

Knowledge-based clusters of U.S. and Canadian metropolitan areas

In today's economy, a highly educated population is a key to growth and prosperity. Policymakers at all levels of government are keen on increasing the educational attainment of residents residing in their regions. Economic analysts often use differences in the share of the population with a college degree to rank places according to the amount of human capital that is available in the workforce.

Recent approaches to economic analysis provide a richer view of a region's stock of human capital; one that goes beyond simply counting up the number of people with a college degree. By focusing on the types of skills and knowledge that are important to job performance, regional occupation data can be used to identify places with high knowledge about subjects such as administration and management, engineering and technology, production and processing, and therapy and counseling.

In a recent study, titled "Knowledge in Cities," we report new information on the knowledge economies of U.S. and Canadian metropolitan areas and discuss how a region's knowledge profile is a key predictor of productivity and earnings. Using data on the occupations present in a region, we identify eleven groups of regions with similar knowledge traits. Every metropolitan region in the U.S. and Canada falls into exactly one of these groups. Examples of these knowledge-based metropolitan area clusters include Innovating Regions that describe places such as Boston, Ottawa and San Francisco; and Enterprising Regions that characterize Chicago, Los Angeles, Montreal and Toronto.

Exhibit 1 provides a brief description of all eleven knowledge-based clusters along with a few examples of U.S. and Canadian metropolitan areas that make up these groups. For instance, Engineering Regions tend to have very high knowledge about engineering, IT and commerce, and low knowledge about physical and mental health. On the other hand, Comforting Regions generally have comparatively high knowledge about mental health, and low knowledge about engineering and production.

These clusters can be used to examine differences in measures of economic development across regions. As shown in **Exhibit 2**, Engineering and Innovating Regions have the highest average values of GDP per capita among the eleven knowledge-based clusters. In addition, U.S. and Canadian metropolitan areas in the Enterprising, Understanding and Thinking Regions have productivity levels that tend to exceed the national average.

The knowledge-based clusters are particularly useful when comparing indicators of regional economic development across places with similar amounts of college attainment. Farming, Making, Building and Working Regions tend to have relatively low levels of formal education;

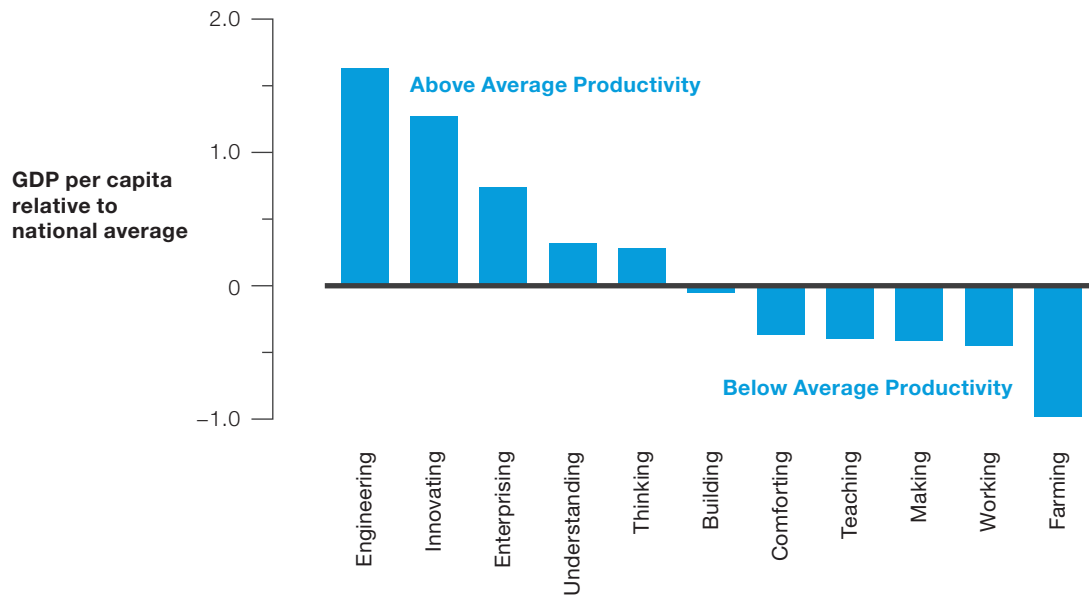
however, of these four clusters, Building Regions—places with strong connections to tourism, transportation and energy—have the highest levels of productivity. At the top end of the college attainment scale, the groups of Engineering and Enterprising Regions have relatively robust productivity, while Teaching and Understanding Regions lag behind other clusters with high amounts of formal education.

