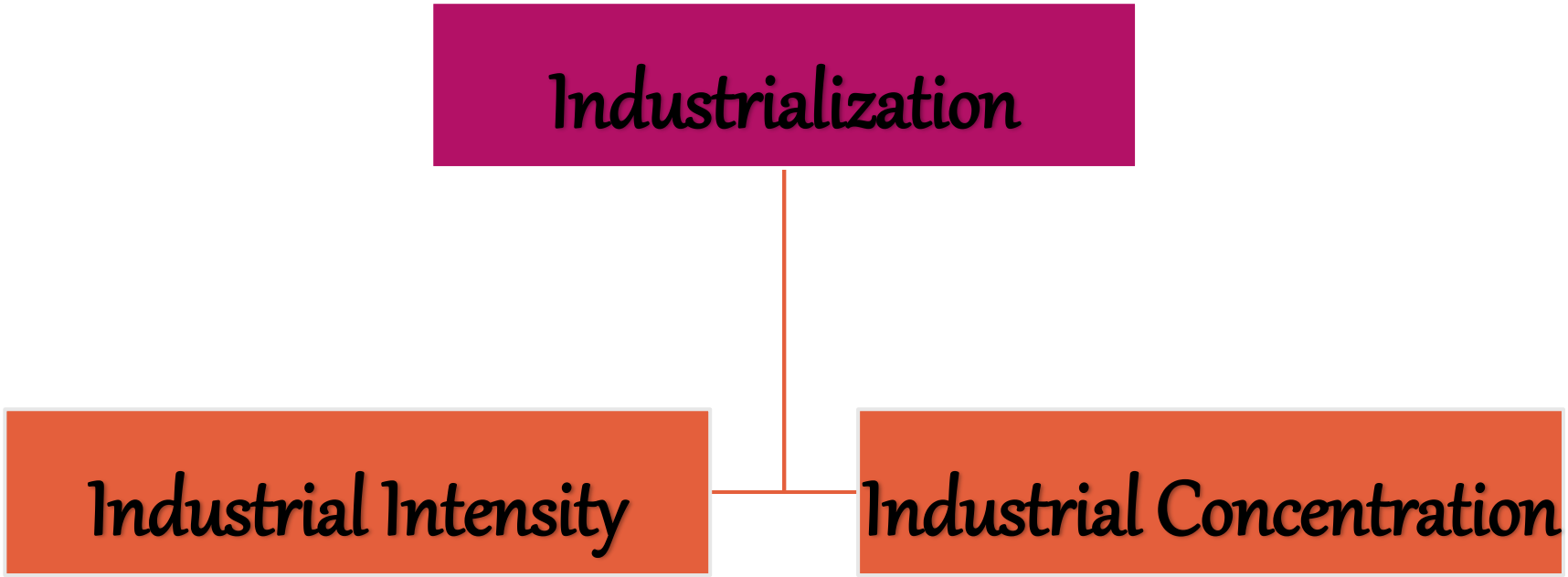
Measures and Methods of Industrialization Level

Measurement of Industrialization

Level of industrialization is **measured in two ways**:



Factors as bases for industrial level determination

- Number of factories
- Number of workers engaged in factories
- Number of workers directly engaged in production process
- Percentage of workers engaged in industrial sector of any region
- Energy consumption
- Cost: raw material, finished product, production process cost, labor cost, capital involved

1. Methods to measure Industrial Intensity

1. Single - Element Technique
2. Multi – Element Technique

1. Single - Element Technique

- ✓ Use of one indicator to analyze the industrial intensity levels.

1. Sten de Geers 1927:

- ▶ Objective: To show distributional pattern of industries in U.S.A.
- ▶ **Single element**: Number of workers in Urban centres of 10,000 and more population
- ▶ **Observation**: industries are found in a densely concentrated pattern (continuous belt) in the central and eastern U.S.A. while industries in the south and western parts of the country are found sparsely concentrated.

2. Alfred J. Wright:

- ✓ Element: **Value added** in production process

  (Raw material cost, Product cost, production process, labor cost, capital cost)

- ✓ Delimited industrial regions of **USA**, **Great Britain** and **Germany**
- ✓ Comparative study

Observation:

- ▶ Value added in production process of USA is 33% higher than the combined increment of other two countries.
- ▶ Therefore, the **industrial level of USA is much higher than Great Britain and Germany**

3. Helen Strong:

- Element: **Consumption of Energy**
- He identified energy consumption in industrial process of each County of USA
- Prepared a map of '**Equal consumption line**'
- **Three clear categories** of industrial regions evolved

4. Richard Hartshorne:

- **Element:** Percentage of industrial workers to the total population of the area.
- **Minimum 10% population of industrial workers should be the criteria to delimit industrial region**

2. Multi- Element Technique

Use of multiple indicators to delimit industrial region.

1. **C.F. Jones:**

Elements:

- ✓ Number of workers
- ✓ Consumption of power
- ✓ Value added data, etc.

- ➢ He prepared maps of each of these indicators (**Individual maps**)
- ➢ **To delineate industrial regions he overlaid all these maps**

2. John Thompson:

Elements:

1. Industrial workers
2. Workers engaged in other economic activities
3. Production process
4. Value added
5. Salary & Wages

1. An **index** is developed for each of these five elements
2. These indices were further used to calculate a **composite index**

✓ He applied this method on **50 metropolitan areas** of USA

Example:

- ✓ Average *Number of Workers* in 50 Metropolitan Areas = 70,000
- ✓ Total number of industrial worker in one metropolitan area = 35,000
- ✓ Index= $\frac{35,000}{70,000} \times 100$ **= 50**
- ✓ Index for a second metropolitan area derived= **200** (having 1,40,000 industrial workers)

1. **Similarly indices for all five indicators will be calculated for each metropolitan area.**
2. **An average index for every metropolitan are derived later**

Example:

- ✓ Indices for -Industrial workers (49), Workers engaged in other economic activities (42), Production process (42), Value added (44), Salary (46) & Wages (39)
- ✓ Composite index = $\frac{49+42+42+44+46+39}{6}$ = **43.66**
- ✓ **The 50 metropolitan areas are further classified into categories as per their composite indices.**

2. Methods to measure Industrial Concentration

- ✓ Industrial concentration = tendency of location of industries i.e.

Centralized or Decentralized

Measures:

1. Location quotient (Bawdy & Nixon, and Sargent Florence)
2. Coefficient of Localization (Sargent Florence)

✓ It is a ratio of ratio

- ✓ Location quotient $= \frac{Small\ unit\ Percentage}{Large\ unit\ percentage}$
- ✓ Small unit = say DISTRICT ; Large unit = Say STATE

- ✓ Small unit % $= \frac{No.of\ industrial\ workers}{No.of\ total\ workers} x\ 100$
- ✓ Large unit % $= \frac{No.of\ industrial\ workers}{No.of\ total\ workers} x\ 100$

Example:

Administrative Unit	Working Population	Industrial Population	Percentage
Rajasthan	80,50,000	2,57,000	
Bikaner	1,65,000	65,000	
Jaisalmer	53,000	582	

Bikaner =

Jaisalmer =

Example:

Administrative Unit	Working Population	Industrial Population	Percentage
Rajasthan	80,50,000	2,57,000	*3.19*
Bikaner	1,65,000	65,000	*39.39*
Jaisalmer	53,000	582	*1.10*

Bikaner = 39.39/ 3.19 **= 12.35**

Jaisalmer = 1.1/ 3.19 **= 0.34**

Interpretation

1. **L.Q. = 1**

- ✓ A **state of evenness** exists i.e. the industries are located as per the capacity of the region
- ✓ This indicates that there is **neither centralization nor decentralization**

2. L.Q. > 1

- ✓ There is a tendency of Centralization
- ✓ The concentration of industries is greater than the capacity of the region

3. L.Q. < 1

- ✓ There is a tendency of Decentralization
- ✓ The concentration of industries is less than the capacity of the region

Coefficient of Localization

- ✓ Coefficient of localization indicates the propensity of concentration of industries
- ✓ This has no relation as such with the area

$$\text{Coefficient of Localisation} = \frac{\text{\% of workers in the area} - \text{\% of workers in particular industry}}{100}$$

Coefficient of Localization...

- ✓ If this coefficient = 0, it means that industries are evenly distributed over all the areas
- ✓ If the coefficient = 1, it indicates concentration of industries in one area
- ✓ The coefficient > 1 will indicate tendency of centralization
- ✓ The coefficient < 1 will indicate tendency of decentralization

Other methods of Industrial Diversification

1. Ogive Index = measures the deviation from equal distribution of employment in all sectors
2. National average approach = uses national average employment or value-added figures in each industry

Other methods of Industrial Diversification...

3. **Portfolio theoretic approach** = to examine the effect of industrial diversification on the stability of a region's employment

4. **Entropy** = a measure of 'disorganization'
   a degree of uncertainty in a system

Great Lakes Industrial Region of U.S.A.

Great Lakes Industrial Region

- ✓ **Growth engine** of North America
- ✓ 107 million population
- ✓ Great lakes manufacturing trends point to
  - **Manufacturers leveraging technology**,
  - **Geographic advantages**, and
  - An experienced **workforce** to drive growth
- ✓ in the region, the nation, and around the globe.
- ✓ The **6 U.S. States**

Illinois, Indiana, Michigan, Minnesota, Ohio, And Wisconsin

Two Canadian provinces : **Ontario** and **Quebec**

that make up the great lakes region are an economic powerhouse.

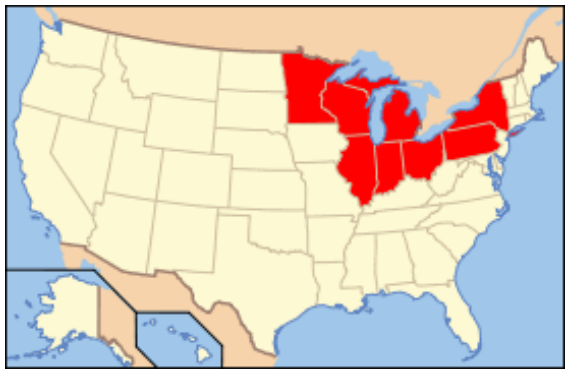
- **30% of US-Canada** economic activity takes place here
- More than **1/2 of US-Canada border trade** happens
- Over **200 million tons of cargo** are shipped annually
- The Great Lakes region is a **hotbed for innovation** with both sides of the border receiving healthy amount of research and development funding
- The area is home to some of the **world's leading educational institutions** in 2015-16, **18 of the top 100 universities in the world** could be found in the Great Lakes region
- **$278 billion** in **bilateral US-Canadian trade** (2015) in the Great Lakes area

  more than the region trades with **Mexico, China, UK, Germany** and **Japan** combined

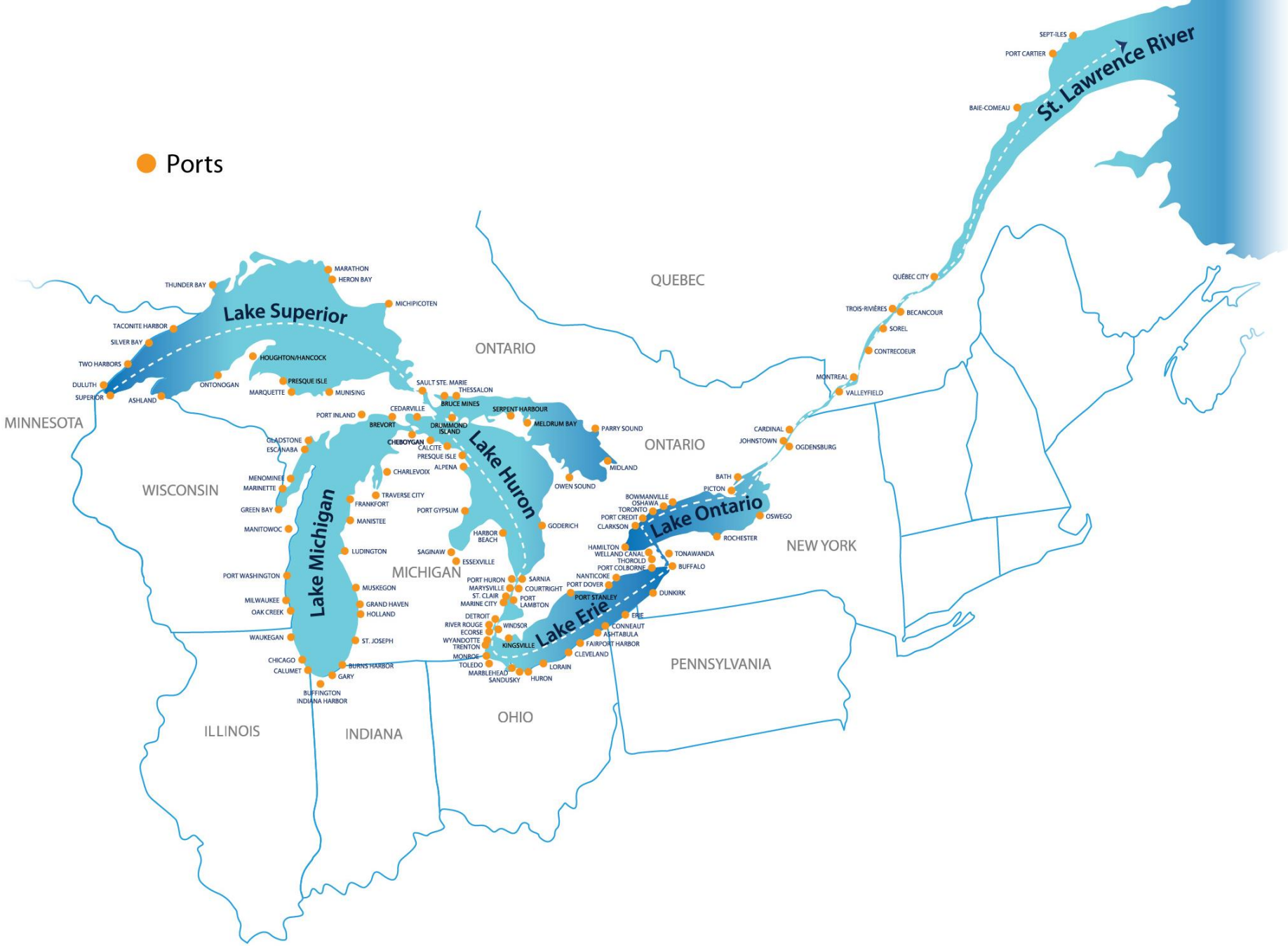

UNITED STATES OF AMERICA
WASHINGTON
Olympia
OREGON
Salem
IDAHO
Boise
MONTANA
Helena
WYOMING
Cheyenne
NORTH DAKOTA
Bismarck
SOUTH DAKOTA
Pierre
NEBRASKA
Lincoln
Great Salt Lake
Salt Lake City
UTAH
Denver
COLORADO
Carson City
NEVADA
Sacramento
CALIFORNIA
ARIZONA
Phoenix
Santa Fe
NEW MEXICO
KANSAS
Topeka
OKLAHOMA
Oklahoma City
TEXAS
Austin
MINNESOTA
St. Paul
IOWA
Des Moines
MISSOURI
Jefferson City
ARKANSAS
Little Rock
LOUISIANA
Baton Rouge
WISCONSIN
Madison
ILLINOIS
Springfield
MICHIGAN
Lansing
INDIANA
Indianapolis
OHIO
Columbus
KENTUCKY
Frankfort
TENNESSEE
Nashville
MISSISSIPPI
Jackson
ALABAMA
Montgomery
GEORGIA
Atlanta
FLORIDA
Tallahassee
SOUTH CAROLINA
Columbia
NORTH CAROLINA
Raleigh
VIRGINIA
Richmond
WEST VIRGINIA
Charleston
PENNSYLVANIA
Harrisburg
NEW YORK
Albany
Hartford
Montpelier
VT
NH
Concord
MAINE
Augusta
MA
Boston
CT
RI
Providence
NJ
Trenton
Dover
DL
MD
Annapolis
Washington D.C.
CANADA
Lake Superior
Lake Michigan
Lake Huron
Lake Erie
Lake Ontario
NORTH PACIFIC OCEAN
Gulf of Mexico
NORTH ATLANTIC OCEAN
MEXICO
THE BAHAMAS
CUBA
ALASKA
Juneau
HAWAII
Honolulu
0 1,000 Miles
0 250 Miles
0 125 250 500 Miles
VT - Vermont
RI - Rhode Island
NH - New Hampshire
DL - Delaware
NJ - New Jersey
CT - Connecticut
MA - Massachusetts
MD - Maryland

