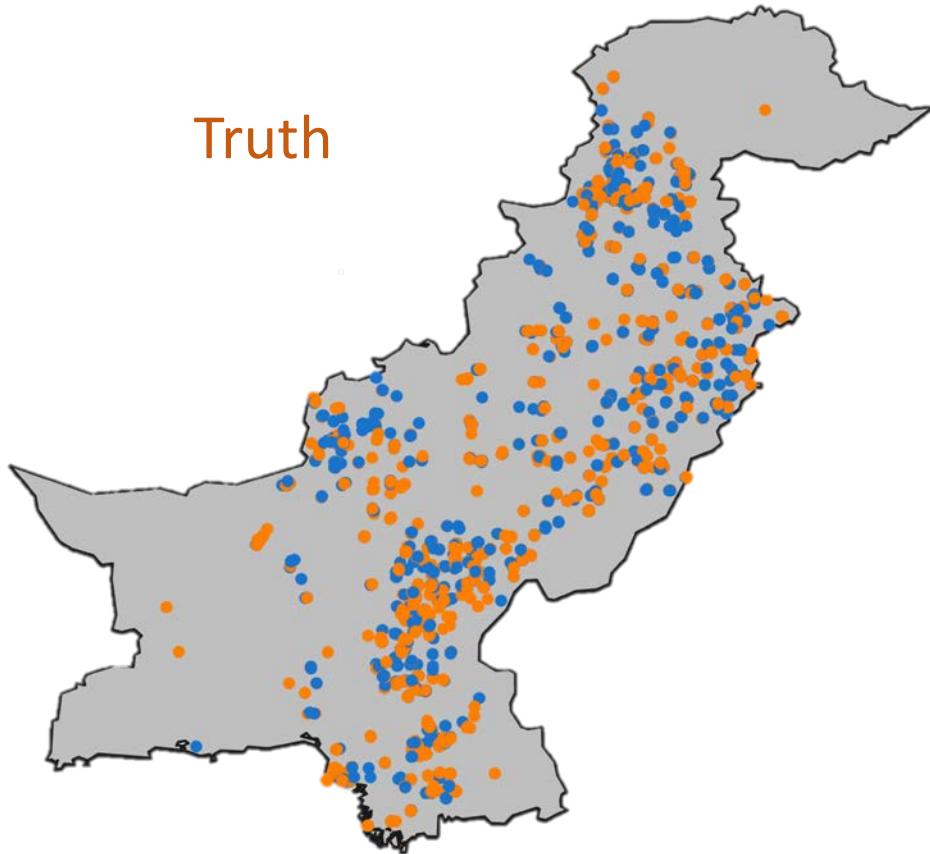
From daytime imagery we extract a number of variables—for example, amount of vegetation.



From the sky VS from the ground

What can we predict ?