Policymakers and regional analysts can use these knowledge-based clusters to organize metropolitan areas based on the economic identity of regions and the types of cognitive skills available in the workforce. In addition, this framework can be used to identify “peer groups” with similar knowledge profiles for the purposes of regional benchmarking or examining the types of government programs and infrastructure available to support closely-related economic activities.

Knowledge-based metropolitan area clusters

Exhibit 1

CLUSTER TITLE	CLUSTER DESCRIPTION	SELECTED METROPOLITAN AREAS
Comforting Regions	High knowledge about mental health; low knowledge about engineering and production.	Asheville, NC; Memphis, TN; Quebec City, QC; Winnipeg, MB
Working Regions	Low knowledge about IT and commerce.	Akron, OH; Guelph, ON; Rochester, NY; Saskatoon, SK
Thinking Regions	High knowledge about arts, humanities, IT and commerce; low knowledge about manufacturing.	New York, NY; Portland, ME; Regina, SK; Victoria, BC
Building Regions	Very high knowledge about construction and transportation.	Edmonton, AB; Houston, TX; Myrtle Beach, SC; Saint John, NB
Innovating Regions	Very high knowledge about IT, arts, commerce and engineering; low knowledge about manufacturing.	Austin, TX; Ottawa, ON; Seattle, WA; Washington, DC
Making Regions	Very high knowledge about manufacturing; very low knowledge about commerce and humanities.	Detroit, MI; Kitchener, ON; Racine, WI; Windsor, ON
Teaching Regions	Very high knowledge about the humanities and science; very low knowledge about manufacturing.	Athens, GA; Columbia, MO; Kingston, ON; State College, PA
Enterprising Regions	High knowledge about commerce and IT.	Chicago, IL; Orlando, FL; Toronto, ON; Vancouver, BC
Farming Regions	Very high knowledge about food production and manufacturing; very low knowledge about arts and humanities.	Abbotsford, BC; Bakersfield, CA; Richland, WA; Yuma, AZ
Understanding Regions	Very high knowledge about arts, sciences, humanities and IT; very low knowledge about manufacturing.	Charlottesville, VA; Gainesville, FL; Iowa City, IA; Rochester, MN
Engineering Regions	Very high knowledge about engineering, IT and commerce; low knowledge about physical and mental health.	Calgary, AB; Huntsville, AL; Melbourne, FL; San Jose, CA



The [Martin Prosperity Institute](#) at the [University of Toronto's Rotman School of Management](#) is the world's leading think-tank on the role of sub-national factors—location, place and city-regions—in global economic prosperity. Led by Director [Richard Florida](#), we take an integrated view of prosperity, looking beyond economic measures to include the importance of quality of place and the development of people's creative potential.