Geography

- Lake **Superior**, Lake **Michigan**, Lake **Huron**, Lake **Erie**, and Lake **Ontario**, form the Great Lakes,
- The **largest group of freshwater lakes** in the world: about **20% of all the earth's fresh water**
- Several other minor lakes and rivers are also included in the Great Lakes region including the Niagra River, Detroit River, St. Lawrence River, St. Marys River, and the Georgian Bay.
- There are **35,000 islands** estimated to be located on the Great Lakes, created by **glacial activity.**




CANADA
MICHIGAN
V.T.
NEW YORK
WISCONSIN
MICHIGAN
Green Bay
Syracuse
Rochester
Buffalo
Madison
Saginaw
Grand Rapids
Milwaukee
Detroit
Scranton
Chicago
Rockford
Cedar Rapids
Toledo
Cleveland
Allentown
PENNSYLVANIA
N.J.
IOWA
Peoria
INDIANA
OHIO
M.D.
D.E.
Springfield
M.O.
ILLINOIS
WEST VIRGINIA
VIRGINIA
St. Louis
KENTUCKY


Ports
Lake Superior
Lake Michigan
Lake Huron
Lake Erie
Lake Ontario
St. Lawrence River
MINNESOTA
WISCONSIN
MICHIGAN
ILLINOIS
INDIANA
OHIO
ONTARIO
QUEBEC
NEW YORK
PENNSYLVANIA
THUNDER BAY
MARATHON
HERON BAY
MICHIPICOTEN
TACONITE HARBOR
SILVER BAY
TWO HARBORS
DULUTH
SUPERIOR
ASHLAND
ONTONAGAN
HOUGHTON/HANCOCK
PRESQUE ISLE
MARQUETTE
MUNISING
SAULT STE. MARIE
THESSALON
BRUCE MINES
SERPENT HARBOUR
MELDRUM BAY
PARRY SOUND
MIDLAND
OWEN SOUND
PORT INLAND
CEDARVILLE
BREVORT
DRUMMOND ISLAND
CHEBOYGAN
CALCITE
PRESQUE ISLE
ALPENA
CHARLEVOIX
GLADSTONE
ESCANABA
MENOMINEE
MARINETTE
GREEN BAY
MANITOWOC
TRAVERSE CITY
FRANKFORT
MANISTEE
PORT GYPSUM
GODERICH
HARBOR BEACH
SAGINAW
ESSEXVILLE
LUDINGTON
PORT WASHINGTON
MUSKEGON
MILWAUKEE
GRAND HAVEN
OAK CREEK
HOLLAND
WAUKEGAN
ST. JOSEPH
CHICAGO
CALUMET
BURNS HARBOR
GARY
BUFFINGTON
INDIANA HARBOR
PORT HURON
SARNIA
MARYSVILLE
COURTRIGHT
ST. CLAIR
MARINE CITY
PORT LAMBTON
DETROIT
RIVER ROUGE
ECORSE
WYANDOTTE
TRENTON
MONROE
TOLEDO
MARBLEHEAD
SANDUSKY
HURON
WINDSOR
KINGSVILLE
LORAIN
CLEVELAND
FAIRPORT HARBOR
ASHTABULA
CONNEAUT
ERIE
PORT DOVER
PORT STANLEY
NANTICOKE
DUNKIRK
HAMILTON
WELLAND CANAL
THOROLD
PORT COLBORNE
BUFFALO
TONAWANDA
ROCHESTER
OSWEGO
BOWMANVILLE
OSHAWA
TORONTO
PORT CREDIT
CLARKSON
BATH
PICTON
CARDINAL
JOHNSTOWN
OGDENSBURG
MONTREAL
VALLEYFIELD
CONTRECOEUR
SOREL
TROIS-RIVIÈRES
BECANCOUR
QUÉBEC CITY
BAIE-COMEAU
PORT CARTIER
SEPT-ILES

The Formation of The Great Lakes

- **The Great Lakes Basin** (the Great Lakes and the surrounding area) **began to form** about **2 billion years ago – almost two-thirds the age of the earth**.
- About **2 million years ago**, it was **glaciers that advanced** over and back across the land.
- The **glaciers were upwards of 6,500 feet thick and further depressed the Great Lakes Basin**.
- When the **glaciers finally retreated** and melted **approximately 15,000 years ago**, **massive quantities of water were left behind.**

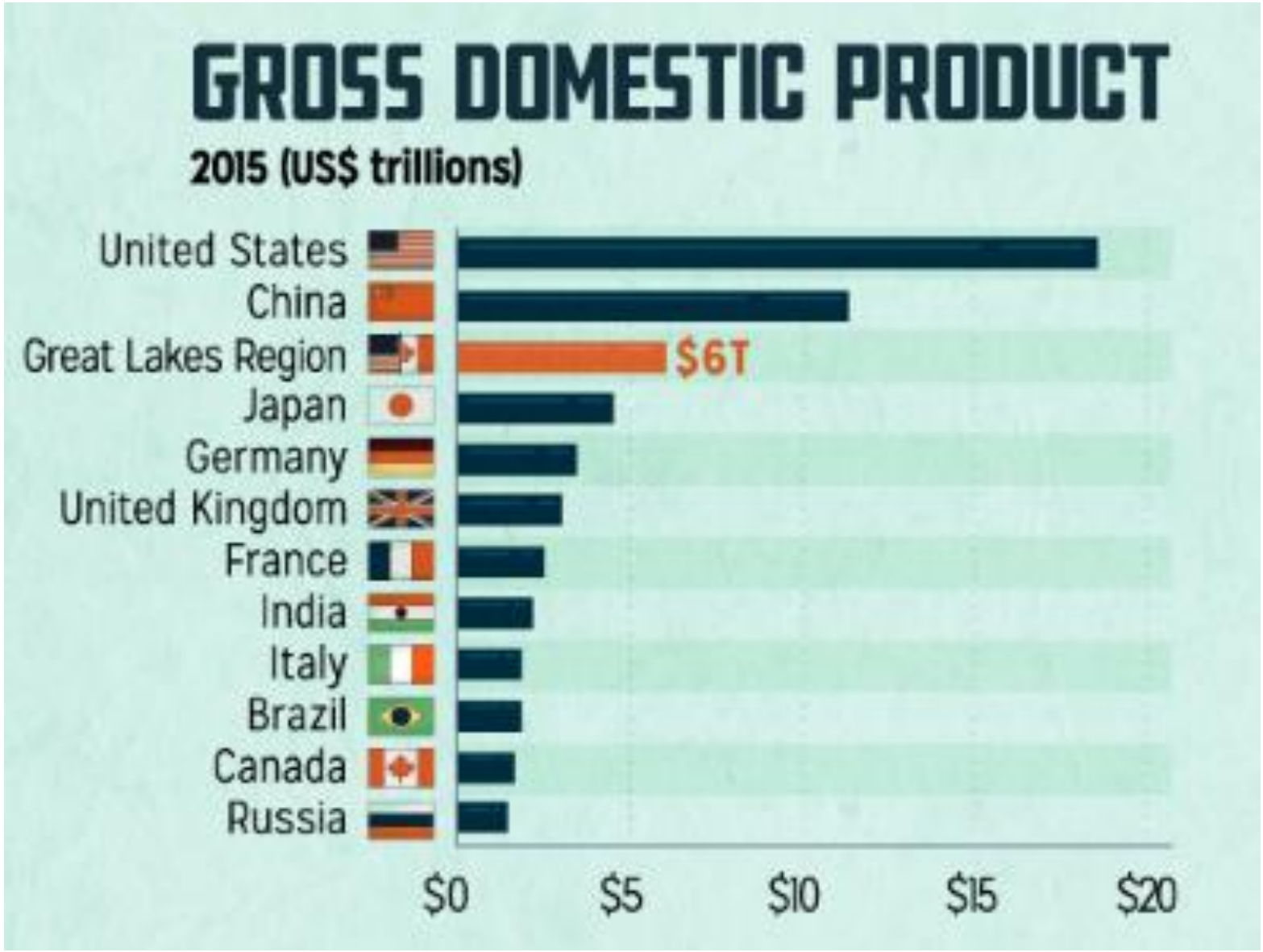
It is these glacier waters that form the Great Lakes today

- Many glacial features are still visible on the Great Lakes Basin today in the form of "glacial drift," groups of sand, silt, clay and other unorganized debris deposited by a glacier.
- Moraines, till plains, drumlins, and eskers are some of the most common features that remain.

The Economy

- The value of the extensive **forests** and **fertile land** in the region was soon realized, and lumbering and agriculture became important.
- **Large coalfields and deposits of iron, copper, salt, limestone, and other minerals were found along or near the extensive shorelines**.
- The combination of these **vast resources** with a plentiful water supply naturally favored the development of huge industries and large metropolitan areas around the Great Lakes.
- Major **urbanized areas** include a band that extends from

Milwaukee, Wisconsin, through Chicago and around southern Lake Michigan; a band that stretches southward from Detroit, Michigan, and then continues along the southern shore of Lake Erie; and the Toronto-Hamilton area on the northern shore of Lake Ontario.



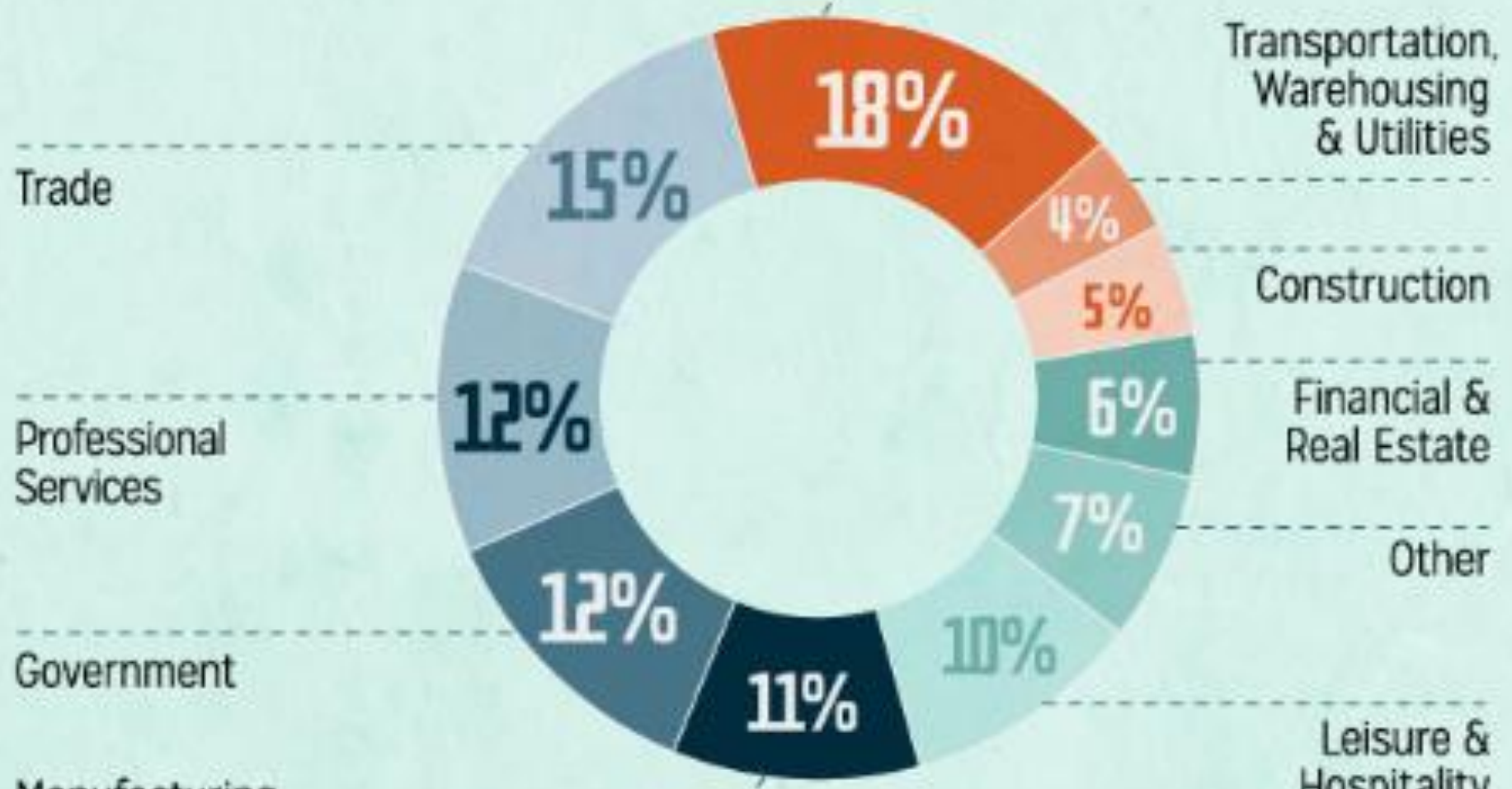
In fact if it were a country, it would be the 3rd largest in the world by GDP

TOP DESTINATIONS FOR MERCHANDISE EXPORTS

from the Great Lakes Region 2015

EMPLOYMENT BY INDUSTRY

Great Lakes-St Lawrence Region 2016



Resources

- The **ranges around Lake Superior**—such as the **Mesabi** in **Minnesota** and the **Marquette** in Michigan—are a **major source of iron ore** for the United States.
- Peak production occurred in 1953, when almost 100 million net tons were produced.
- The **large deposits of rich ores have since been depleted,** but low-grade taconite ores are now efficiently processed into iron-ore pellets.
- Lake Superior's Keweenaw Peninsula was once a major source of **copper**; sources outside of the lakes are now relatively more important.
- **Hydroelectric** generating stations exist on the St. Marys, Niagara, and St. Lawrence rivers.
- **Numerous coal- and nuclear-powered generating plants** around the lakes utilize lake water for cooling.

