

From Data To Decision Making Tools: Where Design Meets Big Data

Alexander Simoes
Co-founder Datawheel, LLC

ColombiaMar 2015

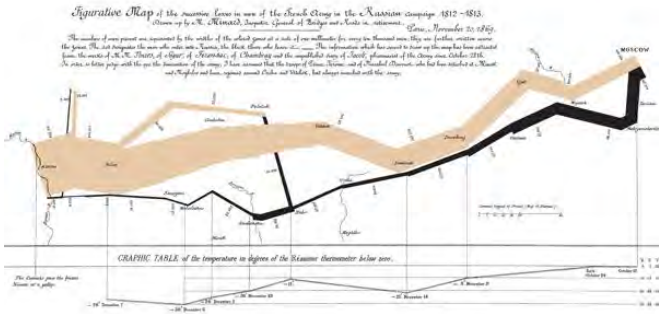
Prologue

The Problem...

DATE 1907	PARTICULARS	DR.	CR.	DR OR CR	BALANCE	DATE 1907	PARTICULARS	DR.	CR.	DR OR CR	BALANCE
Feb 23	Balance		41.52		41.52	Feb 23	Balance		20.97		20.97
March 11			25.65		116.37	March 11		16.02			
19		5.00				19		5.00			
		13.25						5.00			
23	July	56				23	July	72			
23		16.00				23		72			
24		17.75				24		2.95			
		16.85				Nov 29			25.00		
		6.00				Dec 3			100.00		
April 1		16.00						25.00			
12		17.00				8		10.00			
16			150.00			12		17.00			
19		128.80						43.00			
25		10.00				25			496.08		
28	July	1.00						21.00			
30	July	1.06				21		50.00			
			23.00			21		20.00			
June 7		16.00				27		23.00			
13		20.00						25.00			
24			100.00			June 16					
26	on July	120.12							946.69		
					20.97						965.99

Data

1869



Information Graphic

DATE	PARTICULARS	DR.	CR.	DR.	CR.	BALANCE	DATE	PARTICULARS	DR.	CR.	DR.	CR.	BALANCE
1923	March 11						1923	March 11					
	14	5.00				41.50		14	5.00				41.50
	22	1.00				42.50		22	1.00				42.50
	24	17.75				60.25		24	17.75				60.25
	April 1	6.00				66.25		April 1	6.00				66.25
	12	1.70				67.95		12	1.70				67.95
	14	128.10				196.05		14	128.10				196.05
	25	1.00				197.05		25	1.00				197.05
	28	1.00				198.05		28	1.00				198.05
	30	1.00				199.05		30	1.00				199.05
	June 1					199.05		June 1					199.05
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	24	1.00				202.05		24	1.00				202.05
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	28	1.00				204.05		28	1.00				204.05
	30	1.00				205.05		30	1.00				205.05
	July 1					205.05		July 1					205.05
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	24	1.00				208.05		24	1.00				208.05
	26	1.00				209.05		26	1.00				209.05
	28	1.00				210.05		28	1.00				210.05
	30	1.00				211.05		30	1.00				211.05
	August 1					211.05		August 1					211.05
	13	2.00				213.05		13	2.00				213.05
	24	1.00				214.05		24	1.00				214.05
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	28	1.00				216.05		28	1.00				216.05
	30	1.00				217.05		30	1.00				217.05
	September 1					217.05		September 1					217.05
	13	2.00				219.05		13	2.00				219.05
	24	1.00				220.05		24	1.00				220.05
	26	1.00				221.05		26	1.00				221.05
	28	1.00				222.05		28	1.00				222.05
	30	1.00				223.05		30	1.00				223.05
	October 1					223.05		October 1					223.05
	13	2.00				225.05		13	2.00				225.05
	24	1.00				226.05		24	1.00				226.05
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	28	1.00				228.05		28	1.00				228.05
	30	1.00				229.05		30	1.00				229.05
	November 1					229.05		November 1					229.05
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	September 1					289.05		September 1					289.05
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	28	1.00				294.05		28	1.00				294.05
	30	1.00				295.05		30	1.00				295.05
	October 1					295.05		October 1					295.05
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	28	1.00				300.05		28	1.00				300.05
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	November 1					301.05		November 1					301.05
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	28	1.00				306.05		28	1.00				306.05
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	January 1					313.05		January 1					313.05
	13	2.00				315.05		13	2.00				315.05
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	28	1.00				318.05		28	1.00				318.05
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	February 1					319.05		February 1					319.05
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	26	1.00				323.05		26	1.00				323.05
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	30	1											

But why...?

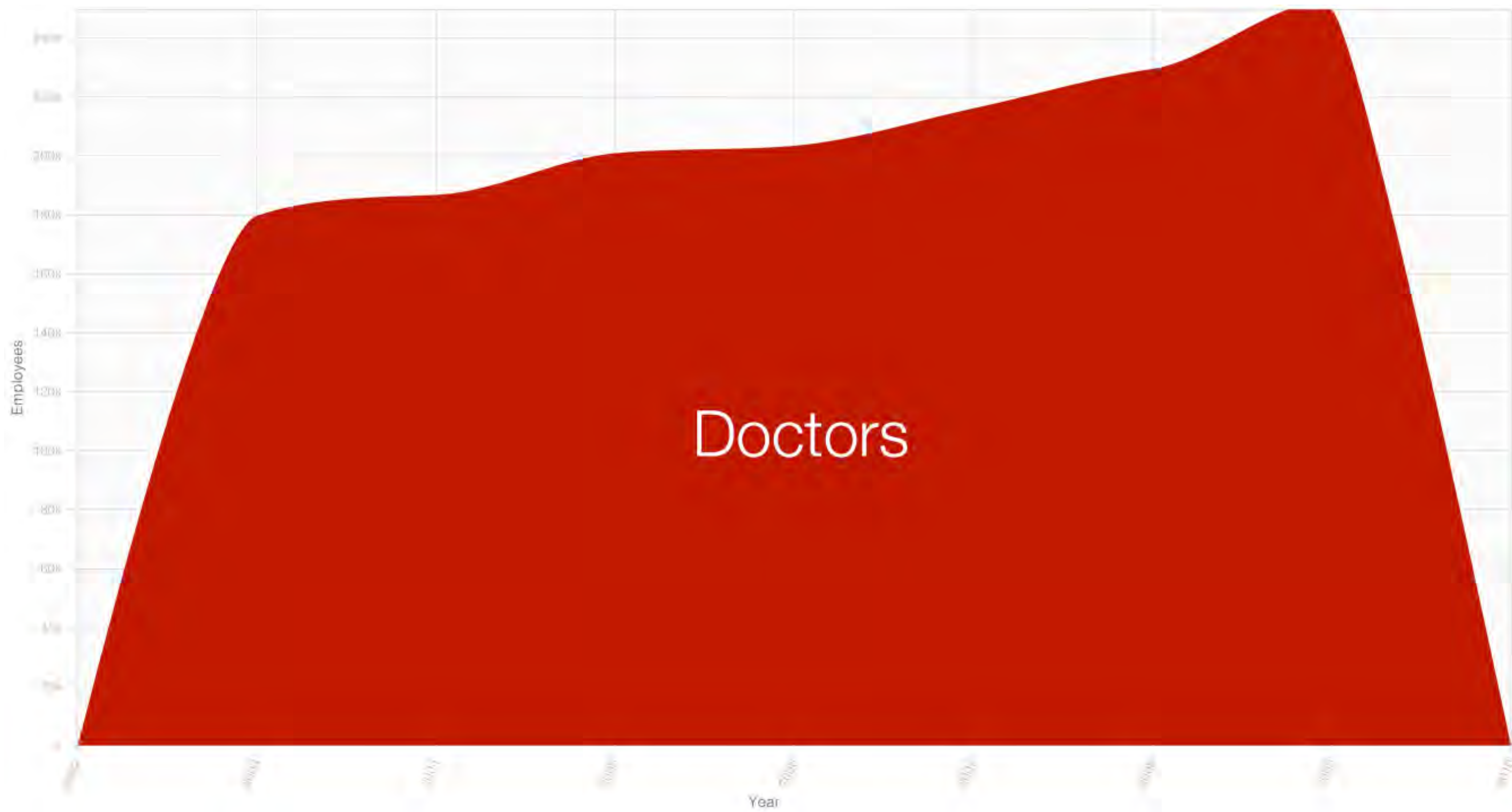




Too much data.