Truth

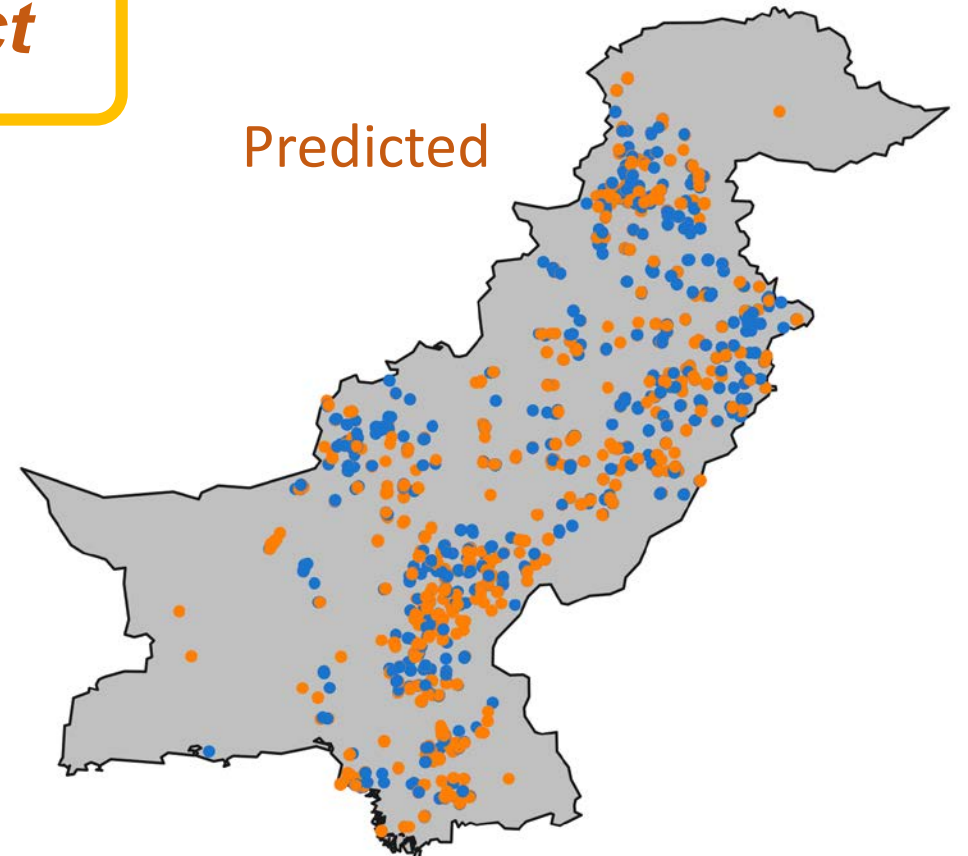


93% correct

Poor household

- Yes
- No

Predicted



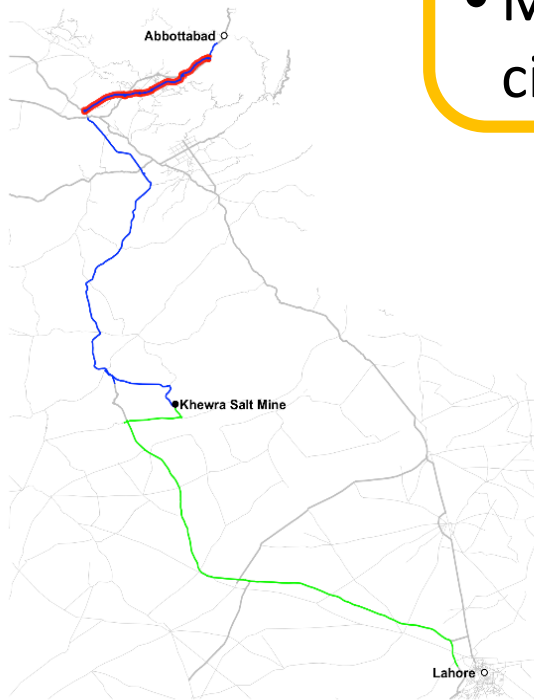
From the ground ...

Measuring changes in consumer prices

Consumer Price Index in Pakistan's Cities

Year:2008

- How do market prices change as a result of changes in transport infrastructure?
- Market prices from 76 markets across 40 cities

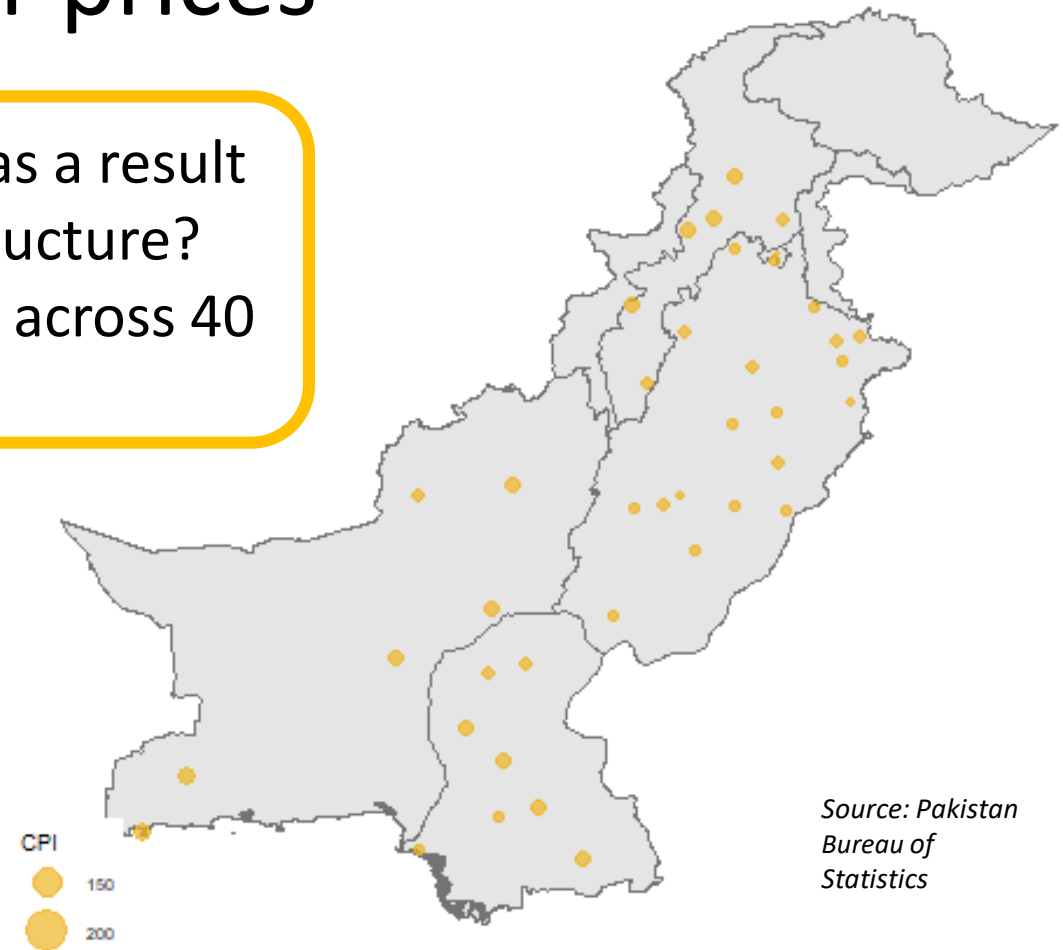


Roads
— Highways
— Treated Route
— Control Route
— Hazara Expressway

Locations
○ Destinations
● Origin



Example of 'transport investment affecting the routes for Himalayan Rock Salt



Source: Pakistan Bureau of Statistics

From the ground...

Capturing changes in trade using customs data

- What gets traded?
- What arrives where?



Karachi port
Source: Karachi Port Trust

Locations of Customs Sheds and Terminals in Pakistan
by average monthly imports in January, 2017



Source: Federal Board of Revenue