Industrial Regions

8 major Industrial Regions of USA and Southern Canada are

1. Southern New England
2. Mid-Atlantic States
3. Pittsburgh-Lake Erie Region
4. Detroit Industrial Region
5. Lake Michigan Region
6. Southern Appalachian Region
7. Eastern Texas
8. Pacific Coastal Region

1. Pittsburgh-Lake Erie Region:

- **The industry spreads northward up to Shenango valley to Sharon, up the Beaver-Mahoning valley to Youngstown and into Canton, Massillon, and other eastern Ohio towns.**
- It also spreads down the Ohio River to Weirton, Steubenville, wheeling Huntington, Ashland, Ironton and Portsmouth and up the Miami valley to Middletown.
- This is the region having **greatest concentration of ferrous industries**.
- This region accounts about **1/4th of ferrous and ferro-alloy products** of the country.
- The famous **Youngstown-Pittsburgh-Johnstown iron and steel triangle** is located in the region.
- The other steel-producing areas are: **Wheeling, Cleveland, Louisville, Rookford, Flint, Steubenville** and **Detroit**

1. Pittsburgh-Lake Erie Region:...

- The other manufacturing centres engaged in diversified manufacturing activities are:

  Chicago, Anderson, Midland, Iowa, St. Louis, Minneapolis

- Most of the iron and steel towns are spun in the vicinity of Pittsburgh, such as Mckeesport, Braddock, Carnegie, Homestead and Johnstown.
- **Pittsburgh** also has the **largest glass industry** in the United States.
- **Johntown**, to the east of Pittsburgh, has a **coal, iron and steel industry**.
- Most of the **ore comes from Lake Superior**
- **Cleveland**, on Lake Erie, is noted **for iron goods, electrical engineering and machineries**.

2. Detroit Industrial Region:

- This is the **greatest automobile manufacturing region of the USA**, centered at **Detroit**.
- The city was at first a centre for wagon and carriage-making which **later led to the assembly of automobiles in the region.**
- It is the **headquarters of several giant motor corporations** including

  Ford, Chrysler, and General Motors
- Other locational advantages were the **large market for cars in the Midwest**, where **other forms of transport**, e.g., railways, were relatively poorly developed in the early 20th century; and the ease of transporting steel from Pittsburgh via Lake Erie.
- **The automobile industry extends** to many other towns **around Detroit, e.g., Lansing, Flint, Jackson, Pontiac, Dearborn and Toledo**
- Car assembly is linked with other branches of manufacture such as

  tyre-making, electrical wires, glass, batteries, paints, polishes, alloyed steel, spare parts and components.
- **Other industries**: motor vehicles, machinery, fabricated metals, machine tools and electronics.

3. Lake Michigan Region:

- ✓ This area lies on the southern shores of Lake Michigan with **Chicago** (**second largest city in the United States)** **as a main centre.**
- ✓ There are some **10,000 factories** in and around Chicago, amongst which **the iron and steel plants** are the most important.
- ✓ The manufacturing industries around Lake Michigan are **confined largely to Chicago and Gary** where **iron ore of the Lake Superior** and of north meets **coal from the south**.
- ✓ Railways from the north-west are obliged to pass through it in rounding Lake Michigan to reach the Atlantic

3. Lake Michigan Region:...

- ✓ Chicago concentrates on **motor vehicles and trucks, cement, chemicals, iron and steel goods, furniture, paper, cereal, baby food and pharmaceuticals.**
- ✓ Other industries are based on the **agricultural products** of the surrounding regions, e.g., **meat-packing, grain milling and the making of agricultural implements and machinery.**
- ✓ **Gary** is another important for **iron and steel production**.
- ✓ Closely associated with the **Chicago metropolitan area** are such urban centres as **Milwankee, Racine** and **Kenosha** with their extensive iron and steel, motor vehicle, beverage, machinery, meat packing, leather and leather goods establishments.

Industrial Regions

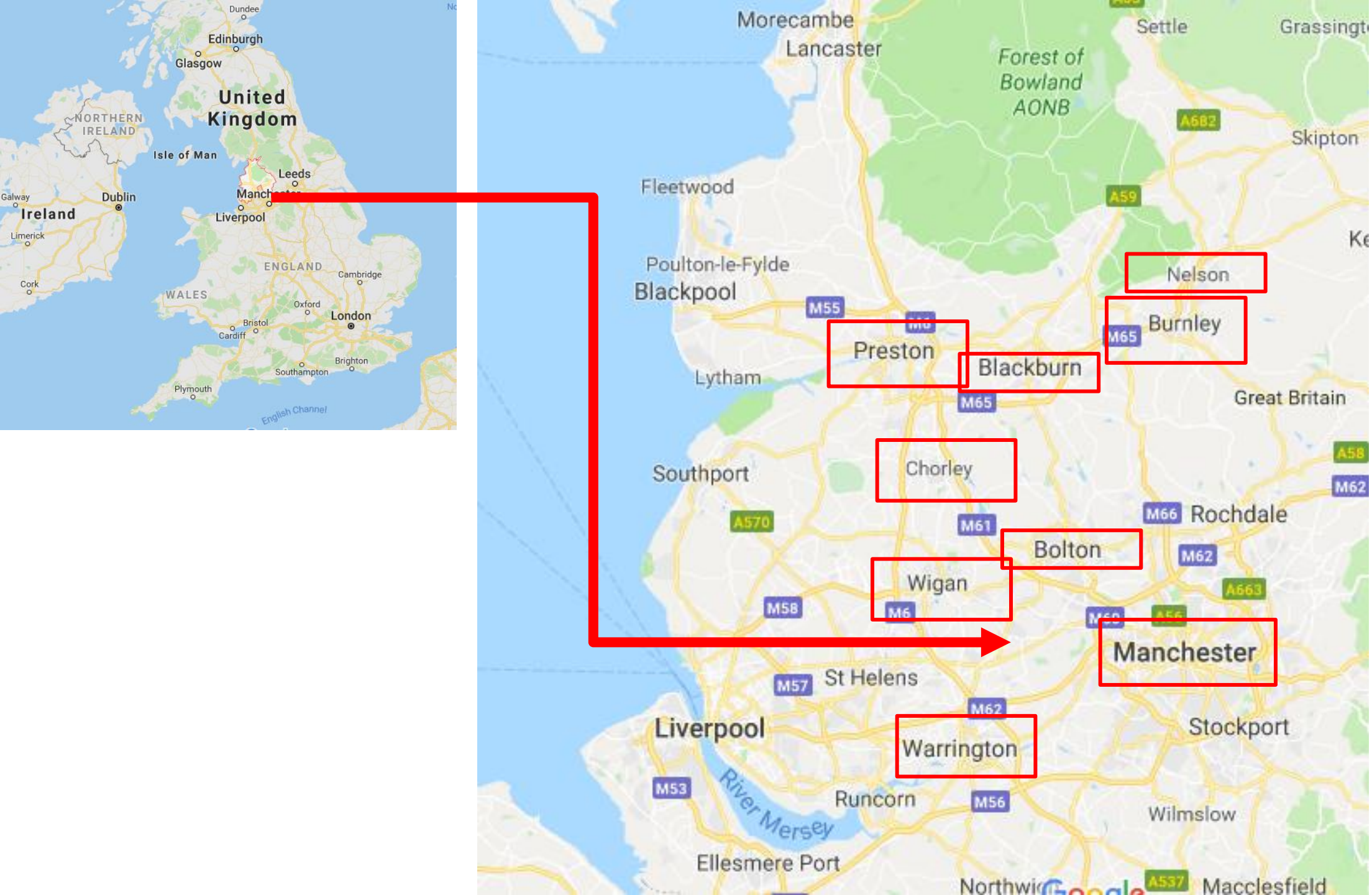
Lancashire Industrial Region


Yorkshire
Dales
Morecambe
Bay
River Lune
Forest
of
Bowland
River Hodder
River Wyre
River Ribble
The
Fylde
Pendle
Hill
River Calder
River Darwen
Rossendale
Valley
West
Pennine
Moors
River Douglas
West
Lancashire
Coastal
Plain
River Irwell


Carnforth
Morecambe
Heysham Port
Lancaster
Skipton
Clitheroe
Colne
Blackpool North
Blackpool South
Burnley Central
Preston
Accrington
Lytham
Blackburn
Darwen
Rawtenstall
Ormskirk
Bolton


Industrial Regions
Exposed Coalfield
Hidden Coalfield
Central Scotland
Northumberland
Durham
Belfast
Cumberland
West Riding
Lancashire
Notts • Derby
Potteries
Midlands
South Wales
London
Bristol
Southampton
Portsmouth
0 20 40 60 80 100
Miles

- ✓ Famous for **Textile industry**
- ✓ Other: **Machines**, **Machinery Tools**, **Chemicals**, **Scientific Instruments**, **Artificial Rubber**, **Plastic**, **Pharmaceuticals**, **Shipbuilding**
- ✓ Major centres: **Manchester, Olts, Blackburn. Bolton, Scot port, Warrington, Chester, Liverpool**.
- ✓ 14th century famous for **Linen industry**...which favored **skilled labor availability**
- ✓ **Cotton textile industry developed in 18th century** and replaced the traditional linen industry
- ✓ **Discovery of coal as source of energy in 19th century supported the industry**
- ✓ **Humid climate** due to **proximity of coast** and availability of water through **convectional rainfall**
- ✓ **Water transportation to cotton regions of USA** (800 km away)
- ✓ Major centres: **Oldhum, Rockdem, Bolton, Burry, Stilibridge, Aton, Anderlin**
- ✓ **Ribel river valley**: Preston, Blackburn, Nelson Col, Burn, Actington


Dundee
Edinburgh
Glasgow
United Kingdom
NORTHERN IRELAND
Isle of Man
Leeds
Dublin
Galway
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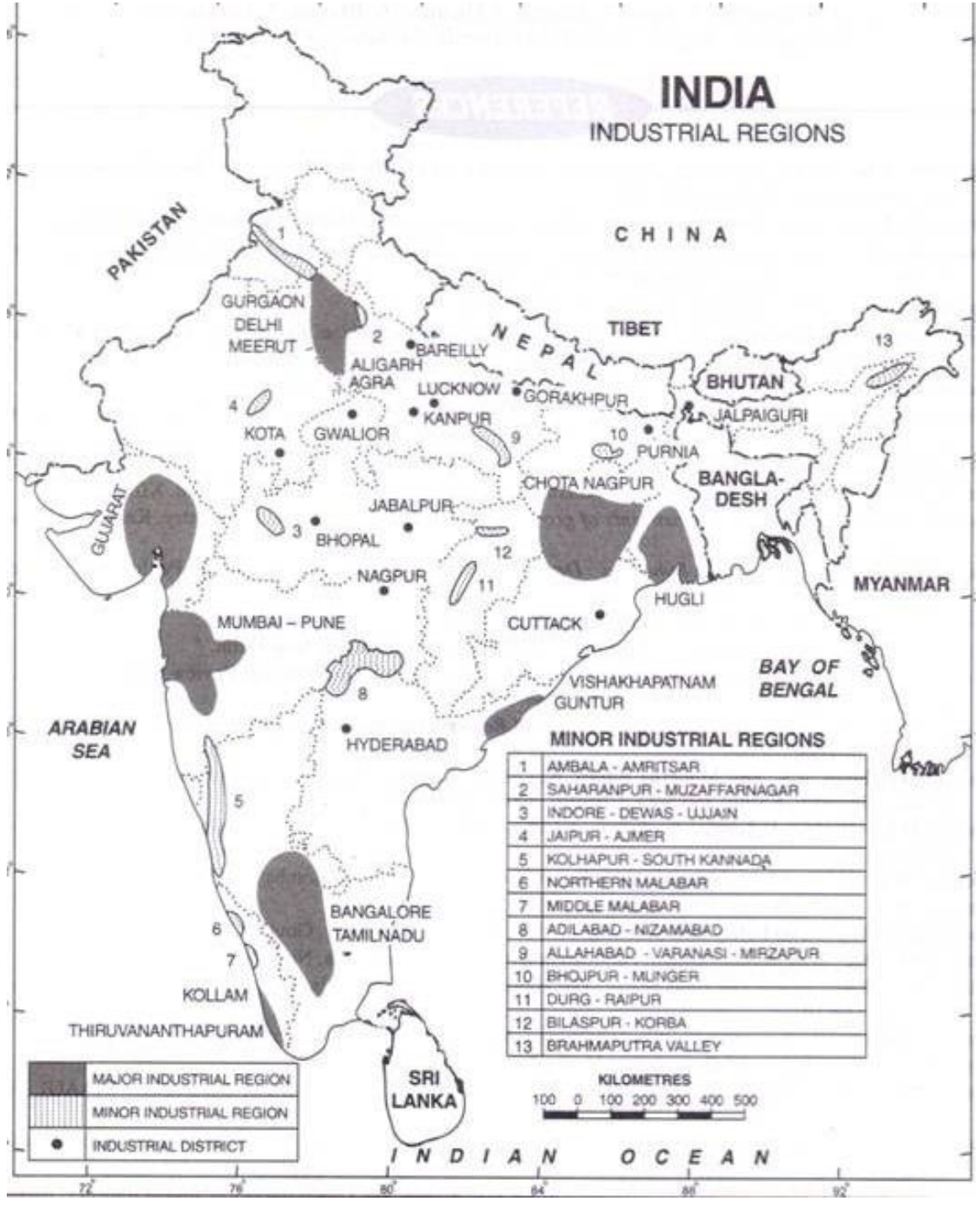
Liverpool
Limerick
Cork
ENGLAND
Cambridge
WALES
Oxford
London
Bristol
Cardiff
Brighton
Southampton
Plymouth
English Channel
Morecambe
Lancaster
Forest of Bowland AONB
Settle
A682
Skipton
Fleetwood
A59
Poulton-le-Fylde
Blackpool
Nelson
M55
Burnley
M65
Preston
Blackburn
Lytham
Great Britain
M65
Chorley
Southport
A58
M62
A570
M61
M66
Rochdale
Bolton
M62
Wigan
A663
M58
M6
Manchester
M57
St Helens
M62
Liverpool
Warrington
Stockport
M53
River Mersey
Runcorn
M56
Wilmslow
Ellesmere Port
A537
Macclesfield

Industrial Regions of India


INDIA
INDUSTRIAL REGIONS
PAKISTAN
CHINA
NEPAL
TIBET
BHUTAN
BANGLA-
DESH
MYANMAR
GUJARAT
ARABIAN
SEA
BAY OF
BENGAL
INDIAN OCEAN
SRI
LANKA
GURGAON
DELHI
MEERUT
BAREILLY
ALIGARH
AGRA
LUCKNOW
GORAKHPUR
JALPAIGURI
KOTA
GWALIOR
KANPUR
PURNIA
CHOTA NAGPUR
JABALPUR
BHOPAL
NAGPUR
HUGLI
CUTTACK
MUMBAI – PUNE
VISHAKHAPATNAM
GUNTUR
HYDERABAD
BANGALORE
TAMILNADU
KOLLAM
THIRUVANANTHAPURAM
MINOR INDUSTRIAL REGIONS
1 AMBALA - AMRITSAR
2 SAHARANPUR - MUZAFFARNAGAR
3 INDORE - DEWAS - UJJAIN
4 JAIPUR - AJMER
5 KOLHAPUR - SOUTH KANNADA
6 NORTHERN MALABAR
7 MIDDLE MALABAR
8 ADILABAD - NIZAMABAD
9 ALLAHABAD - VARANASI - MIRZAPUR
10 BHOJPUR - MUNGER
11 DURG - RAIPUR
12 BILASPUR - KORBA
13 BRAHMAPUTRA VALLEY
MAJOR INDUSTRIAL REGION
MINOR INDUSTRIAL REGION
INDUSTRIAL DISTRICT
KILOMETRES
100 0 100 200 300 400 500
72° 76° 80° 84° 88° 92°

1. Mumbai-Pune Industrial Region:

- ✓ This region extends from **Thane to Pune** and in adjoining districts of **Nashik** and **Solapur**.
- ✓ In addition, industries have grown at a rapid pace in **Kolaba, Ahmednagar, Satara, Sangli** and **Jalgaon** districts also.
- ✓ The region owes its origin to the **British rule** in India.
- ✓ The seeds of its growth were sown in 1774 when the island-site was obtained for construction of Mumbai port. The opening of the first railway track of **34 kms between Mumbai and Thane in 1853**, opening of the **Bhor and Thai Ghats respectively to Pune and Nashik** and that of **Suez Canal in 1869** led to the development of Mumbai.