COMFORTING REGIONS

Abilene, TX	Moncton, NB
Alexandria, LA	Monroe, LA
Amarillo, TX	Pueblo, CO
Asheville, NC	Quebec City, QC
Atlantic City, NJ	Savannah, GA
Buffalo-Niagara Falls, NY	Sioux Falls, SD
Chico, CA	Shreveport, LA
Columbus, GA/AL	Spokane, WA
El Paso, TX	Springfield-Holyoke-Chicopee, MA
Fayetteville, NC	Syracuse, NY
Hattiesburg, MS	Topeka, KS
Las Vegas, NV	Utica-Rome, NY
Lincoln, NE	Waco, TX
Lubbock, TX	Winnipeg, MB
Memphis, TN/AR/MS	

WORKING REGIONS

Akron, OH	Laredo, TX
Albany, GA	London, ON
Allentown-Bethlehem-Easton, PA/NJ	McAllen-Edinburg-Pharr-Mission, TX
Altoona, PA	Medford, OR
Augusta-Aiken GA-SC	Muncie, IN
Bellingham, WA	Peterborough, ON
Billings, MT	Providence-New Bedford-Fall River, RI-MA
Binghamton, NY	Rochester, NY
Brownsville-Harlingen-San Benito, TX	Saskatoon, SK
Dayton-Springfield, OH	Scranton-Wilkes-Barre, PA
Duluth-Superior, MN/WI	Sherbrooke, QC
Eugene-Springfield, OR	Sioux City, IA/NE
Fresno, CA	South Bend-Mishawaka, IN
Glens Falls, NY	Springfield, MO
Goldsboro, NC	Sudbury, ON
Greensboro-Winston Salem-High Point NC	Texarkana, TX/AR
Guelph, ON	Thunder Bay, ON
Hamilton, ON	Trois-Rivieres, QC
Harrisburg-Lebanon-Carlisle, PA	Tucaloosa, AL
Jackson, TN	Tyler, TX
Johnson City-Kingsport-Bristol, TN/VA	Vineland-Milville-Bridgetown, NJ
Johnstown, PA	Waterloo-Cedar Falls, IA
Lafayette-W. Lafayette, IN	Wichita Falls, TX
Lansing-E. Lansing, MI	Wichita, KS

THINKING REGIONS

Albany-Schenectady-Troy, NY	Philadelphia, PA/NJ
Albuquerque, NM	Portland, ME
Barnstable-Yarmouth, MA	Redding, CA
Baton Rouge, LA	Regina, SK
Bridgeport-Stamford-Norwalk, CT	Salinas-Sea Side-Monterey, CA
Charleston-N. Charleston, SC	San Antonio, TX
Columbia, SC	San Diego, CA
Halifax, NS	San Luis Obispo-Atascad-P Robles, CA
Honolulu, HI	Santa Barbara-Santa Maria-Lompoc, CA
Jackson, MS	Santa Cruz, CA
Knoxville, TN	Santa Rosa-Petaluma, CA
Las Cruces, NM	St. Johns, NL
Little Rock—North Little Rock, AR	Tucson, AZ

New Haven-Meriden, CT
New Orleans, LA
New York-Northeastern NJ
Olympia, WA

Victoria, BC
Wilmington, NC
Worcester, MA

Building Regions

Anchorage, AK
Barrie, ON
Beaumont-Port Arthur, Orange, TX
Biloxi-Gulfport, MS
Bremerton, WA
Clarksville-Hopkinsville, TN/KY
Corpus Christi, TX
Dothan, AL
Dover, DE
Edmonton, AB
Fayetteville-Springdale, AR
Fort Myers-Cape Coral, FL
Fort Walton Beach, FL
Grand Junction, CO
Hagerstown, MD
Houston-Brazoria, TX
Jacksonville, NC
Kelowna, BC

Kileen-Temple, TX
Lafayette, LA
Lake Charles, LA
Lakeland-Winterhaven, FL
Macon-Warner Robins, GA
Mobile, AL
Myrtle Beach, SC
Naples, FL
Norfolk-Virginia Beach-Newport News, VA
Ocala, FL
Odessa, TX
Oshawa, ON
Panama City, FL
Pensacola, FL
Punta Gorda, FL
Reno, NY
Riverside-San Bernardino, CA
Saint John, NB

INNOVATING REGIONS

Ann Arbor, MI
Austin, TX
Boston, MA-NH
Colorado Springs, CO
Fort Collins-Loveland, CO
Madison, WI
Ottawa-Gatineau, ON