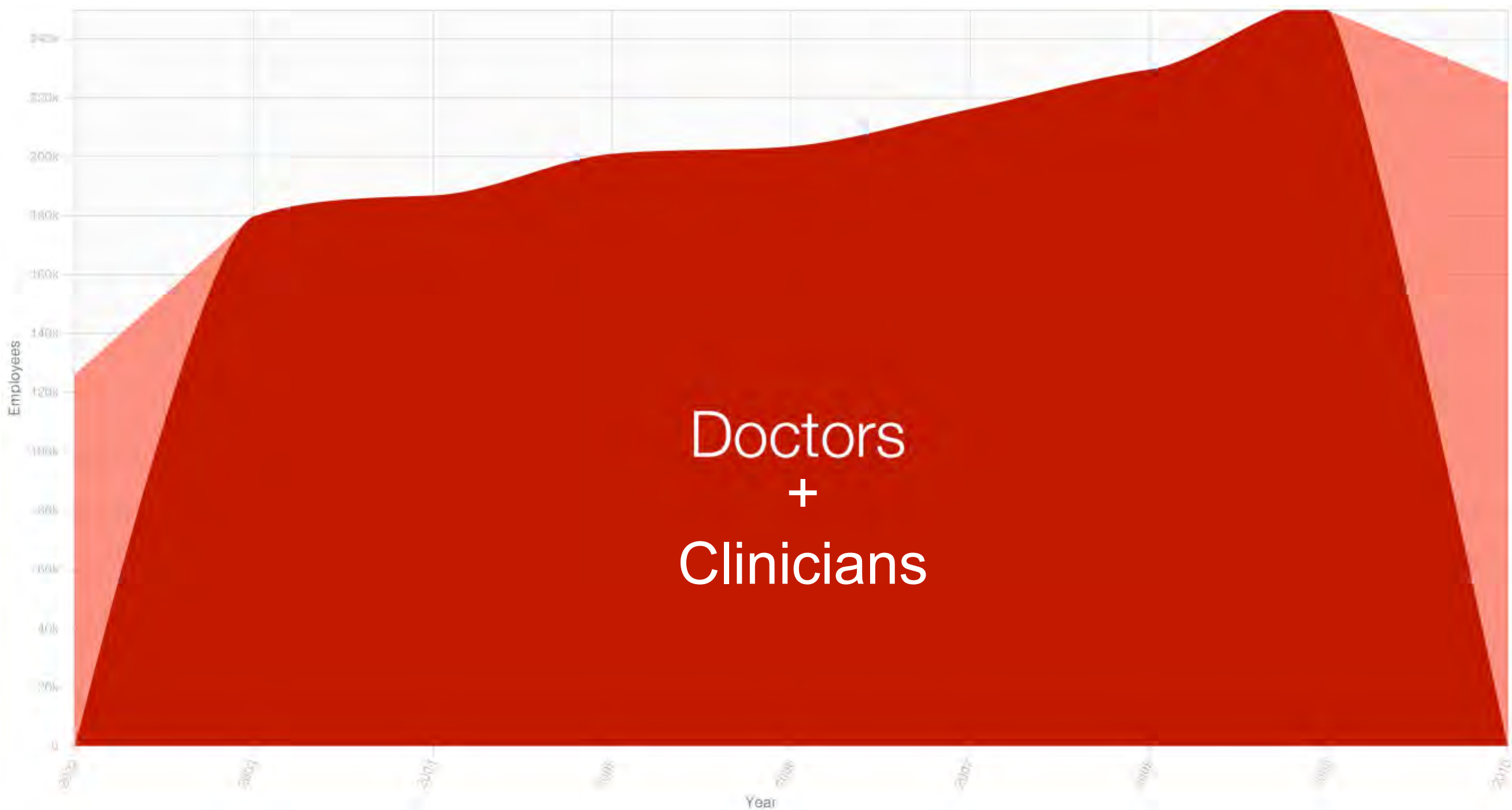
Data Sanity Check



Data Sanity Check



Data Sanity Check



Deeper resolution data provides exponential combinations

Year	Location	Industry	Occupation	Wage
2012	Sao Paulo	Health care	Nurse	\$1,200

14 years x 6,312 locations x 778 Industries x 3,745 occupations

= +250 Billion combinations

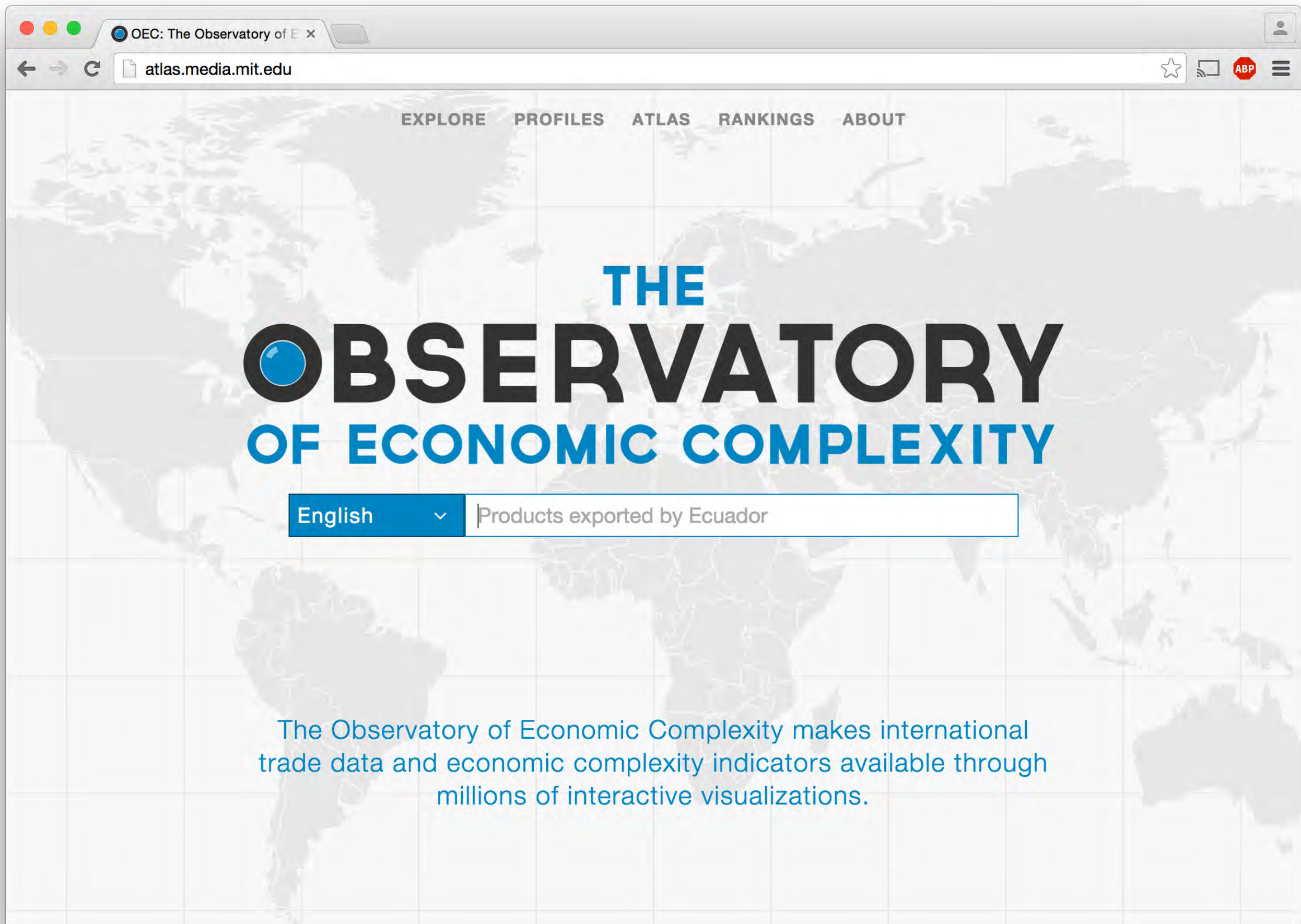


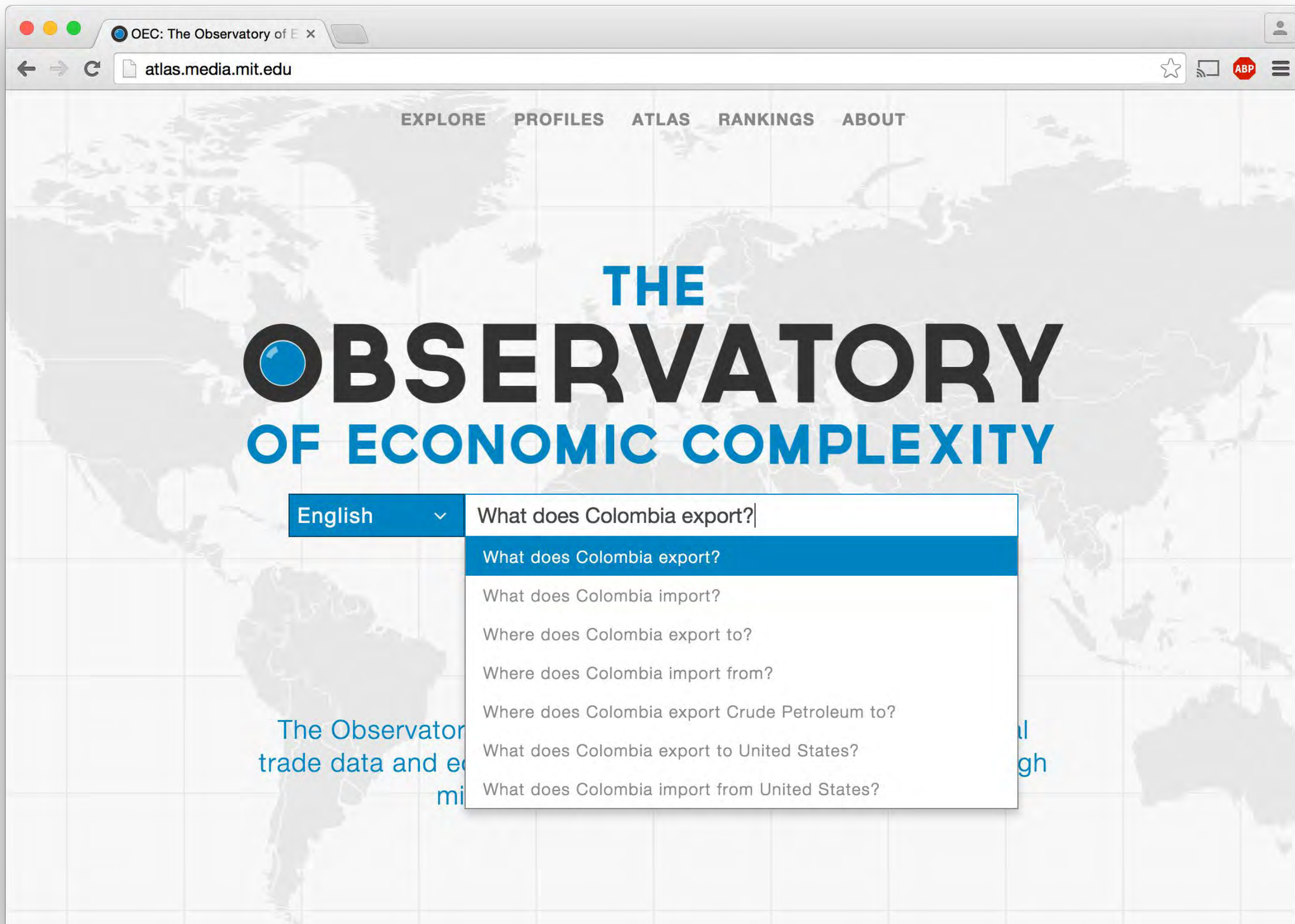
Looking at the world differently
by increasing resolution

Chapter 1

The Observatory of Economic Complexity

<http://atlas.media.mit.edu>





THE OBSERVATORY OF ECONOMIC COMPLEXITY

English



What does Colombia export?

What does Colombia export?

What does Colombia import?

Where does Colombia export to?

Where does Colombia import from?

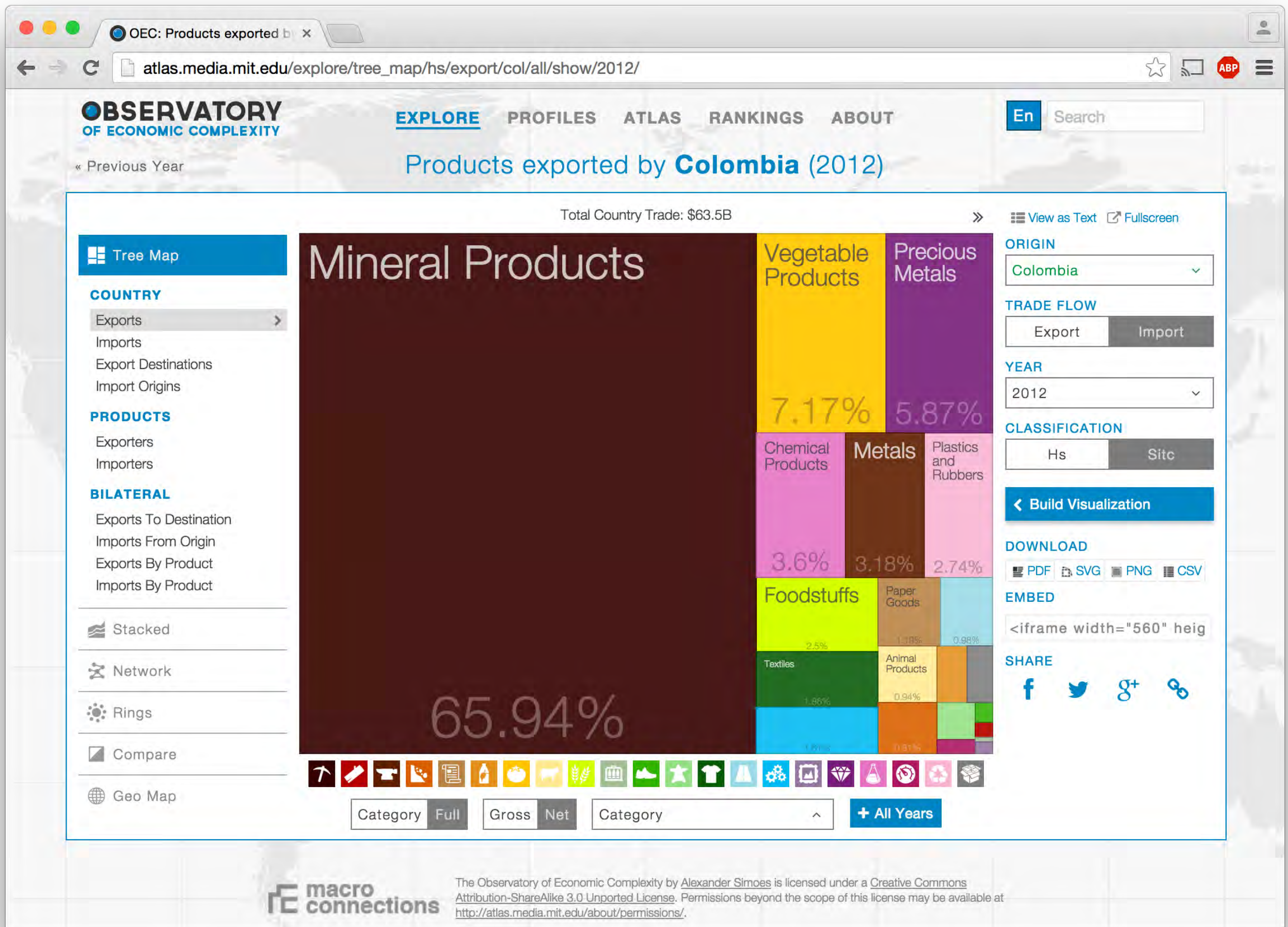
Where does Colombia export Crude Petroleum to?

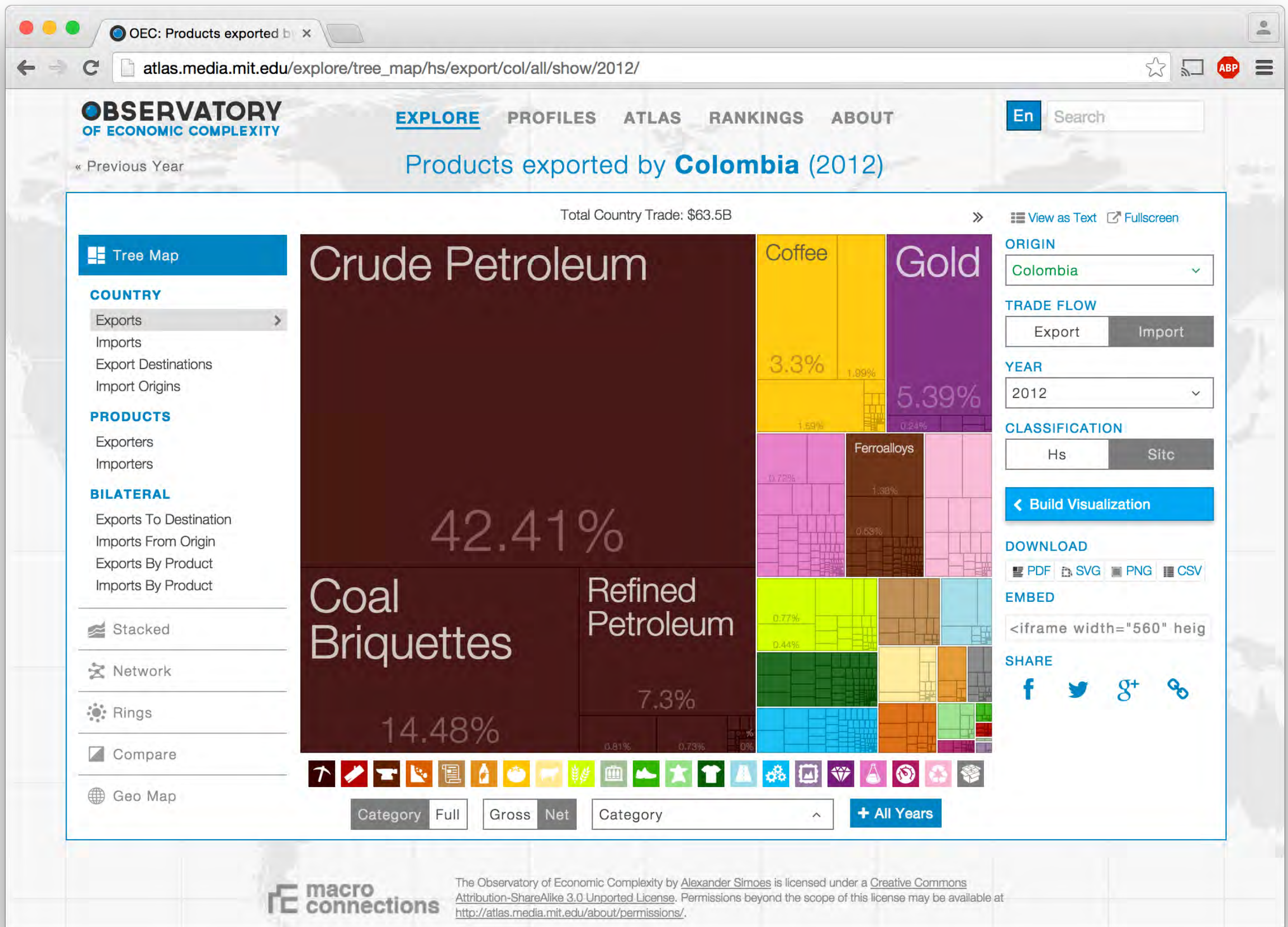
What does Colombia export to United States?