1. Mumbai-Pune Industrial Region:

- ✓ The growth of this industrial region is fully connected with the growth of cotton textile industry in India.
- ✓ As the coal was far removed, **hydel power** was developed in **Western Ghats**.
- ✓ **Cotton was cultivated in the black cotton soil area of the Narmada and Tapi basins.**
- ✓ **Cheap labour-force** came from the hinterland,
- ✓ the **port facilities** for export-import and
- ✓ **communication links** with the peninsular hinterland made **Mumbai the 'Cottonopolis of India'**.
- ✓ With the development of cotton textile industry, the chemical industry developed too.


GURGAON
DELHI
MEERUT
2
BAREILLY
ALIGARH
AGRA
NEPAL
TIBET
BHUTAN
13
LUCKNOW
GORAKHPUR
JALPAIGURI
4
KOTA
GWALIOR
KANPUR
9
10
PURNIA
CHOTA NAGPUR
BANGLA-
DESH
GUJARAT
JABALPUR
3
BHOPAL
12
NAGPUR
11
MYANMAR
HUGLI
MUMBAI – PUNE
CUTTACK
8
VISHAKHAPATNAM
GUNTUR
BAY OF
BENGAL
ARABIAN

1. Mumbai-Pune Industrial Region:

- ✓ Opening of the **Mumbai High petroleum field** and erection of **nuclear energy plants** added additional magnetic force to this region.
- ✓ Now the industrial centres have developed, from **Mumbai to Kurla, Kolaba, Thane, Ghatkopar, Ville Parle, Jogeshwari, Andheri, Thane, Bhandup, Kalyan, Pimpri, Pune, Nashik, Manmad, Solapur, Ahmednagar, Satara and Sangli.**
- ✓ In addition to **cotton textile** and **chemical industries, engineering goods, leather, oil refineries; petrochemicals, synthetic and plastic goods, chemicals, drugs, fertilizers, electricals, electronics, software, ship-building, transport and food industries have also developed here.**
- ✓ Mumbai, the nucleus of this industrial region, is **facing the current limitation of space for the expansion of the industry**. Dispersal of industries is essential to bring about **decongestion**.

2. The Hugli Industrial Region:

- ✓ Located in West Bengal, this region extends as a narrow belt running along the river Hugli for a distance of about 100 km from **Bansbaria** and **Naihati** in the north to **Birlanagar** in the south.
- ✓ Industries have also developed in Midnapur district in the west.
- ✓ **The river Hugli offered the best site for the development of an inland river port as nucleus for the development of Hugli industrial region.**
- ✓ **The old trading centre of late 17th century** has **developed into the present industrial hub of Kolkata**. Thus **Kolkata-Haora** forms the *nucleus* of this region.
- ✓ It is very **well- connected by the Ganga and its tributaries with the rich hinterland of Ganga-Brahmaputra plains. Besides navigable rivers, roads and the railways provided subsequent links to the great benefit of Kolkata port.**

2. The Hugli Industrial Region...

- The discovery of **coal and iron ore** in **Chotanagpur plateau**, **tea plantations** in **Assam and northern parts of West Bengal** and the **processing of deltaic Bengal's jute** led to the industrial development in this region.
- **Cheap labour** could be found easily from the **thickly populated states of Odisha, Bihar, Jharkhand and eastern part of U.P.**
- **Kolkata**, having been designated capital city of the British India (1773-1912) attracted **large scale British investment of capital**.
- Establishment of **first jute mill at Rishra in 1855** ushered in the era of modem industrial clustering in this region.
- A **chain of jute mills** and other factories could be established on either side of Hugli River with the help of **Damodar valley coal**.
- **The port site was best-suited for export of raw materials to England and import of finished goods from that country.**

2. The Hugli Industrial Region...

- ✓ Kolkata's industries have established by drawing in the raw materials from adjoining regions and distributing the finished goods to consuming points. Thus, the **role of transport and communication network** has been as important as the favorable locational factors in the growth of this region.
- ✓ By 1921, Kolkata-Hugli region was responsible for two-thirds of factory employment in India.
- ✓ **Just after the partition of old Bengal province in 1947**, the region faced, for some years, the problem of shortage of jute as **most of the jute-growing areas went to East Pakistan** (now Bangladesh).

The problem was solved by gradually increasing home production of jute.

Cotton textile industry also grew along with jute industry.

- ✓ **Paper, engineering, textile machinery, electrical, chemical, pharmaceuticals, fertilizers and petrochemical industries** have also developed in this region. Factory of the Hindustan Motors Limited at Konanagar and diesel engine factory at Chittaranjan are landmarks of this region.
- ✓ Location of **petroleum refinery at Haldia** has facilitated the development of a variety of industries.

2. The Hugli Industrial Region...

- Major Centres: **Kolkata, Haora, Haldia, Serampur, Rishra, Shibpur, Naihati, Kakinara, Shamnagar, Titagarh, Sodepur, Budge Budge, Birlanagar, Bansbaria, Belgurriah, Triveni, Hugli, Belur, etc.**

- Alarming rate of **silting of the Hugli** River was a very serious problem.

  The depth of water in the channel from bay head to Kolkata docks must be kept at 9.2 metres for big ocean ships to come in. Dredging out of the silt rapidly filling up the water channel was very costly and not a permanent solution to save the life of Kolkata port.

- The industrial growth of this region has slowed down as compared to the other regions. There are several reasons for this sluggish growth **but decline in jute industry is said to be one of the main reasons.**

3. Bangalore-Tamil Nadu Industrial Region:

- ✓ Spread in two states of **Karnataka** and **Tamil Nadu**, this region experienced the fastest industrial growth in the *post-independence era.*
- ✓ This region is a **cotton-growing tract** and is dominated by the **cotton-textile industry** (**availability of Black soil**)
- ✓ Other industries:

Silk-manufacturing Units,

Sugar Mills,

Leather Industry,

Chemicals,

Rail Wagons,

Diesel Engines,

Radio,

Light Engineering Goods,

Rubber Goods

Medicines,

Aluminium

Cement

Glass

Paper

Cigarette, Match Box And Machine Tools, etc.


ARABIAN SEA
BENGAL
VISHAKHAPATNAM
GUNTUR
HYDERABAD
BANGALORE
TAMILNADU
KOLLAM
THIRUVANANTHAPURAM
SRI LANKA
INDIAN OCEAN
8
5
6
7
MINOR INDUSTRIAL REGIONS
1 AMBALA - AMRITSAR
2 SAHARANPUR - MUZAFFARNAGAR
3 INDORE - DEWAS - UJJAIN
4 JAIPUR - AJMER
5 KOLHAPUR - SOUTH KANNADA
6 NORTHERN MALABAR
7 MIDDLE MALABAR
8 ADILABAD - NIZAMABAD
9 ALLAHABAD - VARANASI - MIRZAPUR
10 BHOJPUR - MUNGER
11 DURG - RAIPUR
12 BILASPUR - KORBA
13 BRAHMAPUTRA VALLEY
MAJOR INDUSTRIAL REGION
MINOR INDUSTRIAL REGION
INDUSTRIAL DISTRICT
KILOMETRES
100 0 100 200 300 400 500
72° 76° 80° 84° 88° 92°

3. Bangalore-Tamil Nadu Industrial Region...

- ✓ This region is **away from the main coal-producing areas** of the country
- ✓ But **cheap hydroelectric power** is **available** from **Mettur, Sivasamudram, Papanasam, Pykara and Sharavati** dams.
- ✓ **Cheap skilled labour**
- ✓ **Proximity to vast local market**
- ✓ **Good climate**

have favored the concentration of industries in this region

3. Bangalore-Tamil Nadu Industrial Region...

✓ Coimbatore

- has grown rapidly mainly owing to its industrial growth based on **Pykara power, local cotton, coffee mills, tanneries, oil presses and cement works.**
- It is known as **Manchester of Tamil Nadu** because of its large-scale **cotton textile** industry.
- The establishment of **public sector units** at Bangaluru like **Hindustan Aeronautics, Hindustan Machine Tools, Indian Telephone Industry and Bharat Electronics etc. has further pushed up the growth of industries in the region.**

3. Bangalore-tamil Nadu Industrial Region...

- ✓ **Madurai**
  - It is known for its **cotton textiles.**
- ✓ **Visvesvarayya Iron and Steel Works** is located at Bhadravati.
- ✓ The other important centres of this region are **Sivakasi, Tiruchirapalli, Madukottai, Mettur, Mysore and Mandya. Petroleum refinery at Chennai and Narimanam and iron and steel plant at Salem are recent developments.**

4. Gujarat Industrial Region:

- The **nucleus of this region** lies between **Ahmedabad and Vadodara** as a result of which it is also known as **Ahmedabad-Vadodara industrial region**.
- However, this region extends up to **Valsad and Surat in the south and Jamnagar in the west.**
- The region corresponds to the **cotton growing tracts of the Gujarat plains**.
- The development of this region is associated with the location of **textile industry since 1860s.**
- **This region became important textile region with the decline of cotton textile industry in Mumbai**.

  Mumbai has the disadvantage of paying double freight charges for first bringing the raw cotton from the peninsular hinterland and then dispatching the finished products to inland consuming points in India.

4. Gujarat Industrial Region...

- ✓ But Ahmedabad is
  - **Nearer to the sources of raw material as well as**
  - **The marketing centres** of the **Ganga and Sutlej plains.**
  - **Availability of cheap land,**
  - **Cheap skilled labour** and
  - other **advantages** helped the **cotton textile industry** to develop.


GURGAON
DELHI
MEERUT
2
BAREILLY
ALIGARH
AGRA
NEPAL
TIBET
BHUTAN
13
LUCKNOW
GORAKHPUR
JALPAIGURI
4
KOTA
GWALIOR
KANPUR
9
10
PURNIA
CHOTA NAGPUR
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11
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HUGLI
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CUTTACK
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4. Gujarat Industrial Region...

- The **discovery and production of oil** at a number of places in the **Gulf of Khambhat area** led to the **establishment of petrochemical industries** around **Ankleshwar**, **Vadodara** and **Jamnagar**.
- **Petroleum refineries** at **Koyali** and **Jamnagar** provide necessary raw materials for the proper growth of petrochemical industries.

4. Gujarat Industrial Region...

✓ The **Kandla port**, provides the basic infrastructure **for imports and exports** and helps in rapid growth of industries in this region.

✓ Major Industries in the Region:

- **Textiles (Cotton, Silk and Synthetic Fibres)**
- **Petrochemical Industries,**
- **Heavy And Basic Chemicals, Dyes,**
- **Pesticides,**
- **Engineering,**
- **Diesel Engines,**
- **Textile Machinery,**
- **Pharmaceuticals,**
- **Dairy Products and**
- **Food Processing**

4. Gujarat Industrial Region...

✓ Main industrial centres:

- Ahmedabad
- Vadodara
- Bharuch
- Koyali
- Anand
- Khera
- Surendranagar
- Surat
- Jamnagar
- Rajkot
- Valsad

5. Chotanagpur Industrial Region:

- ✓ The region is located on the **Chotanagpur plateau** and extends over

  Jharkhand, Northern Orissa and Western part of West Bengal

- ✓ The birth and growth of this region is linked with the discovery of **coal in Damodar Valley** and **iron ore in the Jharkhand-Orissa** mineral belt.

As both are found in close proximity, the region is known as the 'Ruhr of India'.

5. Chotanagpur Industrial Region...

- ✓ Besides raw materials,
  - **Power is available from the dam sites in the Damodar Valley**
  - **Thermal power stations** based on the local coal
  - **Cheap labour** as the region is surrounded by **highly populated states of Jharkhand, Bihar, Orissa and West Bengal**

5. Chotanagpur Industrial Region...

- ✓ The **Kolkata** region provides a **large market for the goods produced**
- ✓ It also provides the **port facility** to the region
- ✓ The region has the advantages for developing **ferrous metal industries**.
  - The Tata Iron and Steel Company at Jamshedpur,
  - Indian Iron Steel Co., at Bumpur-Kulti,
  - Hindustan Steel Limited at Durgapur, Rourkela and Bokaro


GURGAON
DELHI
MEERUT
2
BAREILLY
ALIGARH
AGRA
NEPAL
TIBET
BHUTAN
13
LUCKNOW
GORAKHPUR
JALPAIGURI
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KOTA
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CHOTA NAGPUR
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NAGPUR
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MYANMAR
HUGLI
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CUTTACK
8
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5. Chotanagpur Industrial Region...

✓ Major Industries:

- Heavy Engineering,
- Machine Tools,
- Fertilizers,
- Cement,
- Paper,
- Locomotives
- Heavy Electricals

✓ Major Centres:

- Ranchi,
- Dhanbad,
- Chaibasa,
- Sindri,
- Hazaribagh,
- Jamshedpur,
- Daltonganj,
- Garwa
- Japla

6. Vishakhapatnam-Guntur Industrial Region:

- ✓ This industrial region extends from **Vishakhapatnam district in the north-eastern part of Andhra Pradesh to Kurnool** and **Prakasham districts in the south-east and covers most of the coastal Andhra Pradesh**
- ✓ The industrial development of this region mainly depends upon **Vishakhapatnam** and **Machilipatnam ports**.