Raleigh-Durham, NC
San Francisco-Oakland-Vallejo, CA
Santa Fe, NM
Seattle-Everett, WA
Tallahassee, FL
Trenton, NJ
Washington, DC/MD/VA

MAKING REGIONS

Anniston, AL
Appleton-Oskosh-Neenah, WI
Benton Harbor, MI
Brantford, ON
Canton, OH
Danville, VA
Davenport, IA-Rock Island-Moline, IL
Decatur, AL
Decatur, IL
Detroit, MI
Eau Claire, WI
Elkhart-Goshen, IN
Erie, PA
Evansville, IN/KY
Flint, MI
Florence, AL
Fort Wayne, IN
Gadsden, AL
Grand Rapids, MI
Green Bay, WI
Greenville-Spartanburg-Anderson, SC
Hickory-Morgantown, NC
Jackson, MI
Janesville-Beloit, WI
Joplin, MO

Kokomo, IN
Lancaster, PA
Lima, OH
Longview-Marshall, TX
Lynchburg, VA
Mansfield, OH
Modesto, CA
Peoria, IL
Racine, WI
Reading, PA
Rockford, IL
Rocky Mount, NC
Saginaw-Bay City-Midland, MI
Salem, OR
Sheboygan, WI
St. Catharines, ON
St. Cloud, MN
St. Joseph, MO
Stockton, CA
Sumter, SC
Terre Haute, IN
Toledo, OH/MI
Wausau, WI
Williamsport, PA
Windsor, ON

Kalamazoo-Portage, MI
Kankakee, IL
Kitchener, ON

York, PA
Youngstown-Warren, OH-PA
Yuba City, CA

TEACHING REGIONS

Athens, GA
Auburn-Opekika, AL
Bloomington, IN
Bryan-College Station, TX
Champaign-Urbana-Rantoul, IL
Columbia

Greenville, NC
Kingston, ON
Lexington-Fayette, KY
Springfield, IL
State College, PA

ENTERPRISING REGIONS

Atlanta, GA
Birmingham, AL
Bloomington-Normal, IL
Boise City, ID
Charlotte-Gastonia-Rock Hill, NC-SC
Chattanooga, TN/GA
Chicago, IL
Cincinnati-Hamilton, OH/KY/IN
Cleveland, OH
Columbus, OH
Dallas-Fort Worth, TX
Daytona Beach, FL
Denver-Boulder, CO
Des Moines, IA
 Fargo-Morehead, ND/MN
Hartford-Bristol-Middleton- New Britain, CT
Indianapolis, IN
Jacksonville, FL
Kansas City, MO-KS
Los Angeles-Long Beach, CA
Louisville, KY/IN
Manchester-Nashua, NH
Miami-Hialeah, FL

Milwaukee, WI
Minneapolis-St. Paul, MN
Montgomery, AL
Montreal, QC
Nashville, TN
Oklahoma City, OK
Omaha, NE/IA
Orlando, FL
Phoenix, AZ
Portland, OR-WA
Provo-Orem, UT
Richmond-Petersburg, VA
Roanoke, VA
Sacramento, CA
Salt Lake City-Ogden, UT
Sarasota, FL
St. Louis, MO-IL
Tampa-St. Petersburg-Clearwater, FL
Toronto, ON
Tulsa, OK
Vancouver, BC
Ventura-Oxnard-Simi Valley, CA

FARMING REGIONS

Abbotsford, BC
Bakersfield, CA
Houma-Thibodoux, LA
Merced, CA

Richland-Kennewick-Pasco, WA
Yakima, WA
Yuma, AZ

UNDERSTANDING REGIONS

Charlottesville, VA
Gainesville, FL

Iowa City, IA
Rochester, MN

ENGINEERING REGIONS

Calgary, AB
Huntsville, AL

Melbourne-Titusville-Cocoa-Palm Bay, FL
San Jose, CA