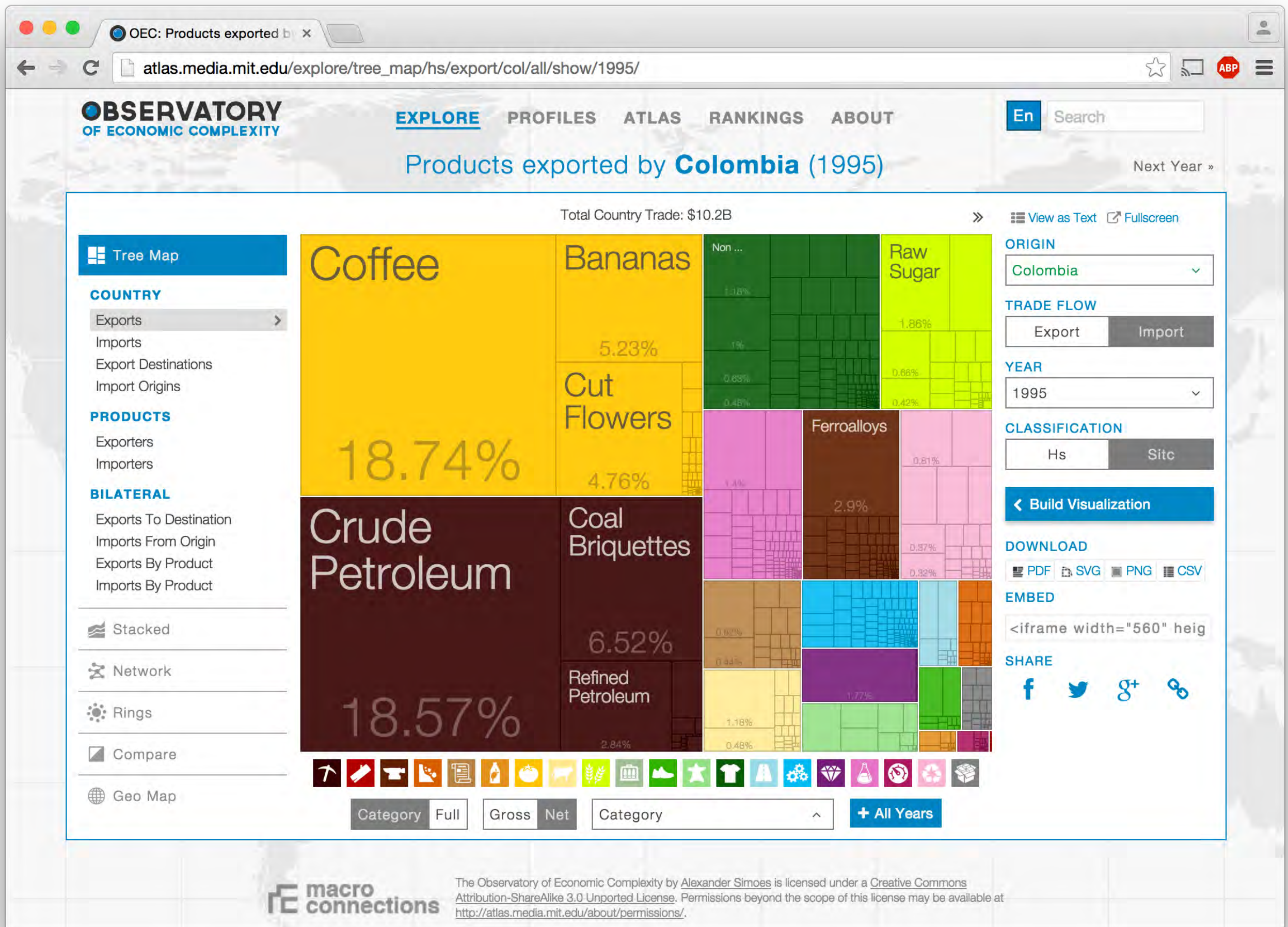
What does Colombia import from United States?