MINOR INDUSTRIAL REGIONS

1	AMBALA - AMRITSAR
2	SAHARANPUR - MUZAFFARNAGAR
3	INDORE - DEWAS - UJJAIN
4	JAIPUR - AJMER
5	KOLHAPUR - SOUTH KANNADA
6	NORTHERN MALABAR
7	MIDDLE MALABAR
8	ADILABAD - NIZAMABAD
9	ALLAHABAD - VARANASI - MIRZAPUR
10	BHOJPUR - MUNGER
11	DURG - RAIPUR
12	BILASPUR - KORBA
13	BRAHMAPUTRA VALLEY

6. Vishakhapatnam-Guntur Industrial Region...

- ✓ **Developed agriculture** and **rich mineral resources** in the hinterlands of these ports provide solid base to the industrial growth in this region.
- ✓ **Coal fields of the Godavari basin** are the main source of energy.
- ✓ **Hindustan Shipyard Ltd.** set up at **Vishakhapatnam**, set up in 1941 is the main focus.
- ✓ **Petroleum refinery** at **Vishakhapatnam** facilitated the growth of several **petrochemical industries**.
- ✓ **Recent discovery of natural gas** in **Krishna- Godavari basin** is likely to provide much needed energy and help in accelerated growth of this industrial region

6. Vishakhapatnam-Guntur Industrial Region...

- ✓ **Vishakhapatnam** has the most **modern iron and steel plant** which have the distinction of being the **only plant in India having coastal location.**

  It uses **high quality iron ore** from **Bailadila in Chhattisgarh.**

- ✓ One **lead-zinc smelter** is functioning in **Guntur district.**

6. Vishakhapatnam-Guntur Industrial Region...

- ✓ Major industries:

Sugar, Textiles, Paper, Fertilizers, Cement, Aluminium and Light Engineering

- ✓ Major industrial centres:

Vishakhapatnam, Vijaywada, Vijaynagar, Rajahmundry, Kurnool, Elum and Guntur

7. Gurgaon-Delhi-Meerut Industrial Region:

- ✓ The region is one of the **fastest growing regions** of India
- ✓ It consists of **two industrial belts** adjoining Delhi.
  1. One belt extends over **Agra-Mathura-Meerut** and **Saharanpur in U.P**.
  2. The other between **Faridabad-Gurgaon- Ambala** in **Haryana**

7. Gurgaon-Delhi-Meerut Industrial Region...

- ✓ The region is **located far away from the mineral** and **power** resources, and therefore,

  the industries are light and market oriented

- ✓ The region owes its development and growth to
  - **Hydro-electricity** from **Bhakra-Nangal complex** and
  - **Thermal power** from **Harduaganj, Faridabad and Panipat**

7. Gurgaon-Delhi-Meerut Industrial Region...

- ✓ Major Industries:
  - **Sugar, Agricultural Implements, Vanaspati, Textile, Glass, Chemicals, Engineering, Paper, Electronics and Cycle**
  - **Software industry** is a recent addition
  - **Agra** and its environs have **glass** industry
  - **Mathura** has an **oil refinery** with its **Petro-chemical complex**
  - One **oil refinery** at **Panipat**

7. Gurgaon-Delhi-Meerut Industrial Region...

- ✓ **Gurgaon** has **Maruti car factory**
- ✓ **Faridabad** has a number of **engineering and electronic industries**
- ✓ **Ghaziabad** is a large-centre of **agro-industries**
- ✓ Saharanpur and Yamunanagar have **paper mills**
- ✓ **Modinagar, Sonipat, Panipat** and **Ballabhgarh** are other important industrial nodes of this region

8. Kollam-Thiruvananthapuram Industrial Region:

- ✓ Comparatively small industrial region and spreads over **Thiruvananthapuram, Kollam, Alwaye, Emakulam and Allapuzha districts of South Kerala**
- ✓ The industrial scene is dominated by **agricultural products processing and market oriented light industries**... **WHY???**

because the region is located far away from the mineral belt of the country

8. Kollam-Thiruvananthapuram Industrial Region...

- ✓ **Plantation agriculture** and **hydroelectricity** provide the **industrial base** to this region
- ✓ Main industries:

Textiles, Sugar, Rubber, Match Box, Glass, Chemical Fertilizers, Food And Fish Processing, Paper, Coconut Coir Products, Aluminium and Cement

- ✓ **Oil refinery** set up in 1966 **at Kochi** provides solid base to **petrochemical industries**
- ✓ Important industrial centres:

Kollam, Thiruvananthapuram, Alluva, Kochi, Alappuzha and Punalur

India has 13 minor industrial regions and 15 industrial districts

Minor Industrial Regions

1. Ambala-Amritsar in Haryana-Punjab
2. Saharanpur-Muzaffamagar-Bijnaur in Uttar Pradesh
3. Indore-Dewas-Ujjain in Madhya Pradesh
4. Jaipur-Ajmer in Rajasthan
5. Kolhapur-South Kannada in Maharashtra-Karnataka
6. Northern Malabar in Kerala
7. Middle Malabar in Kerala
8. Adilabad-Nizamabad in Andhra Pradesh
9. Allahabad-Varanasi-Mirzapur in Uttar Pradesh
10. Bhojpur-Munger in Bihar
11. Durg-Raipur in Chhattisgarh
12. Bilaspur-Korba in Chhattisgarh
13. Brahmaputra Valley in Assam

Industrial Districts:

1. Kanpur
2. Hyderabad
3. Agra
4. Nagpur
5. Gwalior
6. Bhopal
7. Lucknow
8. Jalpaiguri
9. Cuttack
10. Gorakhpur
11. Aligarh
12. Kota
13. Pumia
14. Jabalpur
15. Bareilly

Industrial Regions in India

Industrial regions emerge when a number of industries locate close to each other and share the benefits of their closeness. They tend to concentrate on certain locations because of the favourable locational factors. India has several industrial regions like Mumbai- Pune cluster, Bangalore-Tamil Nadu region, Hugli region, Ahmedabad-Baroda region, Chottanagpur industrial belt, Vishakhapatnam-Guntur belt, Gurgaon-Delhi-Meerut region and the Kollam Thiruvanathapuram industrial cluster.

SHAKEEL ANWAR
NOV 28, 2018 18:24 IST

Industrial Regions in India

Industrial regions emerge when a number of industries locate close to each other and share the benefits of their closeness. They tend to concentrate on certain locations because of the favourable locational factors. Several indices are used to identify the clustering of industries, important among them are:

- The number of industrial units
- Number of industrial workers.

Industrial Regions in India

India has several industrial regions like Mumbai- Pune cluster, Bangalore-Tamil Nadu region, Hugli region, Ahmedabad-Baroda region, Chottanagpur industrial belt, Vishakhapatnam-Guntur belt, Gurgaon-Delhi-Meerut region and the Kollam Thiruvanathapuram industrial cluster. The Industrial region are discussed below:

1. Mumbai-Pune Industrial Region

It extends from Mumbai-Thane to Pune and in adjoining districts of Nashik and Solapur. Besides, industrial development has been rapid in Kolaba, Ahmednagar, Satara, Sangli and Jalgaon districts. Development of this region started with the location of cotton textile industry in Mumbai. Mumbai, with cotton hinterland and moist climate favoured the location of cotton textile industry. Hydro-electricity was developed in the Western Ghats region to meet the requirements of this industry. With the development of cotton textile industry, chemical industry also developed. Important industrial centres are Mumbai, Kolaba, Kalyan, Thane, Trombay, Pune, Pimpri, Nashik, Manmad, Solapur, Kolhapur, Ahmednagar, Satara and Sangli.

2. Hugli Industrial Region

It extends from Bansberia in the north to Birlanagar in the south for a distance of about 100 km along the Hugli River. Industries also has developed in Mednipur in the west. Kolkata-Haora from the nucleus of this industrial region. Kolkata emerged as a leading centre of the country. Later, Kolkata was connected with interior parts by railway lines and road routes. Development of tea plantations in Assam and northern hills of West Bengal, the processing of indigo earlier and jute later coupled with the opening of coalfields of the Damodar Valley and iron ore deposits of the Chotanagpur plateau, contributed to the industrial development of the region. Cheap labour available from thickly populated part of Bihar, eastern Uttar Pradesh and Orissa also contributed to its development.

Cotton textile industry also grew along with jute industry, paper, engineering, textile machinery, electrical,

3. Bangalore-Chennai Industrial Region

This region witnessed most rapid industrial growth in post-Independence period. Till 1960, industries were confined to Bangalore, Salem and Madurai districts but now they have spread over all the districts of Tamil Nadu except Viluppuram. Since, this region is away from the coalfields; its development is dependent on the Pykara hydroelectric plant, which was built in 1932. Cotton textile industry was the first to take roots due to the presence of cotton growing areas. Along with cotton mills, loom industry spread very rapidly. Several heavy engineering industries converged at Bangalore. Aircraft (HAL), machine tools, telephone (HTL) and Bharat Electronics are industrial landmarks of this region. Important industries are textiles, rail wagons, diesel engines, radio, light engineering goods, rubber goods, medicines, aluminium, sugar, cement, glass, paper, chemicals, film, cigarette, match box, leather goods, etc. Petroleum refinery at Chennai, iron and steel plant at Salem and fertiliser plants are recent developments.

4. Gujarat Industrial Region

The nucleus of this region lies between Ahmedabad and Vadodara but this region extends upto Valsad and Surat in the south and to Jamnagar in the west. Development of this region is also associated with the location of the cotton textile industry since 1860s. This region became an important textile region with the decline of the cotton textile industry at Mumbai. Located in cotton growing area, this region has double advantage of the proximity of raw materials as well as of market. The discovery of oil fields led to the establishment of petrochemical industries around Ankleshwar, Vadodara and Jamnagar. The port at Kandla helped in the rapid growth of this region. Petroleum refinery at Koyali provided raw materials to a host of petrochemical industries. The industrial structure is now diversified. Besides, textiles (cotton, silk and synthetic fabrics) and petrochemical industries, other industries are heavy and basic chemicals, motor, tractor, diesel engines, textile machinery, engineering, pharmaceuticals, dyes, pesticides, sugar, dairy products and food processing. Recently, largest petroleum refinery has been set up at Jamnagar. Important industrial centres of this region are Ahmedabad, Vadodara, Bharuch, Koyali, Anand, Khera, Surendranagar, Rajkot, Surat, Valsad and Jamnagar.

What is Geographical Indication and how it is different from Trademark?

5. Chotanagpur Region

This region extends over Jharkhand, northern Orissa and western West Bengal and is known for the heavy metallurgical industries. This region owes its development to the discovery of coal in the Damodar Valley and metallic and non-metallic minerals in Jharkhand and northern Orissa. Proximity of coal, iron ore and other minerals facilitated the location of heavy industries in this region. Six large integrated iron and steel plants at Jamshedpur, Burnpur- Kulti, Durgapur, Bokaro and Rourkela are located within this region. To meet the power requirement, thermal and hydroelectric plants have been constructed in the Damodar Valley. Densely populated surrounding regions provide cheap labour and Hugli region provides vast market for its industries. Heavy engineering, machine tools, fertilisers, cement, paper, locomotives and heavy electrical are some of the important industries in this region. Important centres are Ranchi, Dhanbad, Chaibasa, Sindri, Hazaribag, Jamshedpur, Bokaro, Rourkela, Durgapur, Asansol and Dalmianagar.

6. Vishakhapatnam-Guntur Region

This industrial region extends from Vishakhapatnam district to Kurnool and Prakasam districts in the south. Industrial development of this region hinges upon Vishakhapatnam and Machilipatnam ports and developed

aluminium and light engineering are principal industries of this region. Important industrial centres are Vishakhapatnam, Vijayawada, Vijaynagar, Rajahmundry, Guntur, Eluru and Kurnool

7. Gurgaon-Delhi-Meerut Region

This region is located far away from the mineral and power resources, and therefore, the industries are light and market-oriented. Electronics, light engineering and electrical goods are major industries of this region. Besides, there are cotton, woollen and synthetic fabrics, hosiery, sugar, cement, machine tools, tractor, cycle, agricultural implements, chemical and vanaspati industries which have developed on large scale. Software industry is a recent addition. To the south lies the Agra-Mathura industrial area which specialises in glass and leather goods. Mathura with an oil refinery is a petrochemical complex. Among industrial centres, mention is made of Gurgaon, Delhi, Shahdara, Faridabad, Meerut, Modinagar, Ghaziabad, Ambala, Agra and Mathura.

8. Kollam-Tiruvanantapuram Region

This industrial region is spread over Tiruvanantapuram, Kollam, Alwaye, Ernakulam and Alappuzha districts. Plantation agriculture and hydropower provide industrial base to this region. Located far away from the mineral belt of the country, agricultural products processing and market oriented light industries predominate the region. Among them, cotton textile, sugar, rubber, matchbox, glass, chemical fertiliser and fish-based industries are important. Food processing, paper, coconut coir products, aluminium and cement industries are also significant. Important industrial centres are Kollam, Tiruvanantapuram, Alluva, Kocchi, Alappuzha, and Punalur.

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6 Major Industrial Clusters Regions of India

Article shared by : P Tiwari

6 Major industrial clusters regions of India are: 1. Hooghly Industrial Belt 2. Mumbai-Pune Industrial Region 3. Ahmedabad-Vadodara Region 4. Madurai-Coimbatore-Bengaluru Region 5. The Chhotanagpur Plateau Region 6. Agra-Mathura-Meerut-Saharanpur and Faridabad-Gurgaon-Ambala Belts.

1. Hooghly Industrial Belt:

This belt developed around Kolkata as the nucleus. The mouth of River Hooghly presented ideal conditions for development of a port. The Ganga and Brahmaputra linked the belt with rich hinterland.

These links were later supplemented and strengthened by rail and road links.

The following factors helped in industrialisation of this belt:

(i) Kolkata was the British Indian capital from 1773 to 1911. This ensured continuous British capital investment.

(ii) Tea plantations in close proximity in Assam and Bengal, processing of indigo earlier and jute later coupled with the discovery of coal and iron ore in the Chhotanagpur Plateau region contributed to the industrial development of the Hooghly industrial region.

(iii) Cheap labour was easily available from thickly populated and out-migrating states of Bihar, Orissa and eastern Uttar Pradesh.

By 1921, the Hooghly region accounted for two- thirds of the total factory employment in the country. Presently, this region supports a variety of industries which include iron and steel, heavy engineering, rail equipment, transport equipment, chemicals, oil refining, agro-processing, textiles, paper, fertilisers and diverse consumer goods.

The major problems faced by this region, after independence, include the following.

(i) Eighty per cent of the jute hectarage went to Bangladesh, while most of the factories were located on the banks of Hooghly.

(ii) The direct inland link with Assam got broken.

(iii) Silting of Kolkata port is a major problem. The Farakka barrage is expected to help the situation, while the new Haldia port may ease the pressure to some extent.

2. Mumbai-Pune Industrial Region:

In 1774, the British acquired the island of Mumbai as a site to develop a port. In 1853, the 34-km Mumbai- Thane rail ushered in industrialisation. Opening of routes through Bhorghat to Pune and through Thalghat to Nasik extended the region's influence to the hinterland. The opening of the Suez Canal in 1869 established closer links with Europe.

The Mumbai region had a favourable climate for cotton textiles because of the following reasons:

(i) Easy availability of raw cotton from the black soil belt of the Narmada and Tapti;

(ii) Coastal humid climate which was ideal for weaving and spinning;

(iii) Easy availability of hydel power from the Western Ghats;

(iv) Location of the port on the west coast which ensured ready access to western markets; and

(v) Easy import of capital goods through the port.

Thus, this region emerged as the ‘cottonopolis’ of India. With cotton textiles, a chemical industry also developed soon. Today, the belt has extended to Kurla, Jogeshwari, Ghatkopar, Villeparle, Andheri, Kalyan, Pimpri, Pune, Bhandup and Thane. The product range of the industry in the Mumbai-Pune belt includes textiles, chemicals, engineering, electrical, drugs, transport equipment, plastic and synthetic goods, leather goods and ship-building.

The major problems faced by this belt after independence include the following:

(i) Eighty per cent of the irrigated, long staple cotton growing areas went to Pakistan.

(ii) Congestion is a serious problem and reclamation of more land from the sea is not going to be economical.

3. Ahmedabad-Vadodara Region:

This region is characterised by an inland location in the cotton growing Gujarat plains.

The following factors helped the industrialisation of this region:

(i) The decline of cotton textile industry of Mumbai due to high transportation costs of cotton from the peninsular region and easy access of Ahmedabad-Vadodara region to raw cotton worked to the advantage of this belt.

(ii) The petrochemical industry around Vadodara and Ankaleshwar developed after oil was discovered in the Gulf of Cambay.

(iii) Location of Kandla port is an obvious advantage.

(iv) The densely populated northern plains in close proximity provided an easy market.

Now the region has diversified into diesel engines, textiles machinery, pharmaceuticals and food processing.

4. Madurai-Coimbatore-Bengaluru Region:

It is a predominantly cotton and sugarcane growing region, and has developed around silk textiles, sugar, chemicals, machine tools and leather goods industries. The region receives hydel power from the Mettur, Sharavathi, Sivasamudram, Papanasam and Pykara projects. Various public sector enterprises located in this belt include the Hindustan Machine Tbols, the Visveshwaraiya Iron and Steel Works, the Bharat Electronics, BHEL, the Indian Telephone Industry and the Hindustan Aeronautics Limited. The important industrial centres in this belt include Madurai, Sivakasi, Tiruchirappalli, Bengaluru, Madukottai, Mandya, Mettur, Mysore and Coimbatore.