The Observatory
trade data and economic
mi

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gh

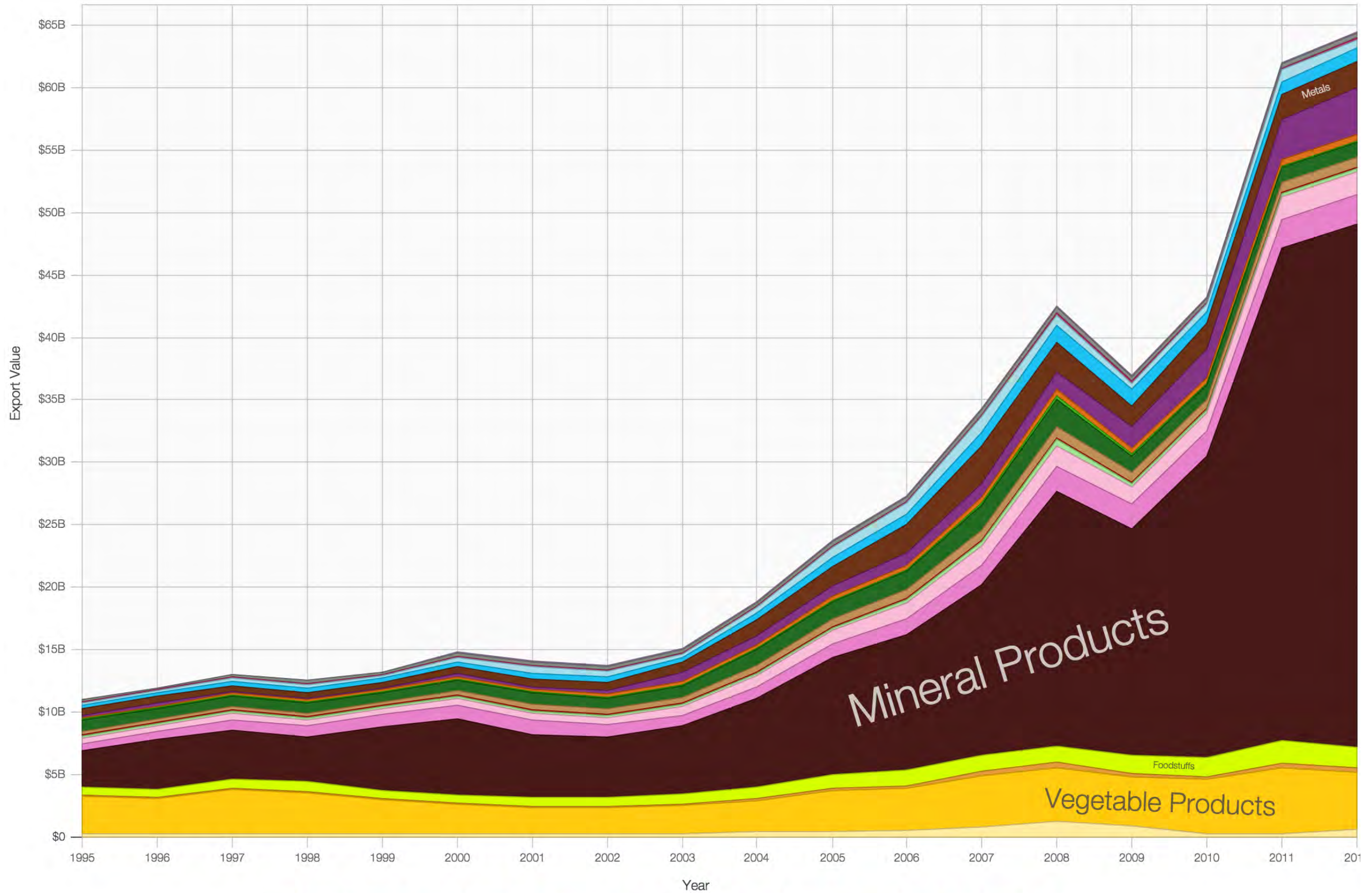






Products exported by Colombia

Total Country Trade: \$455B

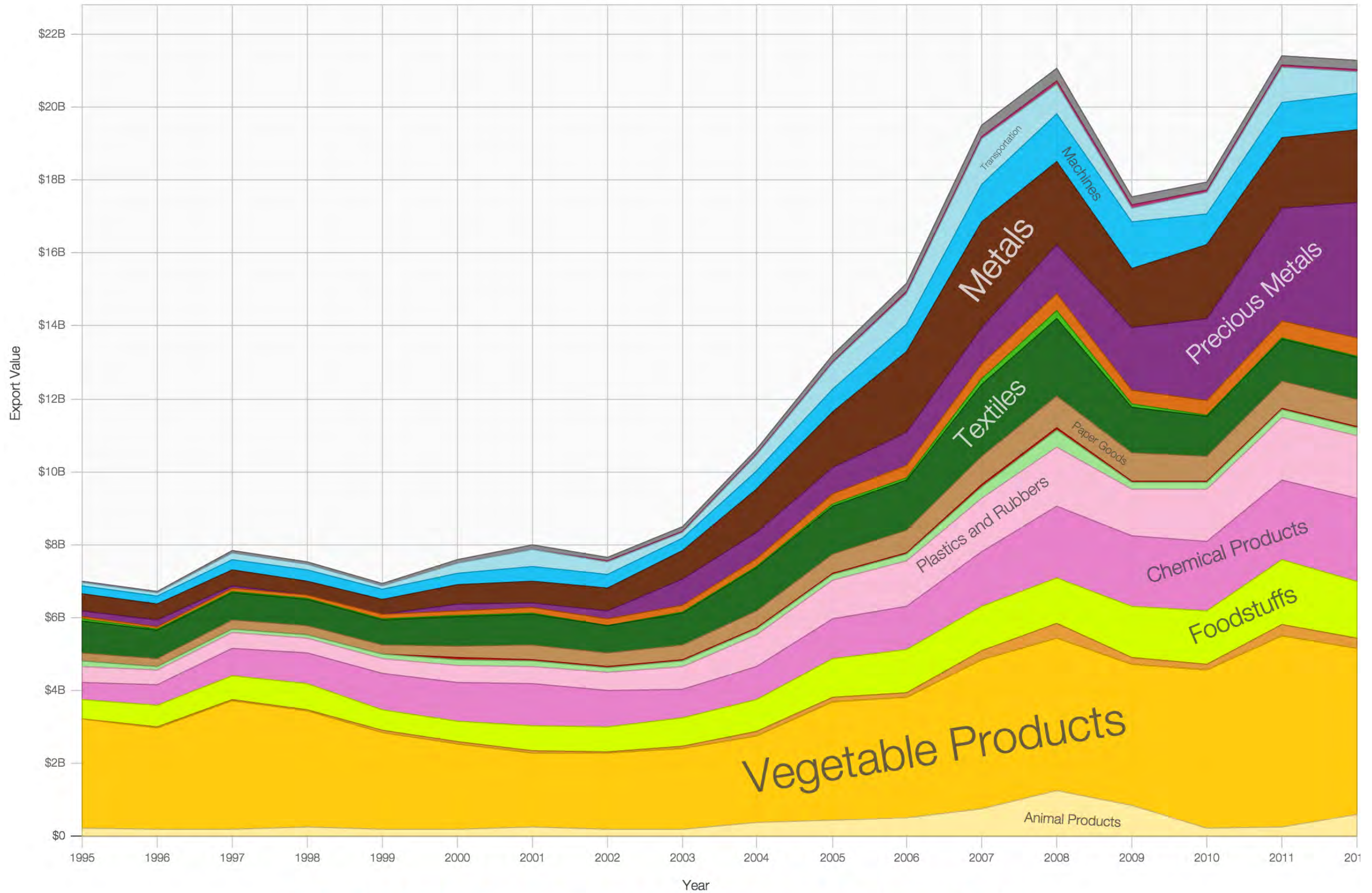


1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012

Percent Value Gross Net

Products exported by Colombia

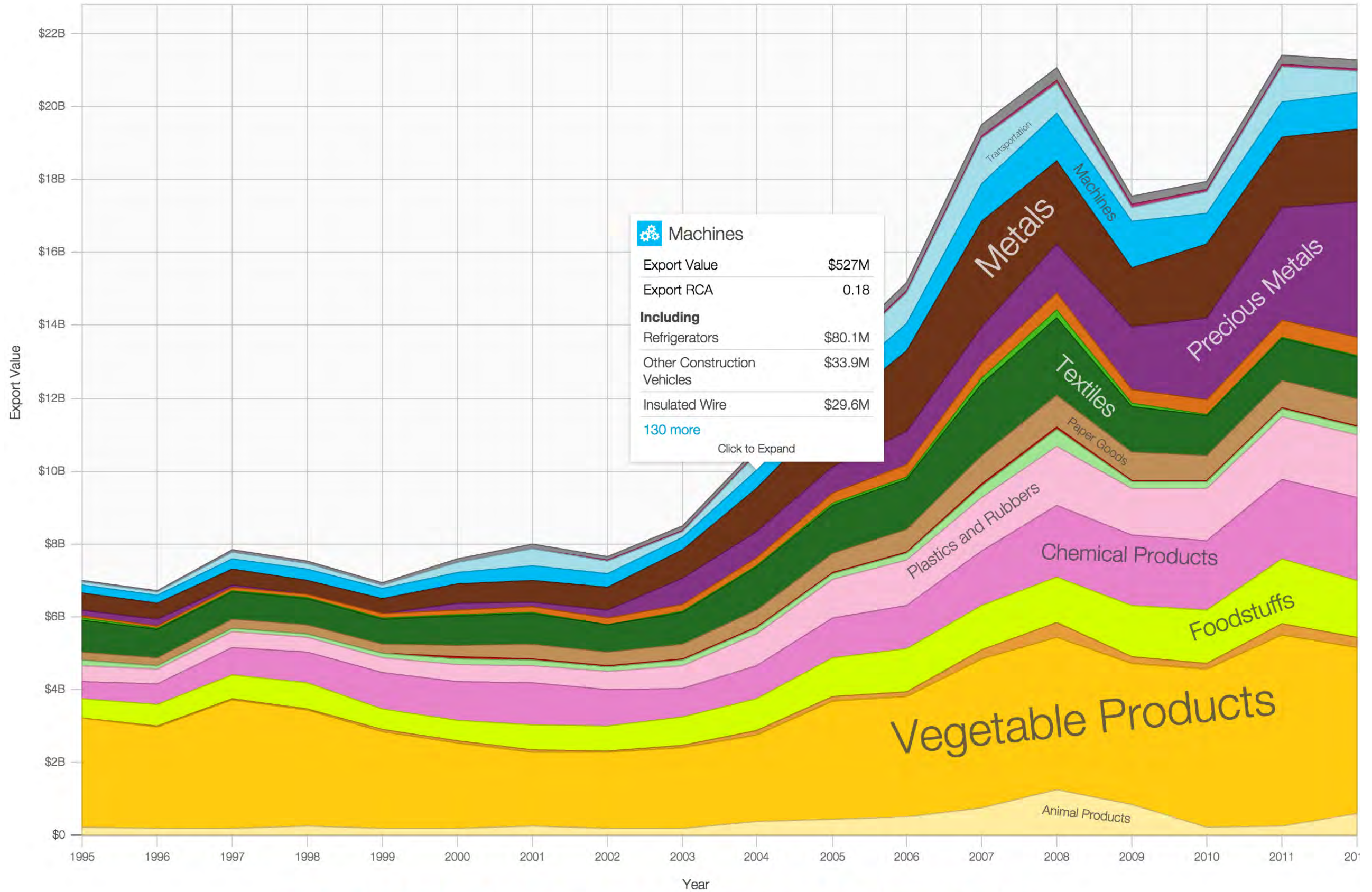
Total Country Trade: \$230B



Percent Value Gross Net

Products exported by Colombia

Total Country Trade: \$230B

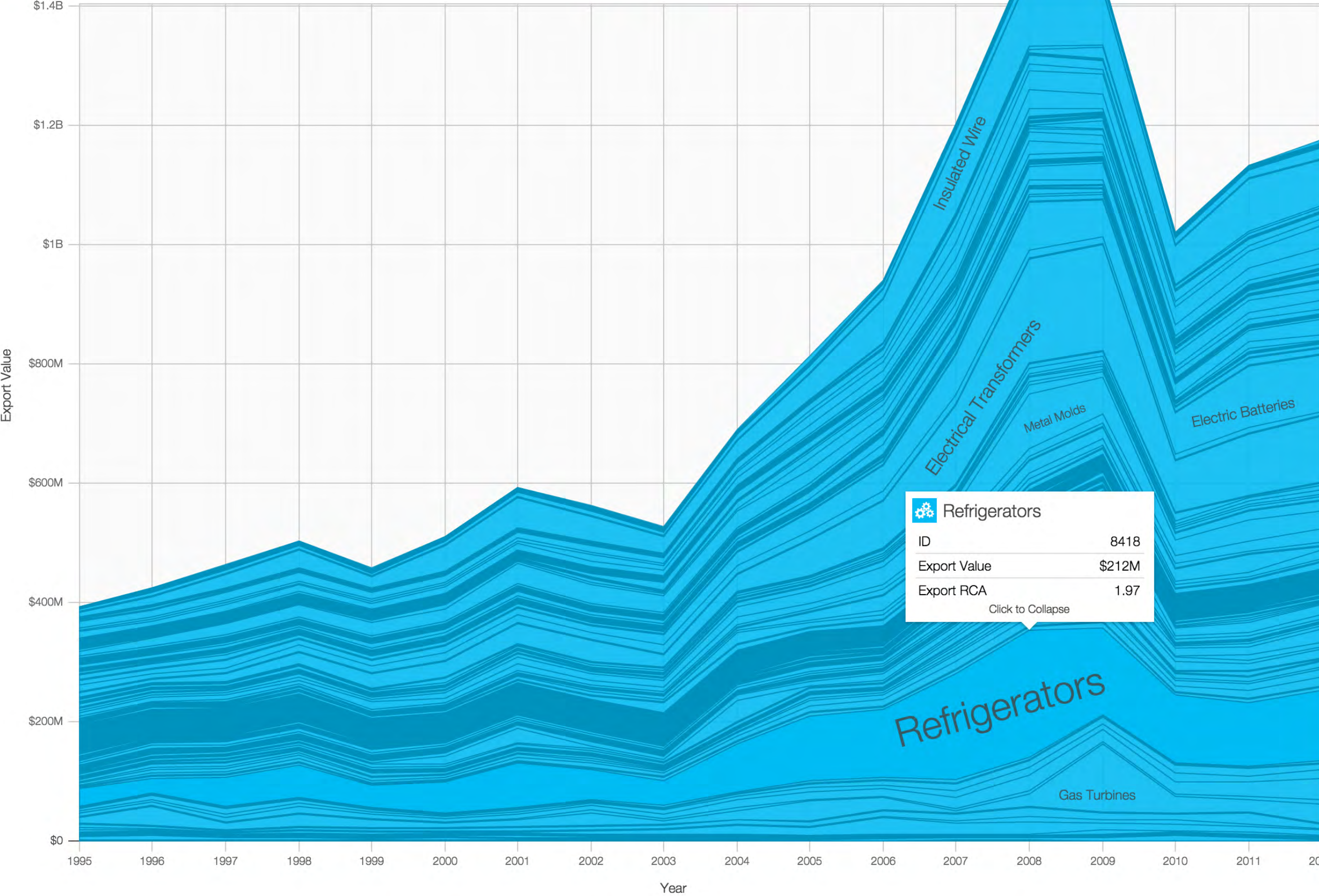


Percent Value Gross Net

Products exported by Colombia

Machines

Total Country Trade: \$11.4B

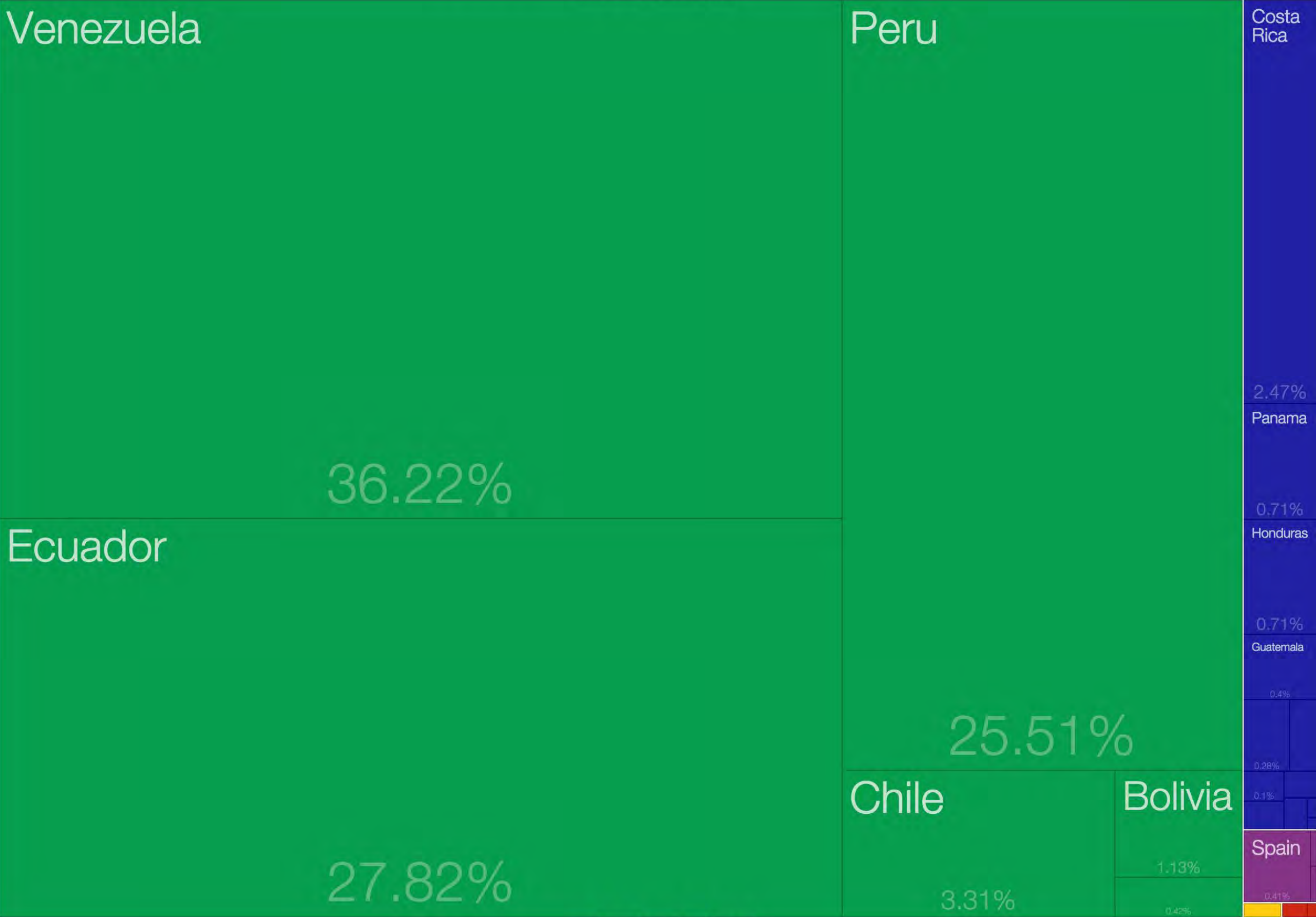


 Refrigerators

ID	8418
Export Value	\$212M
Export RCA	1.97

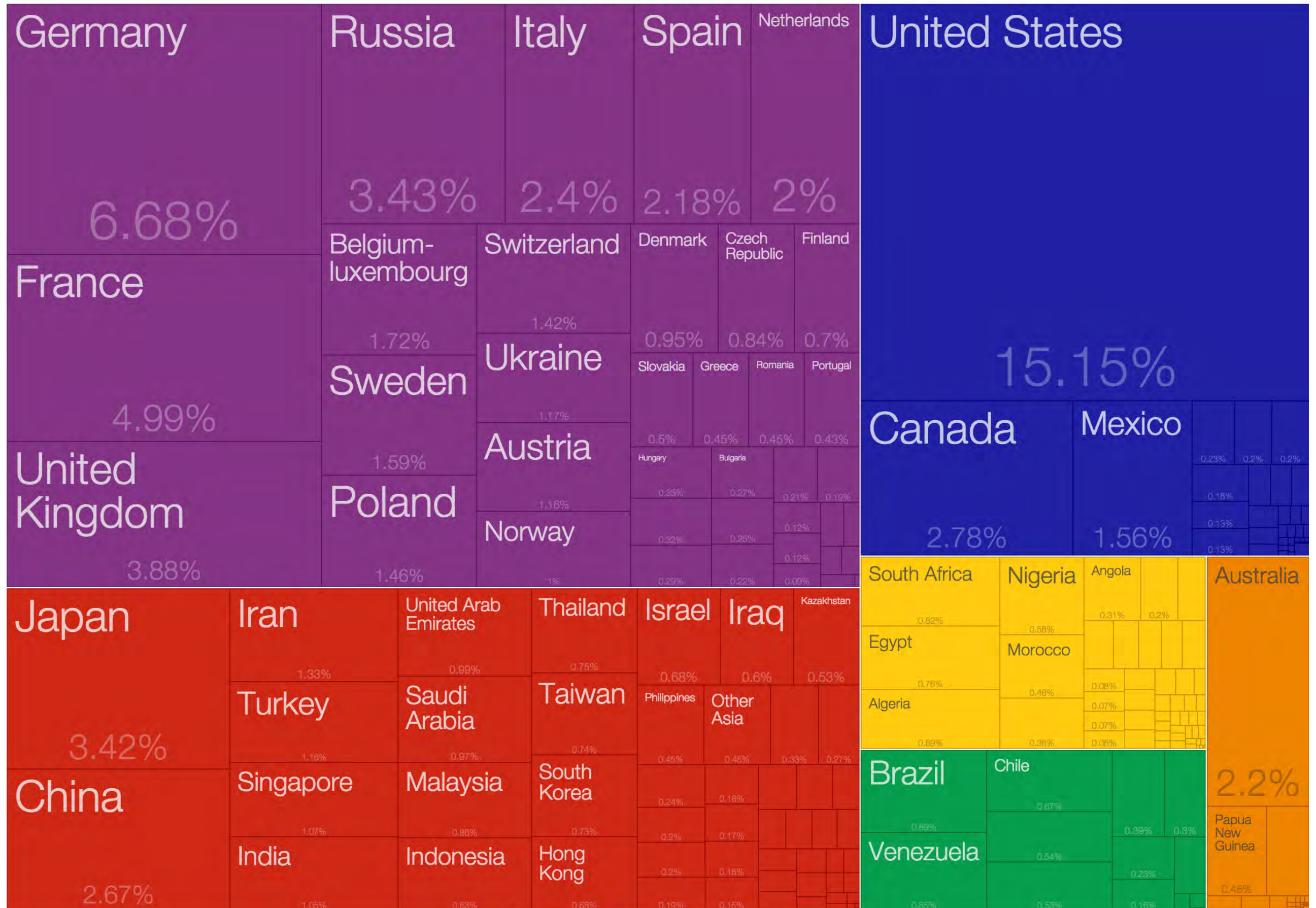
Click to Collapse

1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012

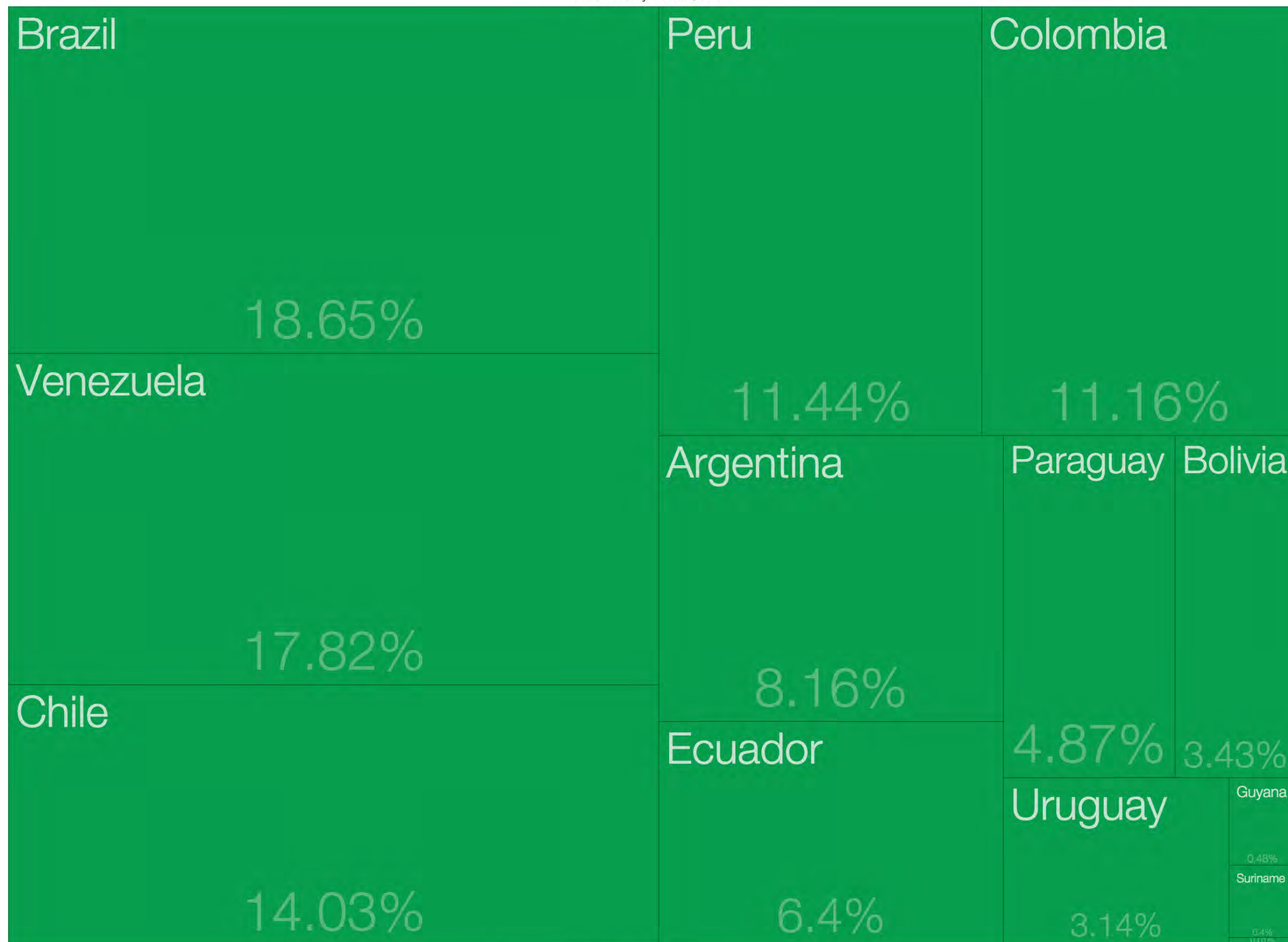


Countries that import Refrigerators

Total Country Trade: \$38.3B



Total Country Trade: \$1.82B



Continent

Country

Gross

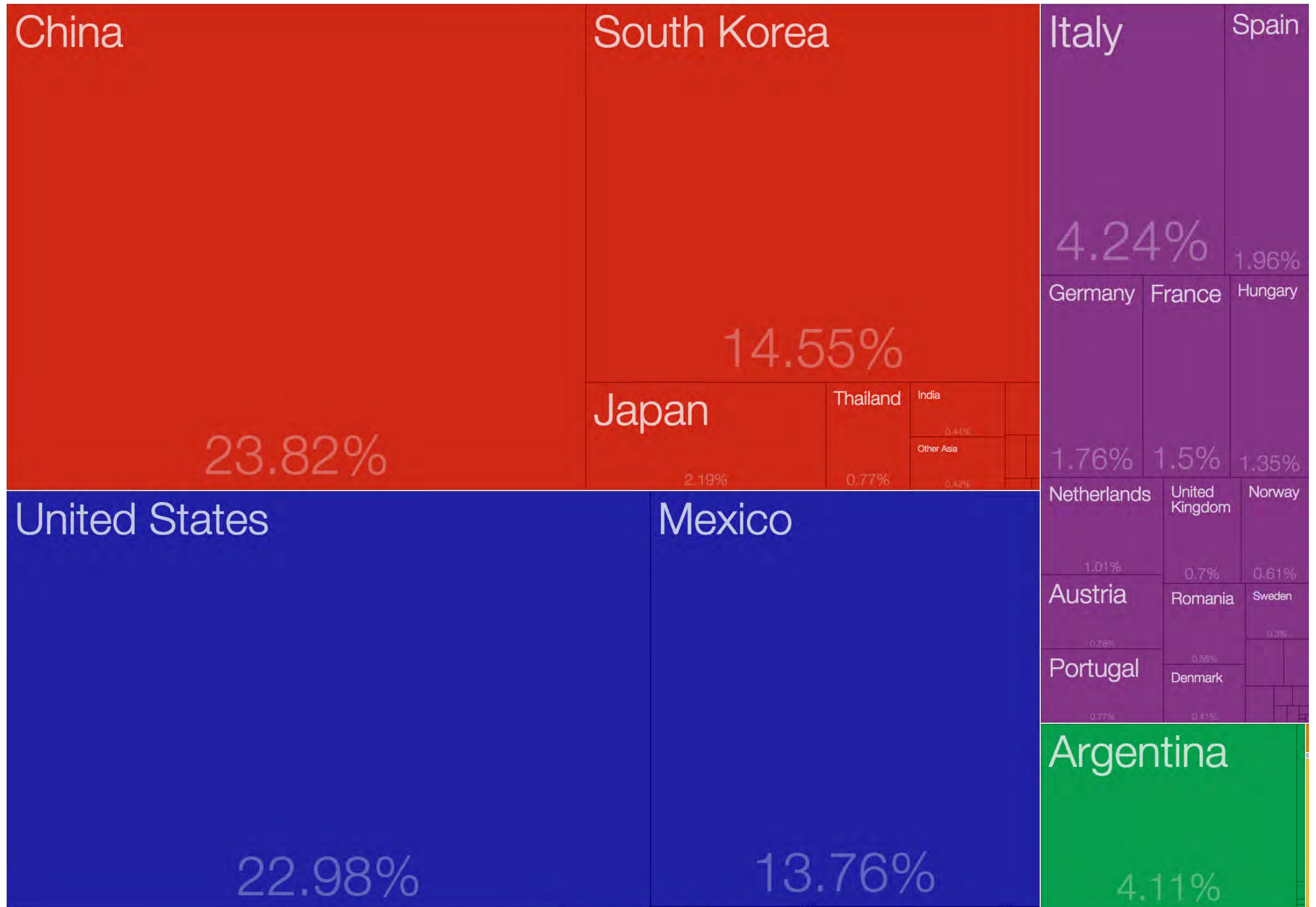
Net

Category

^

Import origins of Refrigerators to Brazil

Total Country Trade: \$340M



Chapter 2

Using Networks to Identify Opportunity

Seattle

Missoula

S.F.