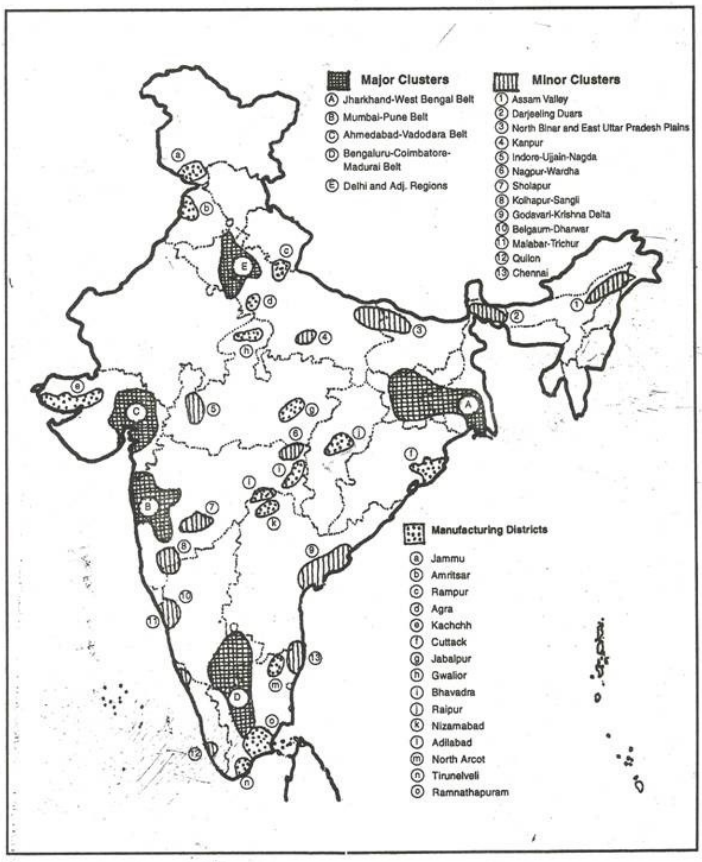

Fig. 16.15 Map showing clustering of industry in India.

5. The Chhotanagpur Plateau Region:

The factors which favoured industrialisation of this region include the following:

(i) Discovery of coal and iron in the Bihar- Orissa belt and location of these resources in close proximity to each other facilitated easy utilisation.

(ii) Easy availability of power from the Damodar Valley Project and from coal-based thermal power projects helped in industrialisation.

(iii) Availability of cheap labour from Bihar, Orissa and eastern Uttar Pradesh was of great advantage.

(iv) Proximity to port and access to large market in the vicinity also worked to the advantage of this belt.

The important nodal centres in the Chhotanagpur region include Ranchi, Dhanbad, Chaibasa, Sindri, Hazaibagh, Jamshedpur, Daltonganj, Garwa and Japla. The important industries in this region include iron and steel, heavy engineering, machine tools, fertilisers, cement, paper, locomotives and heavy electricals.

6. Agra-Mathura-Meerut-Saharanpur and Faridabad-Gurgaon-Ambala Belts:

Both these belts merge in an agglomeration in the vicinity of Delhi. A number of industrial clusters have assumed importance in this belt after independence, helped by hydel power from Bhakra and thermal power from Harduaganj and Faridabad. The majority of industries in this belt are agro-based industries like sugar and textiles.

The important nodal centres and the industries they support are given below:

Agra: glassworks, iron foundries, leather goods;

Mathura: oil refinery, petrochemicals;

Faridabad: engineering, electronics;

Saharanpur, Yamunanagar: paper mills;

Meerut: sugar.

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AUTOMOTIVE

The Great Lakes Economy: Th of North America

Published 3 years ago on August 16, 2017
By **Jeff Desjardins**

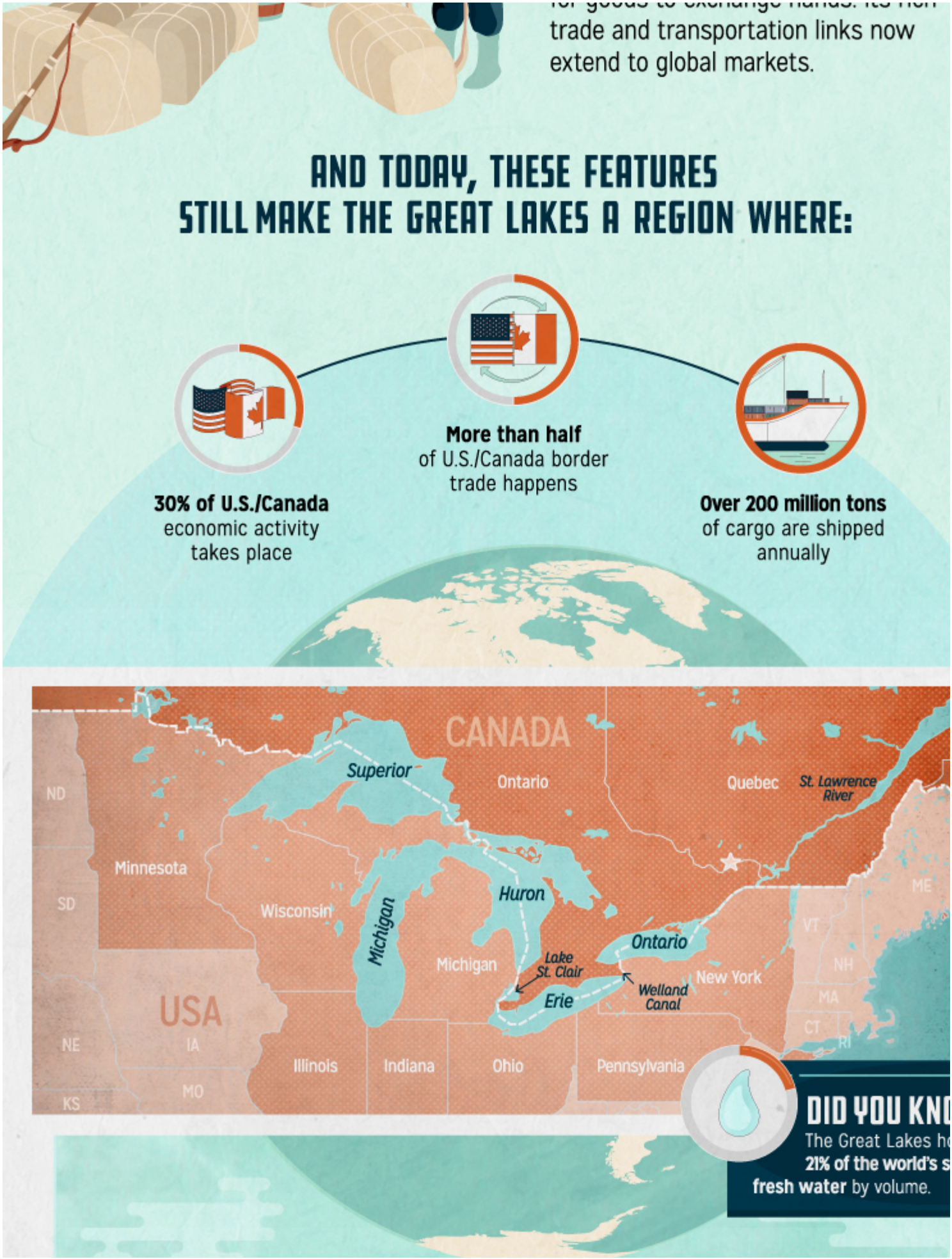
We don't often think about the states and Canadian provinces surrounding the Great Lak own economy – but maybe we should.

After all, the region is tightly integrated in terms of trade. It alone accounts for more thar all U.S./Canadian bilateral border trade and sees over 200 million tons of cargo shipped a If it were its own country, it would have a GDP of US$6 trillion – making it the third bigge economy in the world.

An Economic Powerhouse

Today's infographic comes from the Council of the Great Lakes Region, and it breaks dow massive economic impact and trade partnerships that stem from the region's prolific wa and the people living around them.


GROWTH ENGINE
OF NORTH AMERICA
THE GREAT LAKES REGIO
has always been a center of trade.
From the fur trade of the 17th century
to modern day, the area's waterways
and terrain have made it an easy place
for goods to exchange hands. Its rich


trade and transportation links now extend to global markets.
AND TODAY, THESE FEATURES STILL MAKE THE GREAT LAKES A REGION WHERE:
More than half of U.S./Canada border trade happens
30% of U.S./Canada economic activity takes place
Over 200 million tons of cargo are shipped annually
CANADA
Superior
Ontario
Quebec
St. Lawrence River
ND
Minnesota
SD
Wisconsin
Michigan
Huron
Michigan
Lake St. Clair
Erie
Ontario
Welland Canal
New York
ME
VT
NH
MA
CT
RI
USA
NE
IA
MO
KS
Illinois
Indiana
Ohio
Pennsylvania
DID YOU KNO
The Great Lakes h
21% of the world's s
fresh water by volume.

AN ECONOMIC CENTER

By almost any measure, the Great Lakes region is one of the world's most important economic and population centers.

Population
107 million

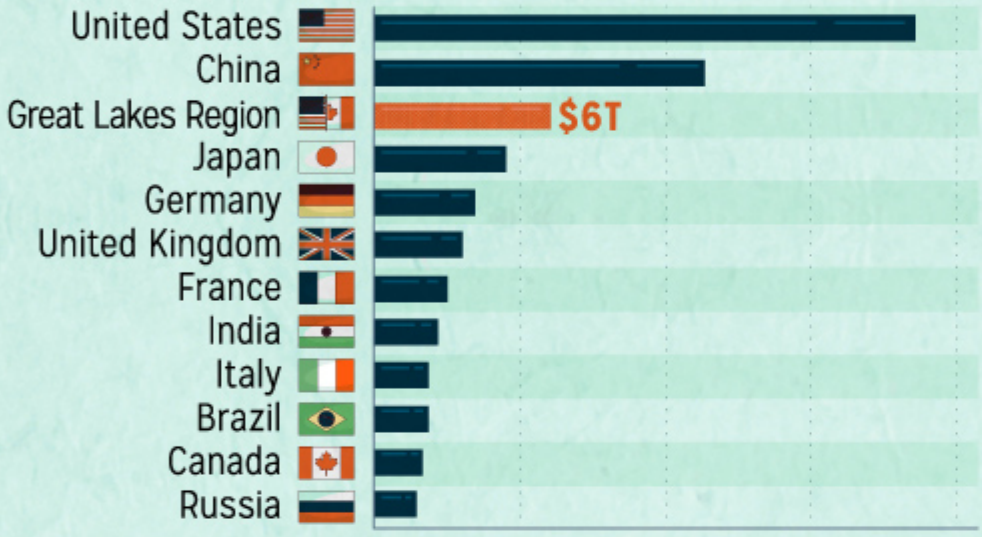
GDP
US$6 trillion

Jobs
51 million

In fact, if it were a country, it would be the **3rd largest in the world** by GDP.

GROSS DOMESTIC PRODUCT

2015 (US$ trillions)



KEY INDUSTRIES in the Great Lakes

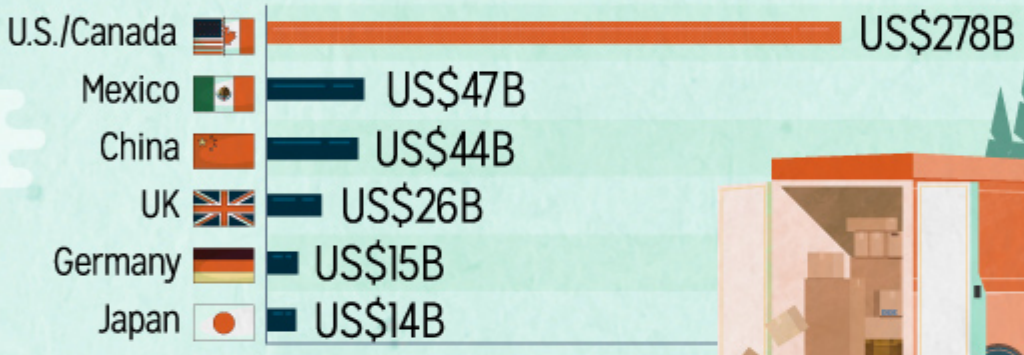
- Manufacturing
- Agriculture
- Mining & Energy
- Tourism
- Shipping & Logistics
- Education and Health
- Finance

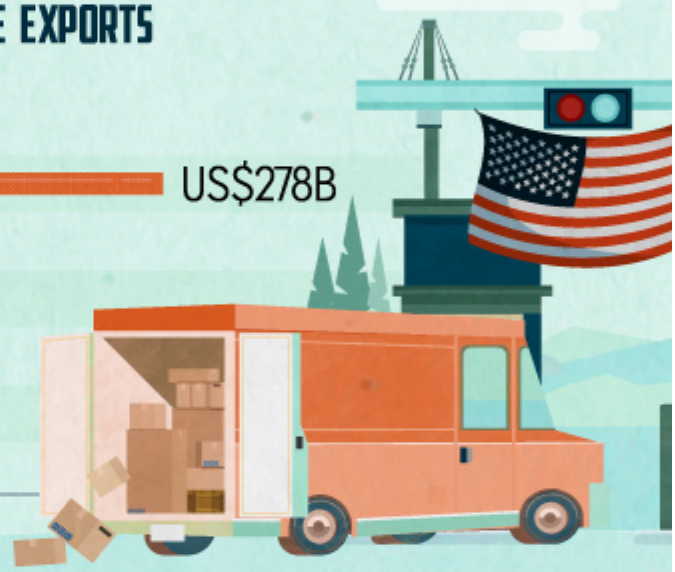
$0 $5 $10 $15 $20

AND DESPITE HAVING A BORDER, THE REGION IS HIGHLY INTEGRATED.

Each year, there is $278 billion in bilateral U.S./Canadian trade in the Great Lakes area – more than the region trades with Mexico, China, UK, Germany, and Japan combined.

TOP DESTINATIONS FOR MERCHANDISE EXPORTS
from the Great Lakes Region 2015

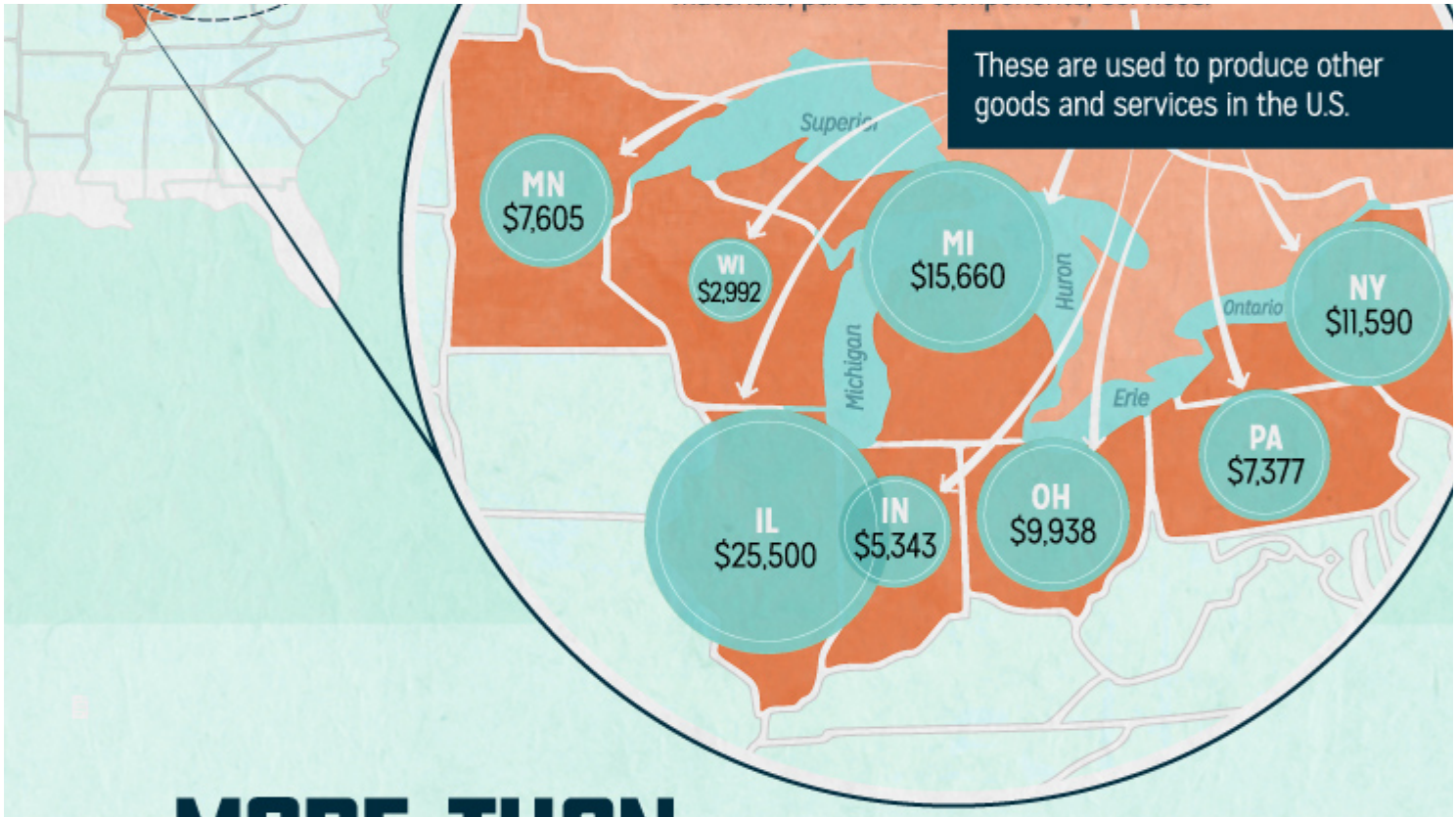




The best international customer of each state in the Great Lakes is Canada – and the U.S. is the top destination for goods from Ontario and Quebec, too.

INTERMEDIATE GOODS IMPORTS
Canada - Millions, US$

About 78% of U.S. imports from Canada are raw materials, parts and components, services.

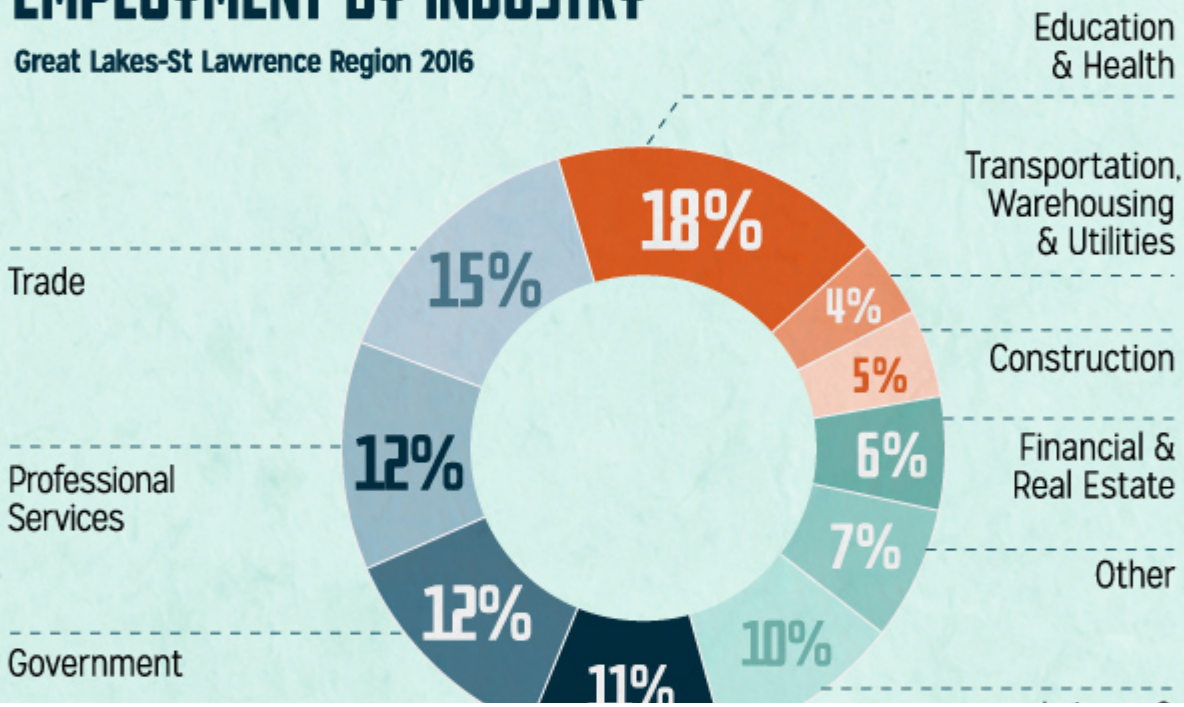


MORE THAN MANUFACTURING

The Great Lakes is known best as the industrial heartland of North America, but the economy in the region is very diverse.

EMPLOYMENT BY INDUSTRY

Great Lakes-St Lawrence Region 2016



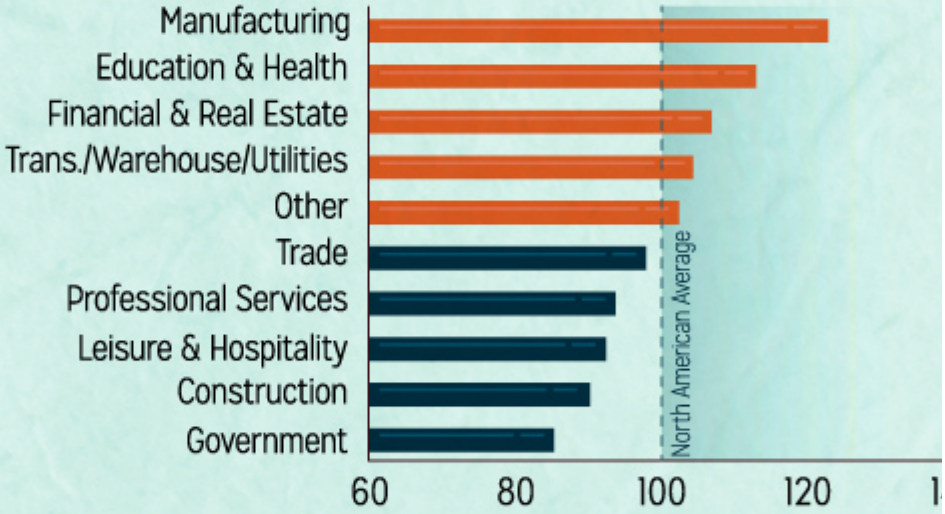
Manufacturing

Leisure & Hospitality

Here's another look, this time comparing Great Lakes jobs to the North American average.

RELATIVE INDUSTRY CONCENTRATION

Great Lakes-St Lawrence Region 2016



INVESTING IN INNOVATION

The Great Lakes region is a hotbed for innovation, with both sides of the border receiving a healthy amount of research and development funding.

The level of R&D funding correlates with the number of domestic patents granted.

RESEARCH & DEVELOPMENT FUNDING

Great Lakes-St Lawrence Region 2014

DOMESTIC PATENTS GRANTED

Great Lakes-St Lawrence Region 2014

U.S.
US$80.2 BILLION
(24% of U.S. total)

Canada
US$19.2 BILLION
(70% of Canada total)

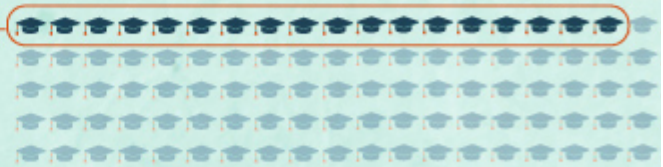
Source: National Science Foundation, StatCan

U.S.
25%*

Canada
68%*

*% of national total
Source: U.S. Patent Office, Canadian Intellectual Property Office

As well, the area is home to some of the world's leading educational institutions. In 2015-16, **18 of the top 100 universities in the world** could be found in the Great Lakes region.

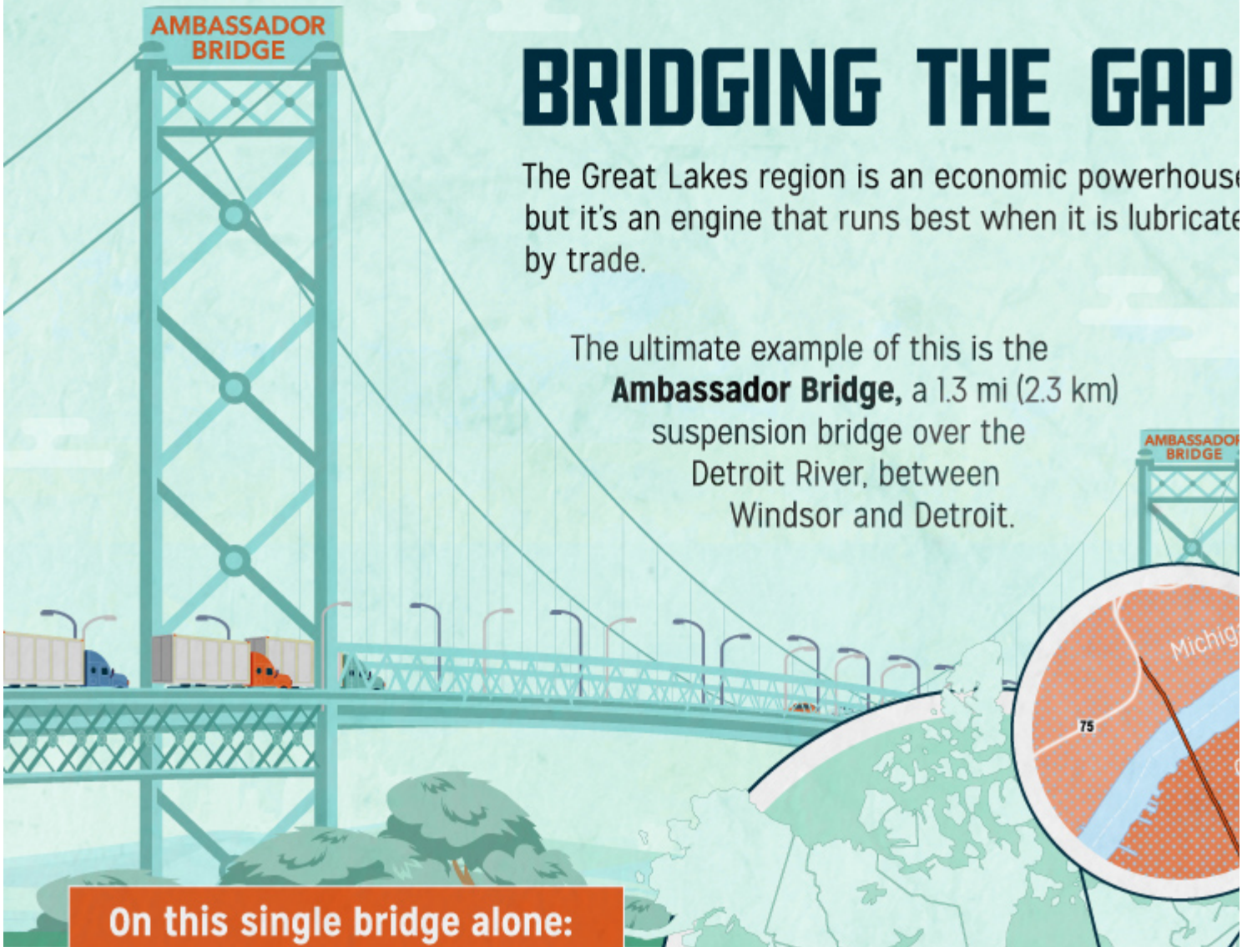


Source: Times Higher Educat

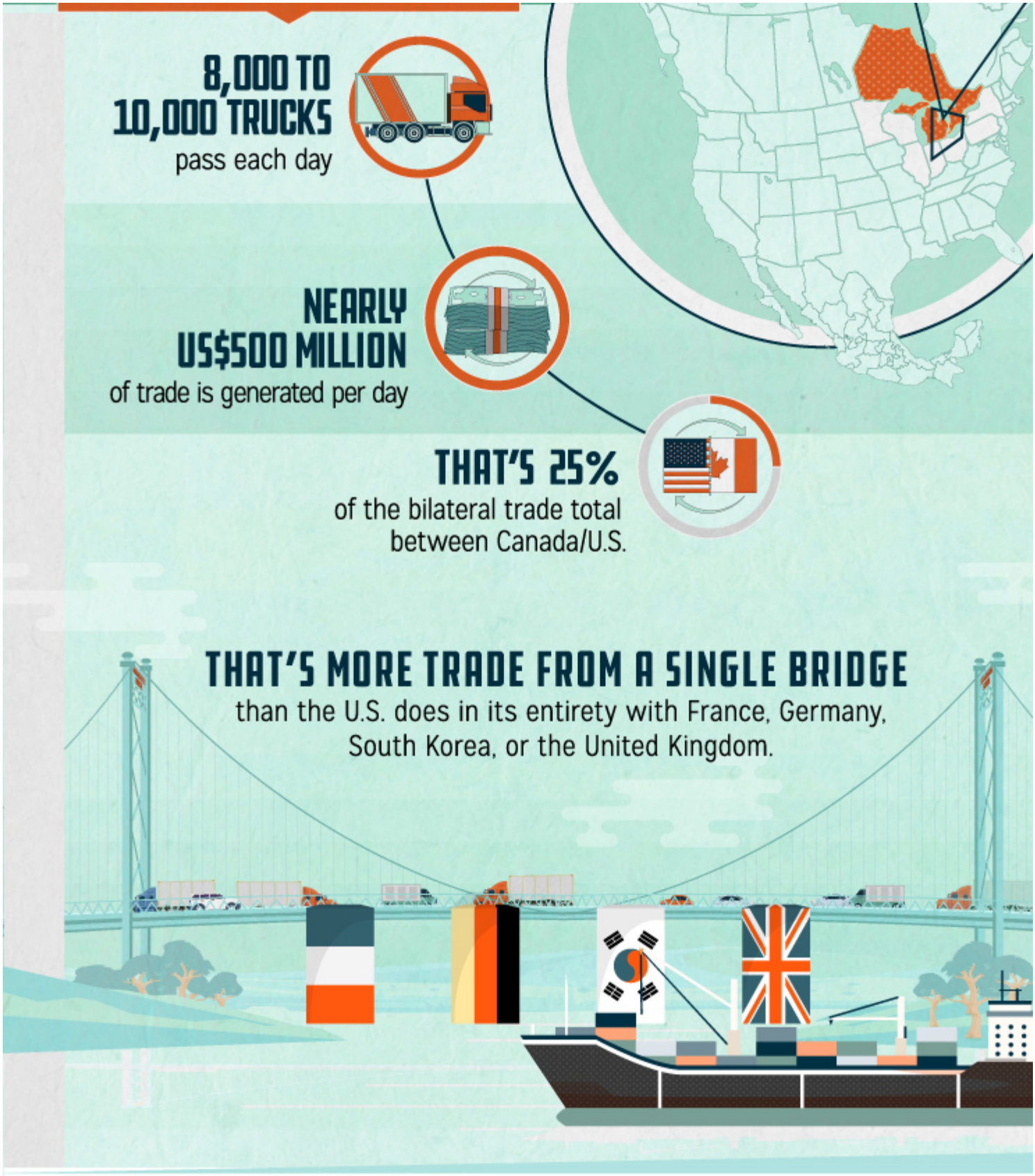
BRIDGING THE GAP

The Great Lakes region is an economic powerhouse but it's an engine that runs best when it is lubricate by trade.