Buffalo

Chicago

Boston

Cleveland

Nashville

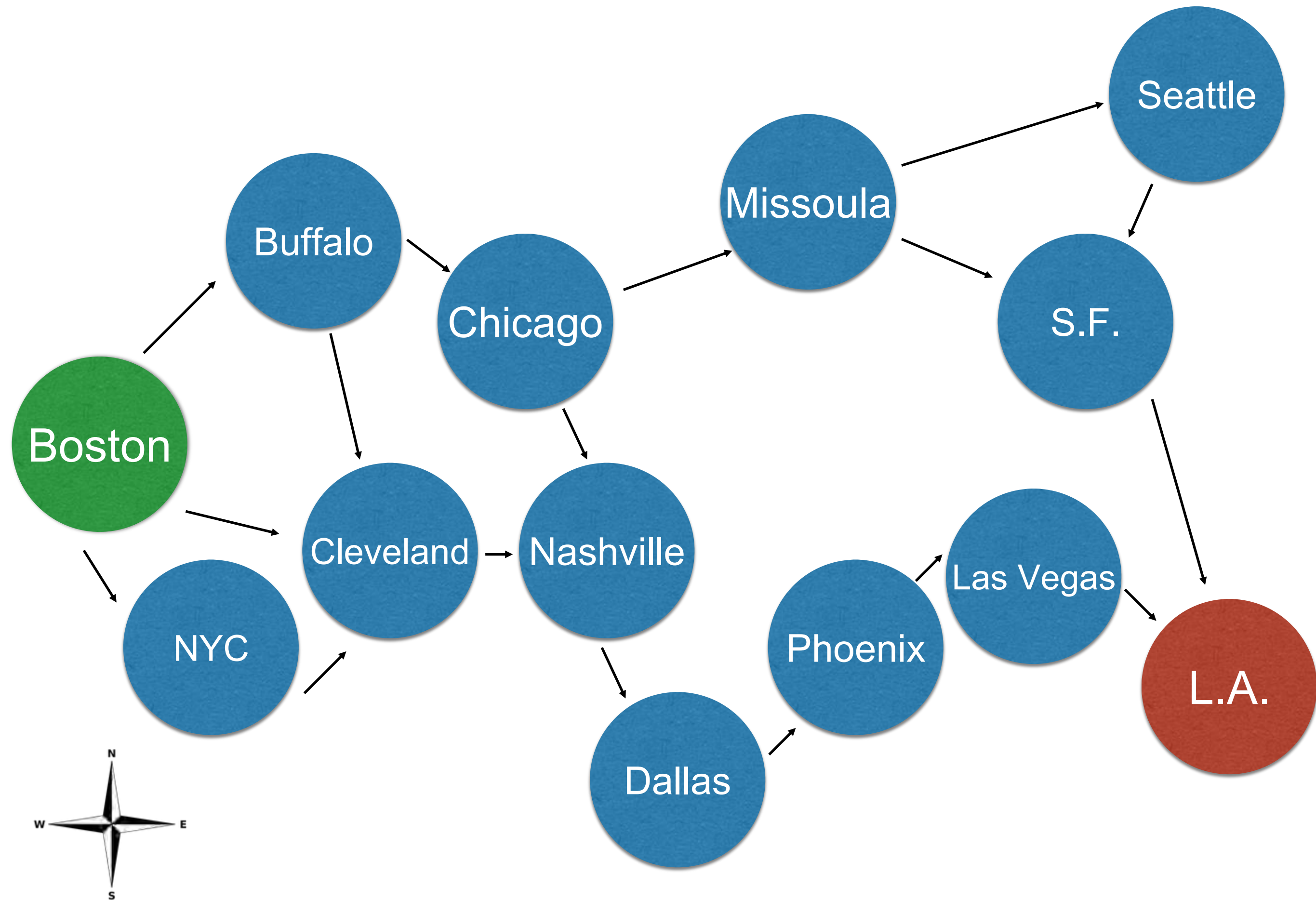
Las Vegas

Phoenix

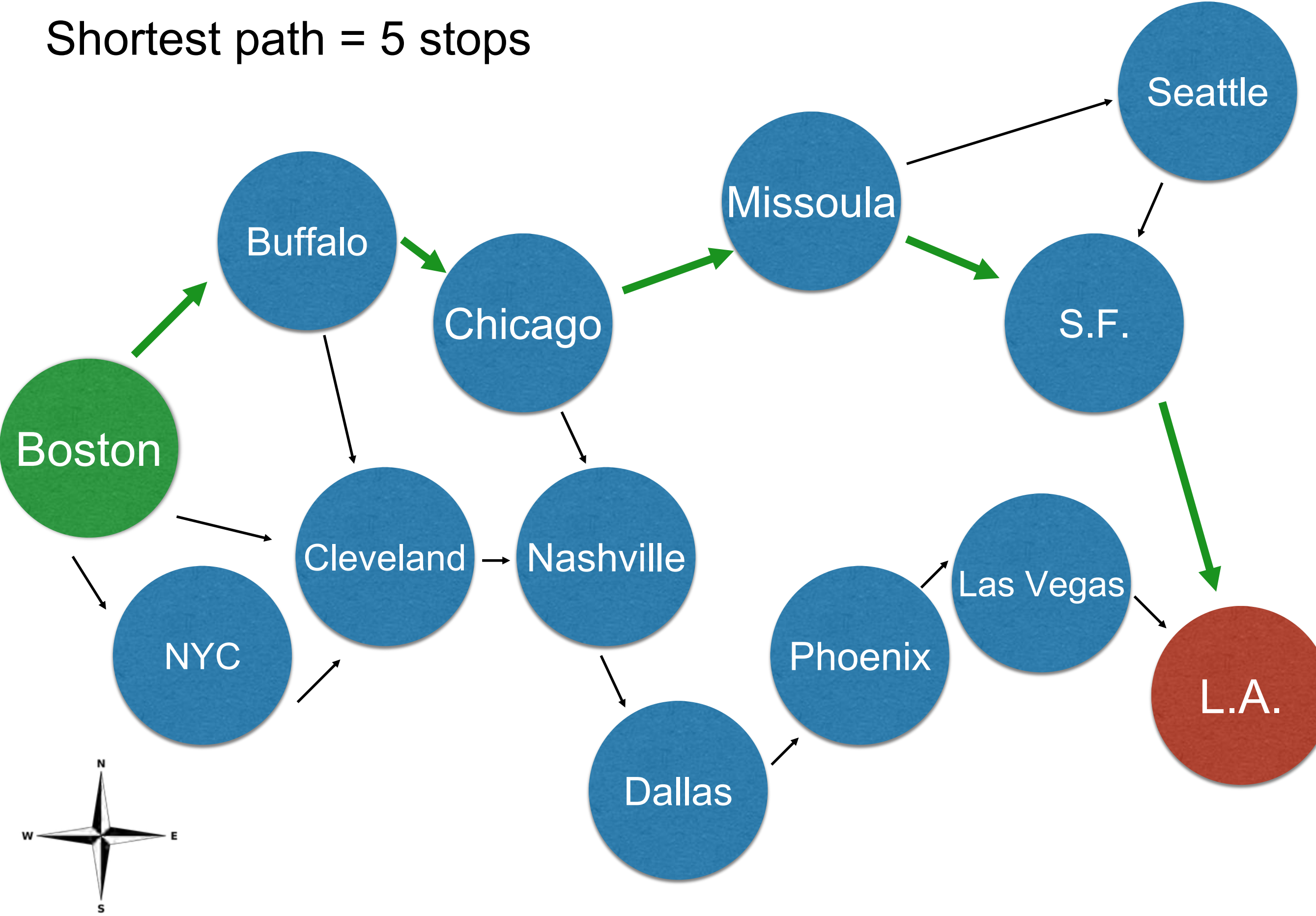
L.A.