The ultimate example of this is the **Ambassador Bridge,** a 1.3 mi (2.3 km) suspension bridge over the Detroit River, between Windsor and Detroit.



On this single bridge alone:



C G L R
COUNCIL OF THE GREAT LAKES REGION

GREAT LAKES ECONOMIC FORUM
MONTREAL | 2018
GREATLAKESECONOMICFORUM.COM

The Great Lakes Region has always been a center of trade. From the fur trade of the 17th to modern day, the area's navigable terrain, waterways, and ports have made it an easy p goods to exchange hands.

Overview: The Great Lakes Economy

The Great Lakes Region includes eight states (Minnesota, Wisconsin, Illinois, Indiana, Mi New York, Ohio, and Pennsylvania) and two Canadian provinces (Ontario and Quebec) th surround the five interconnected freshwater bodies known as the Great Lakes. The area to 107 million people, 51 million jobs, and a GDP of US$6 trillion – making the Great Lake Economy a powerhouse on an international level.

In particular, the region is well-known globally for its manufacturing prowess. It's home automobile and aerospace giants like Ford, GM, Chrysler, Bombardier, GE Aviation, and I International, and also many other diverse industries. Education and health, shipping an logistics, agriculture, mining and energy, tourism, and finance are some of the other maj industries that generate business for the region.

And despite having a border, the Great Lakes Economy is highly integrated. Each year, th $278 billion in bilateral U.S.-Canadian trade in the Great Lakes area – more than the enti trades with countries like Mexico, China, UK, Germany and Japan combined.

Cross-Border Customers

The relationship between U.S. states and Canadian provinces in the Great Lakes Region i and relies on goods flowing both ways.

For U.S. companies in the region, 78% of the imports they bring in from Canada are "inte goods", which are raw materials, parts and components, and services that are used to pr other goods and services in the United States.

Here's a breakdown of Canadian intermediate goods bought by U.S. states:

Rank	State	Canadian imports (Intermediate Goods, $USD)
#1	Illinois	$25.5 billion
#2	Michigan	$15.7 billion
#3	New York	$11.6 billion
#4	Ohio	$9.9 billion
#5	Minnesota	$7.6 billion
#6	Pennsylvania	$7.4 billion
#7	Indiana	$5.3 billion
#8	Wisconsin	$3.0 billion
	Total	$86.0 billion

Going the other way, Canadians buy billions of dollars worth of goods from the Great Lak as well.

In fact, Canada is actually the biggest international customer for each state in the region something we've previously shown in our USA/Canada trade infographic as well.

Bridge Over Troubled Water

Although rhetoric against the U.S./Canadian trade relationship has ramped up in the rece months, there is still one enduring symbol that exemplifies the intimate trade relationsh two countries in the Great Lakes Economy: the Ambassador Bridge between Detroit, Mic and Windsor, Ontario.

Each day, over this one 1.3 mi (2.3 km) suspension bridge alone, close to 10,000 trucks pa generate close to US$500 million of international trade between the two nations.

That's equal to 25% of all bilateral trade between Canada and the U.S. Amazingly, more b trade happens over this single bridge than the U.S. does in its entirety with France, Germ South Korea, or the United Kingdom.

RELATED TOPICS: #AMBASSADOR BRIDGE #BILATERAL TRADE #CANADA #ECONOMY #GREAT LAKES #INDU #MANUFACTURING #TRADE #UNITED STATES

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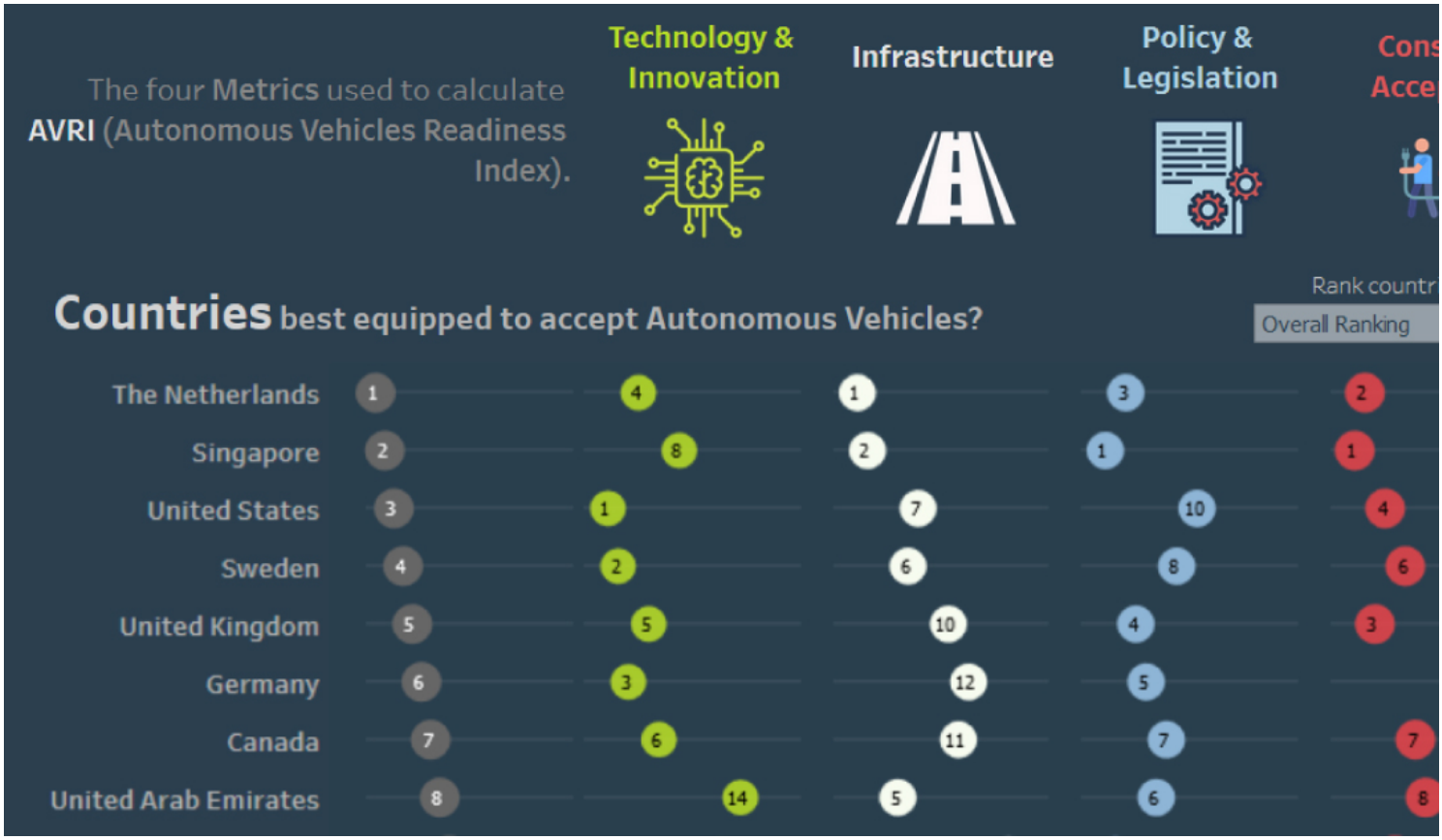
COMMENTS

AUTOMATION

Ranked: The Autonomous Vehicle Readiness of 20 Countries

This interactive visual shows the countries best prepared for the shift to autonom vehicles, as well as the associated societal and economic impacts.

Published 8 months ago on August 27, 2019
By **Katie Jones**



For the past decade, manufacturers and governments all over the world have been preparing for the adoption of self-driving cars—with the promise of transformative economic development.

As autonomous vehicles become more of a looming certainty, what will be the wide impacts of this monumental transition?

Which Countries are Ready?

Today's interactive visual from Aquinov Mathappan ranks countries on their

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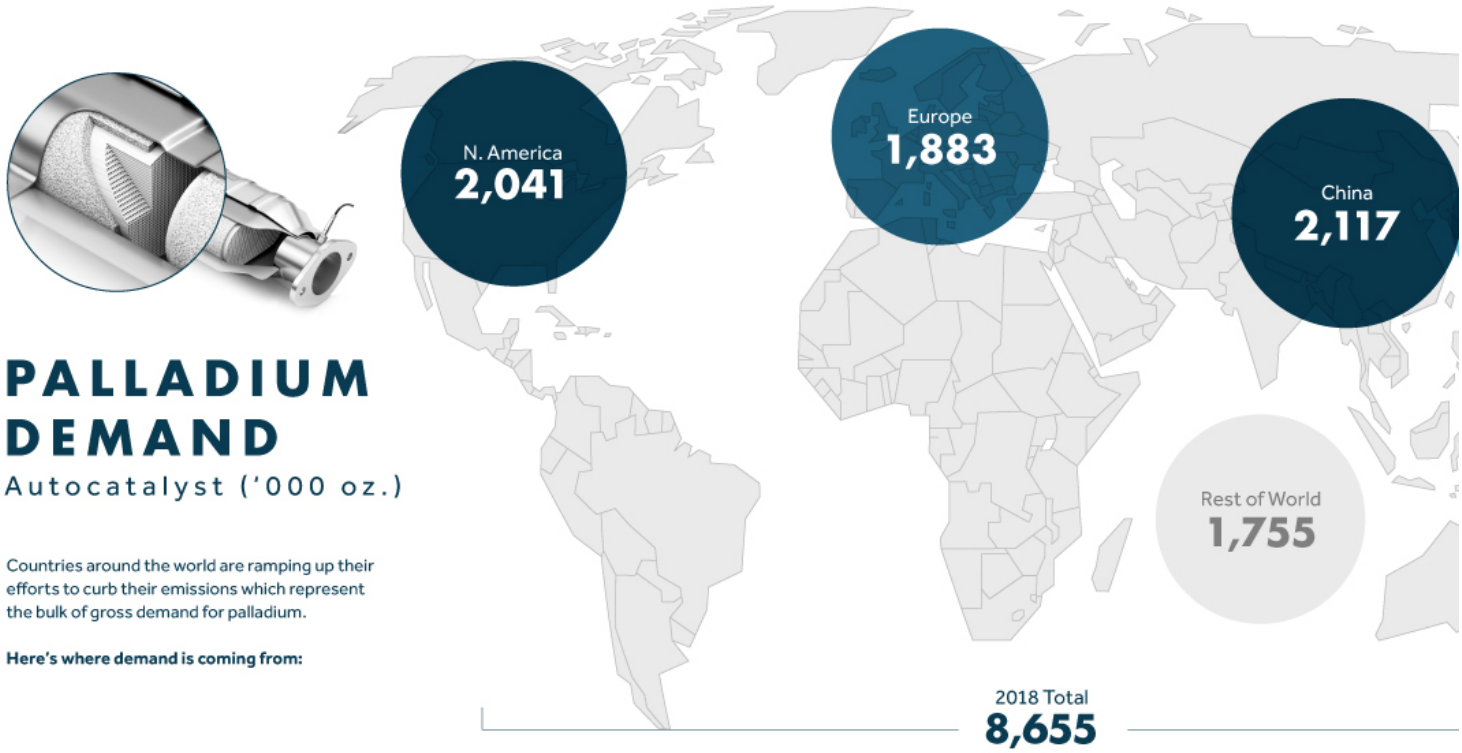
AUTOMOTIVE

Palladium: The Secret Weapon in Fighting Pollution

The world is in critical need of palladium. It's a crucial metal in reducing emissio gas-powered vehicles, and our secret weapon for cleaner air.

Published 8 months ago on August 20, 2019
By **Nicholas LePan**



Despite the growing hype around electric vehicles, conventional gas-powered vehic are expected to be on the road well into the future.

As a result, exhaust systems will continue to be a critical tool in reducing harmful ai pollution.

The Power of Palladium

Today's infographic comes to us from North American Palladium, and it demonstrat the unique properties of the precious metal, and how it's used in catalytic converter

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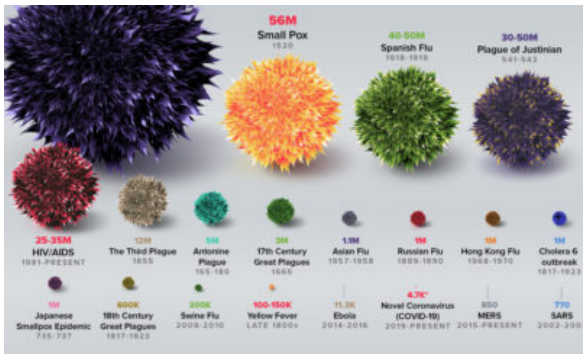

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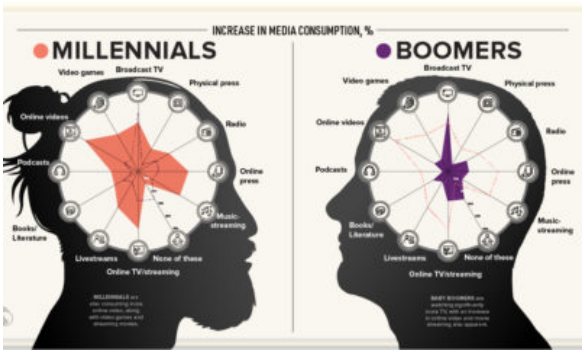

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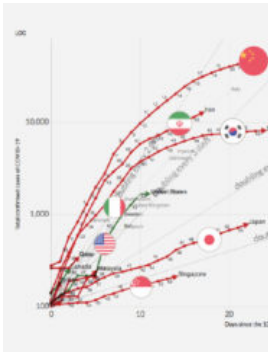

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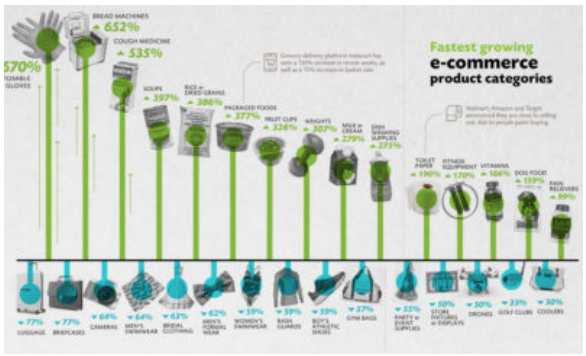

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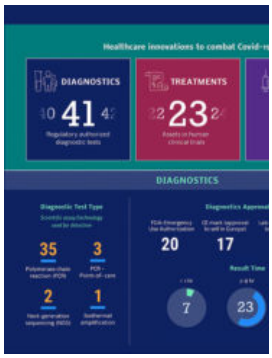

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Every Vaccine anc Development for