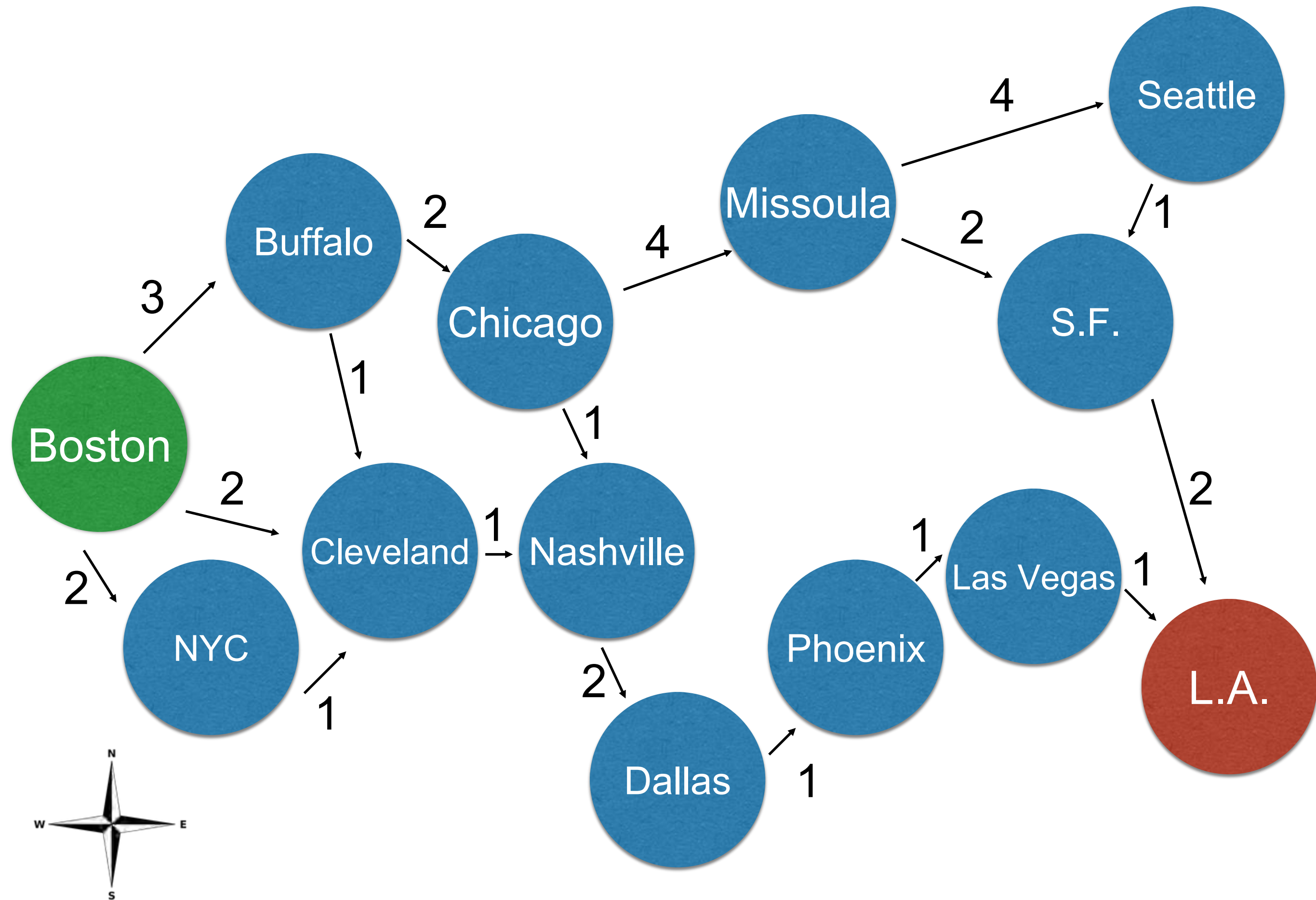
Dallas



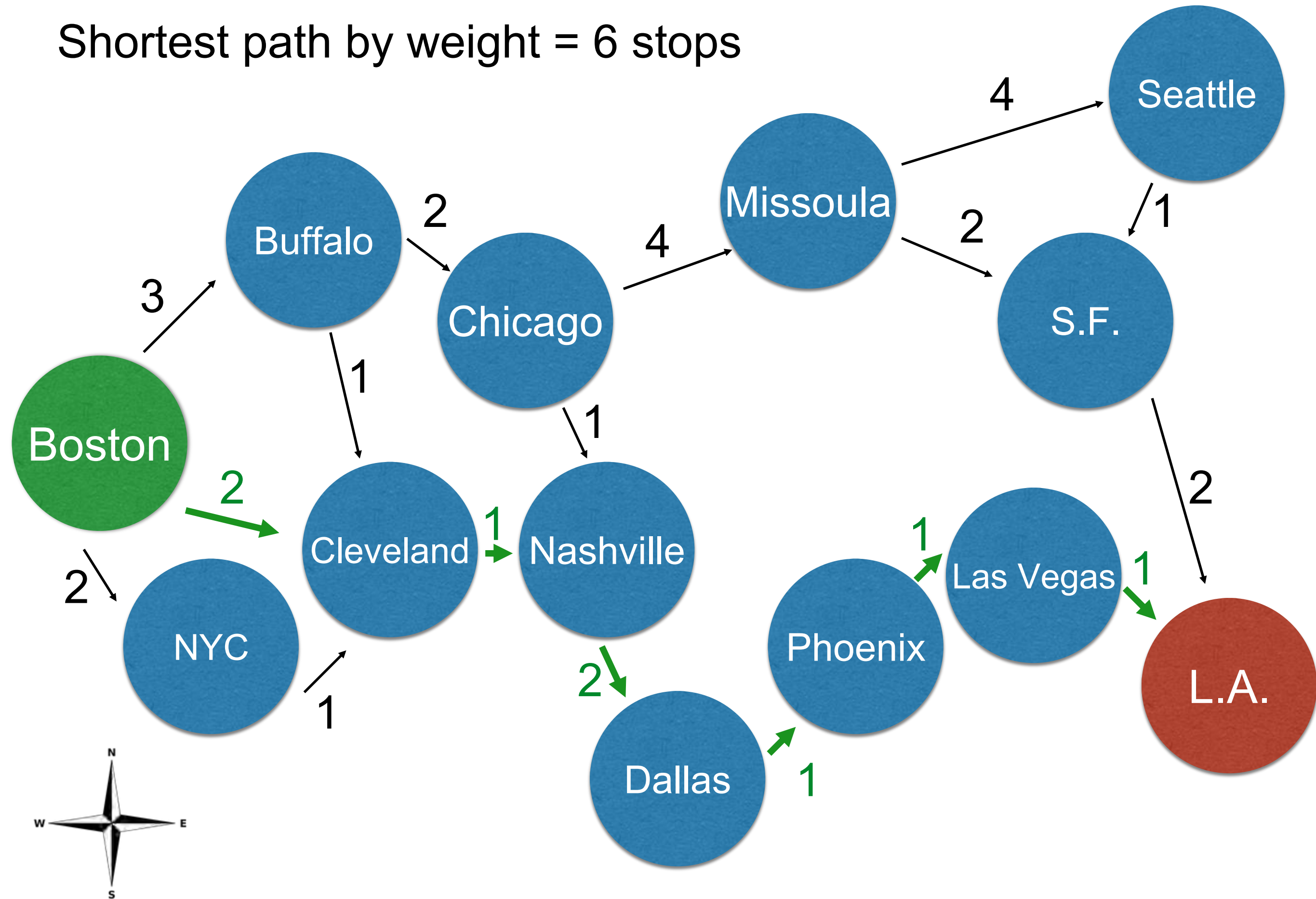


Shortest path = 5 stops





Shortest path by weight = 6 stops

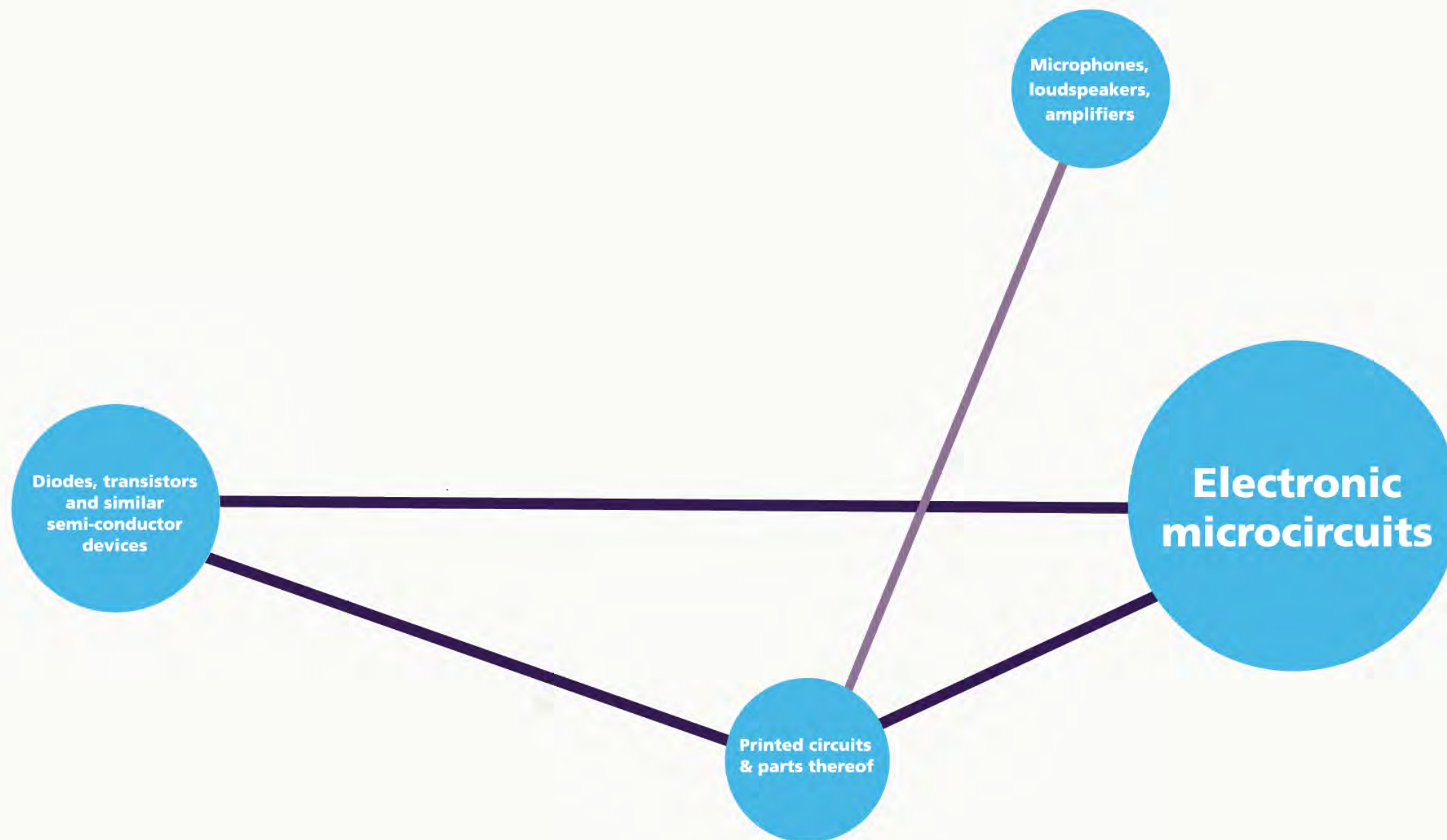


**Electronic
microcircuits**

**Microphones,
loudspeakers,
amplifiers**

**Printed circuits
& parts thereof**

**Diodes, transistors
and similar
semi-conductor
devices**



WORLD TRADE:
USD \$26.6 billions
0.46% of World Trade

9 countries exporting



**Diodes, transistors
and similar
semi-conductor
devices**

8 countries co-exporting



9 countries co-exporting



8 countries co-exporting



**Printed circuits
& parts thereof**

8 countries co-exporting



WORLD TRADE:
USD \$16.0 billions
0.28% of World Trade

12 countries exporting



**Microphones,
loudspeakers,
amplifiers**

WORLD TRADE:
USD \$ 9.3 billions
0.16% of World Trade

14 countries exporting



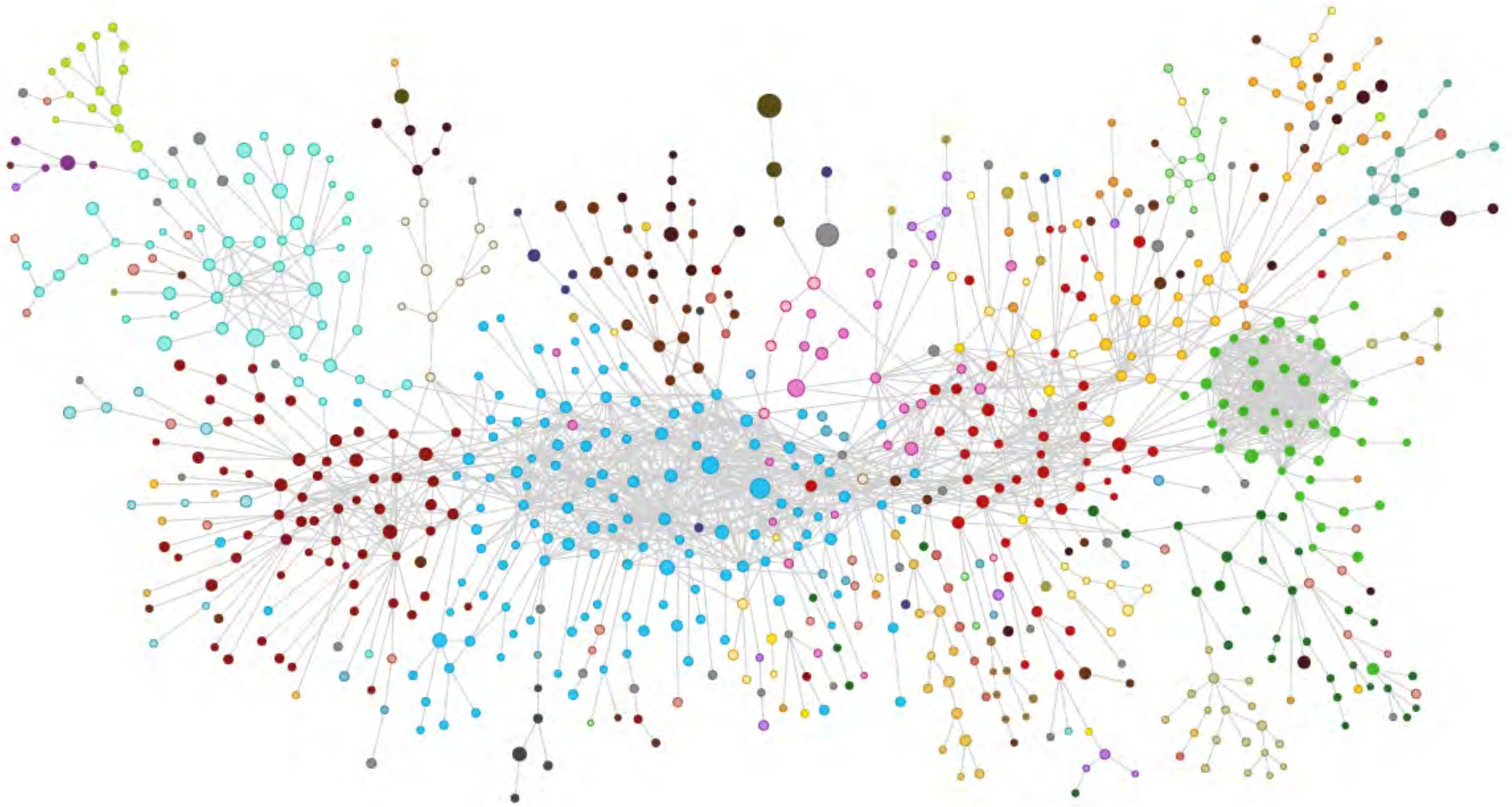
**Electronic
microcircuits**

WORLD TRADE:
USD \$215.0 billions
3.70% of World Trade

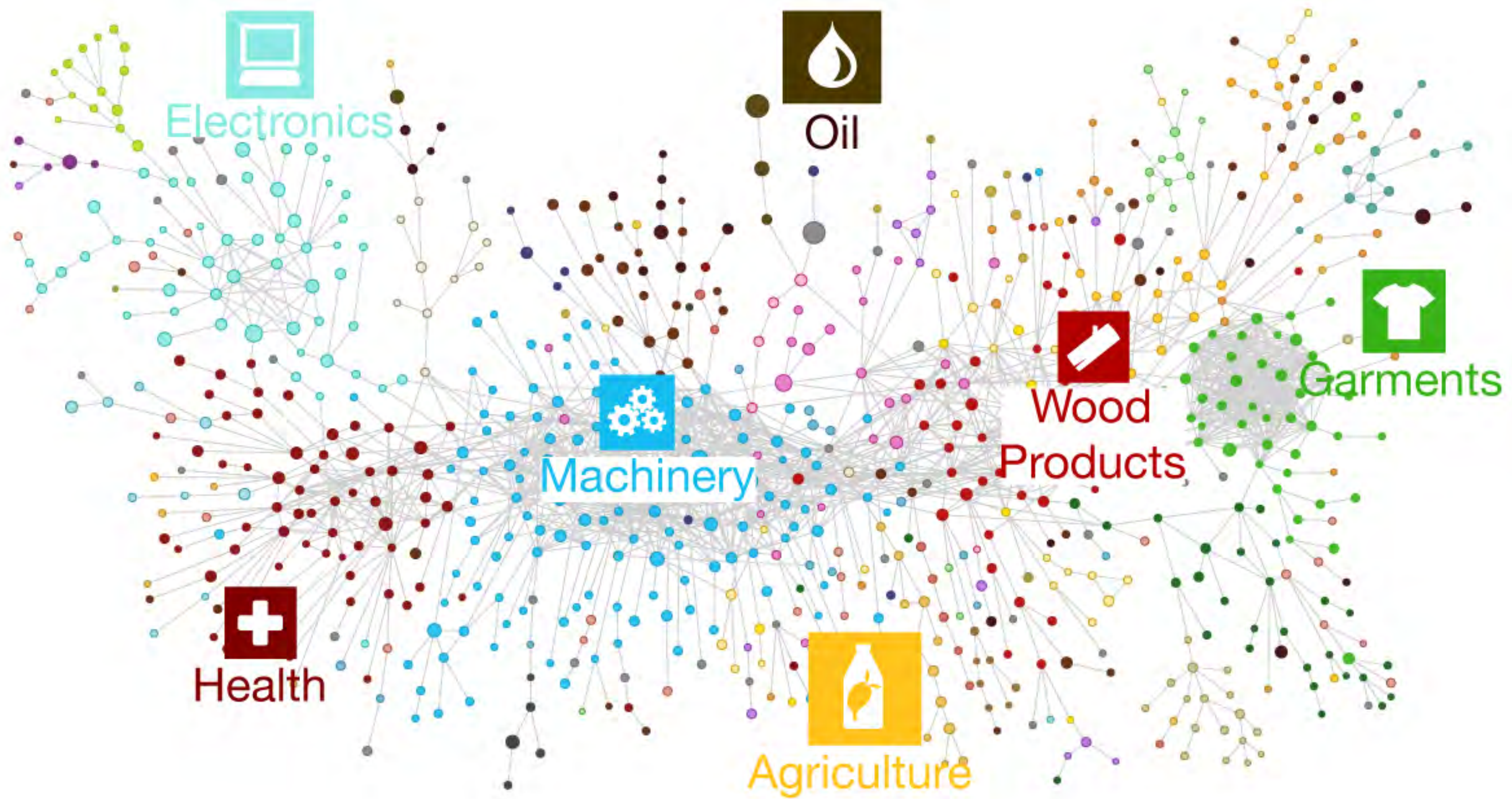
12 countries exporting



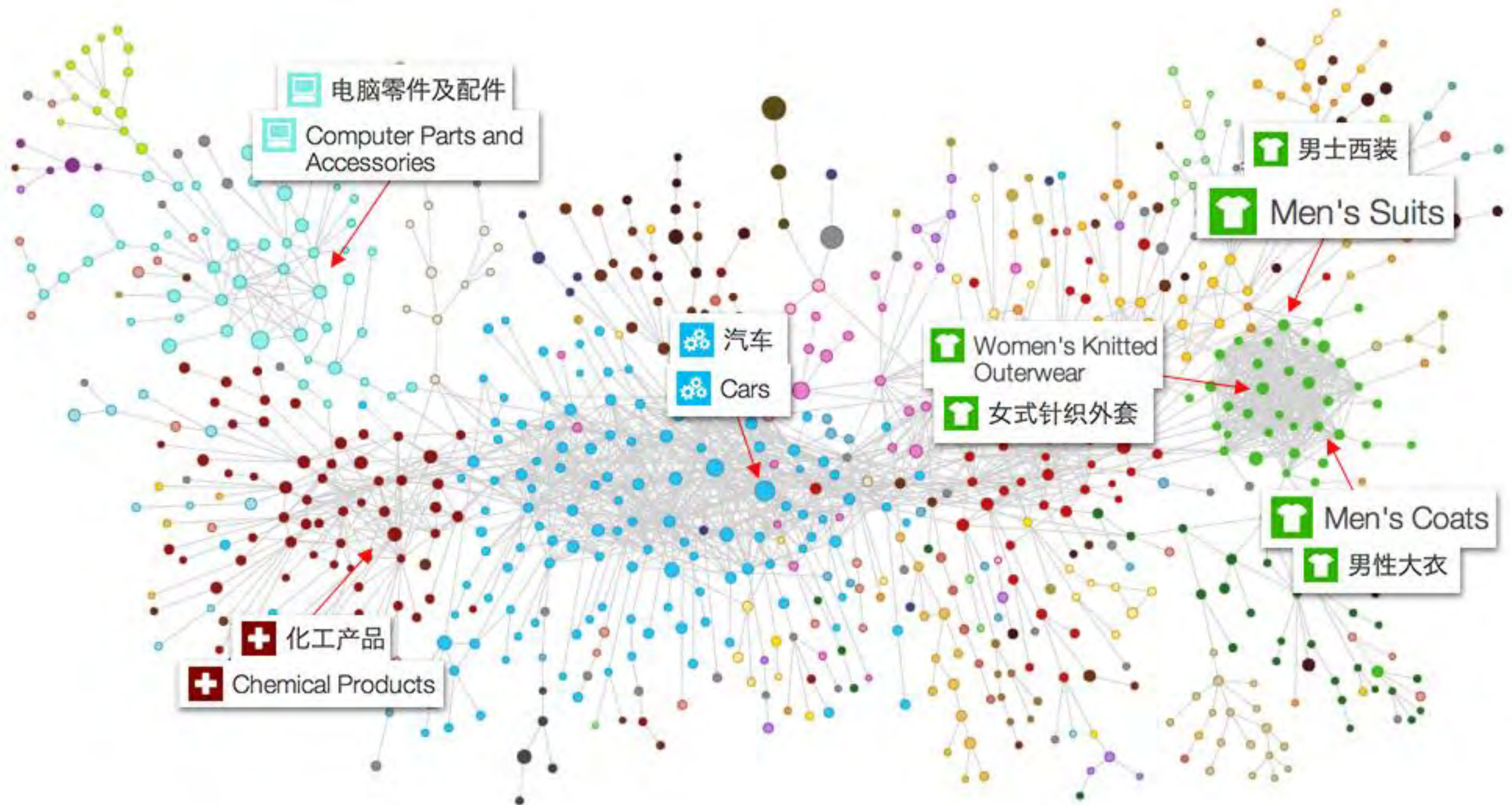
The Product Space

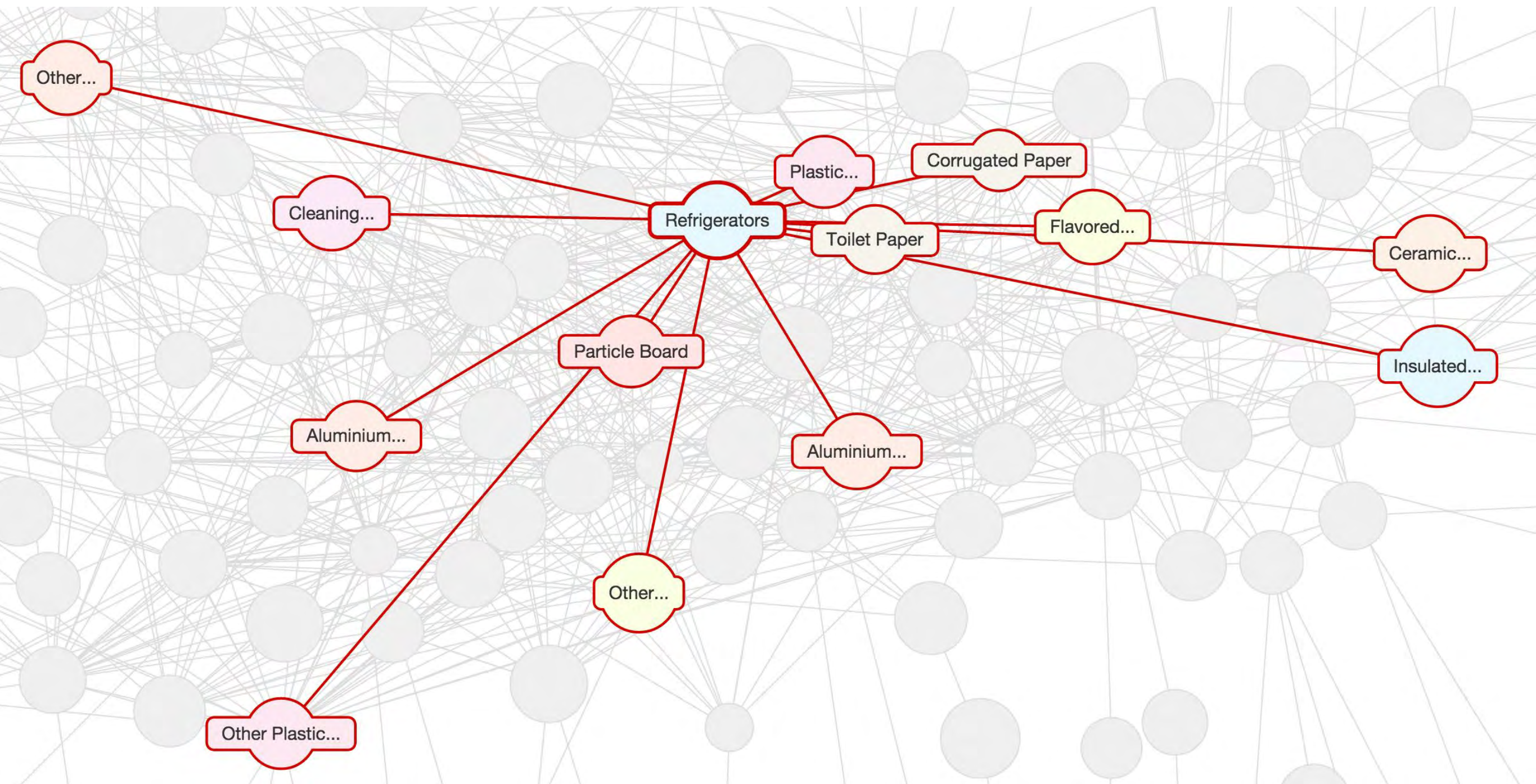


The Product Space



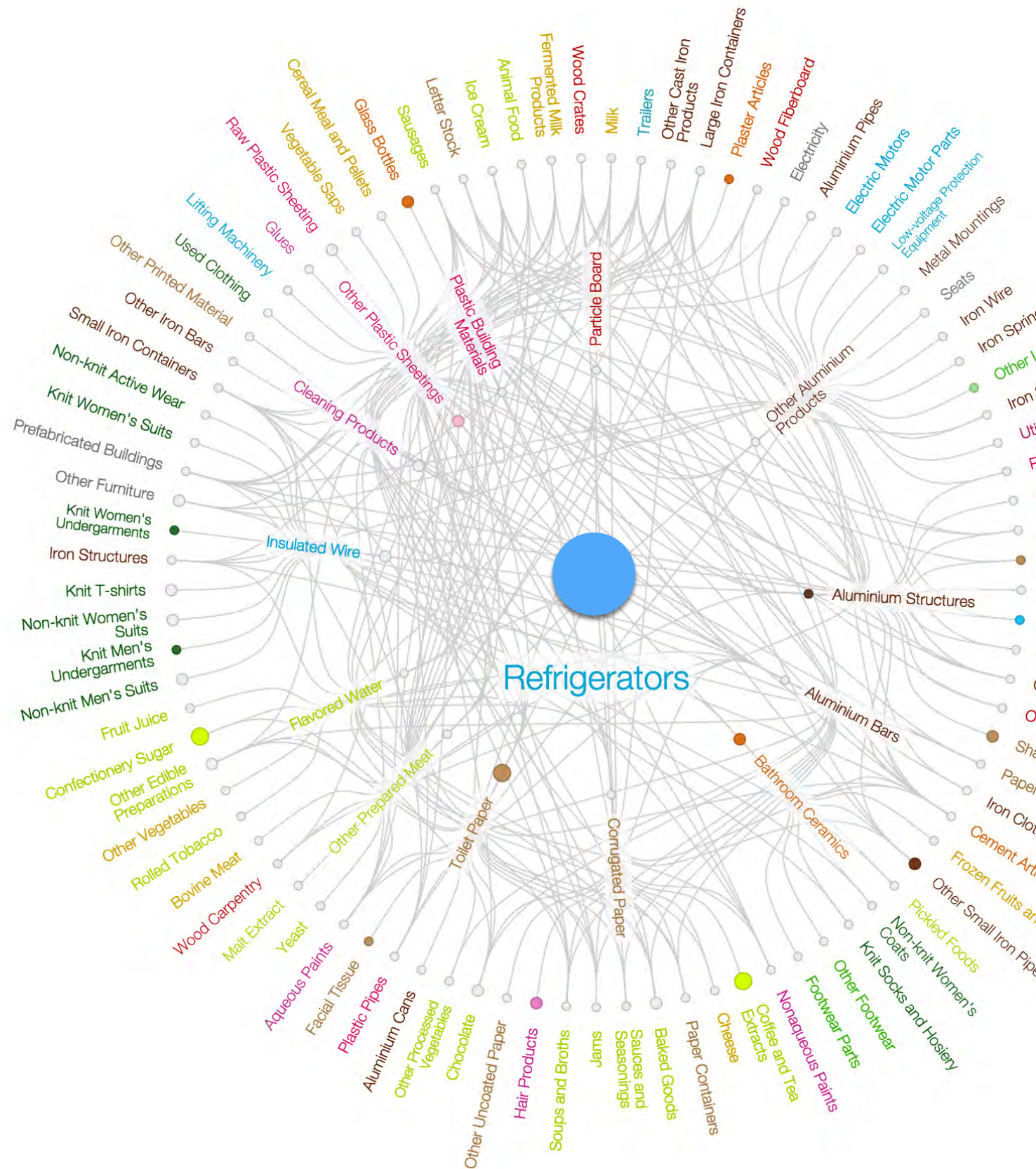
The Product Space





Connections of Refrigerators in Colombia

Total Country Trade: \$117M



Refrigerators

ID	8418
Export Value	\$117M
Export RCA	0.79

Primary Connections

- Other Prepared Meat
- Other Plastic Sheetings
- Cleaning Products
- Corrugated Paper
- Particle Board
- Plastic Building Materials
- Bathroom Ceramics
- Flavored Water
- Other Aluminium Products
- Aluminium Structures
- Insulated Wire
- Toilet Paper
- Aluminium Bars

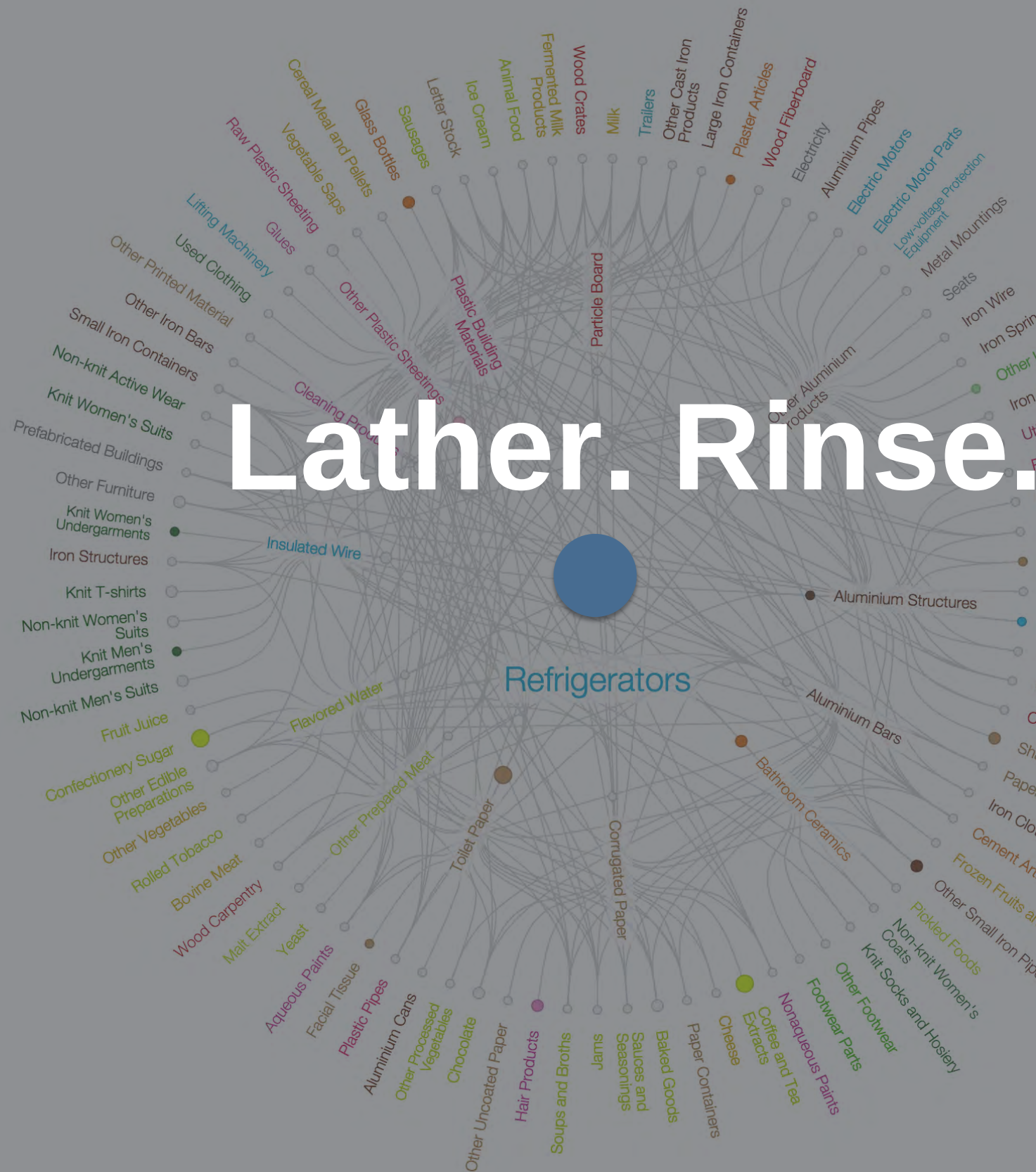


Category



Connections of Refrigerators in Colombia

Total Country Trade: \$117M



Lather. Rinse. Repeat.



Refrigerators

ID	8418
Export Value	\$117M
Export RCA	0.79

Primary Connections

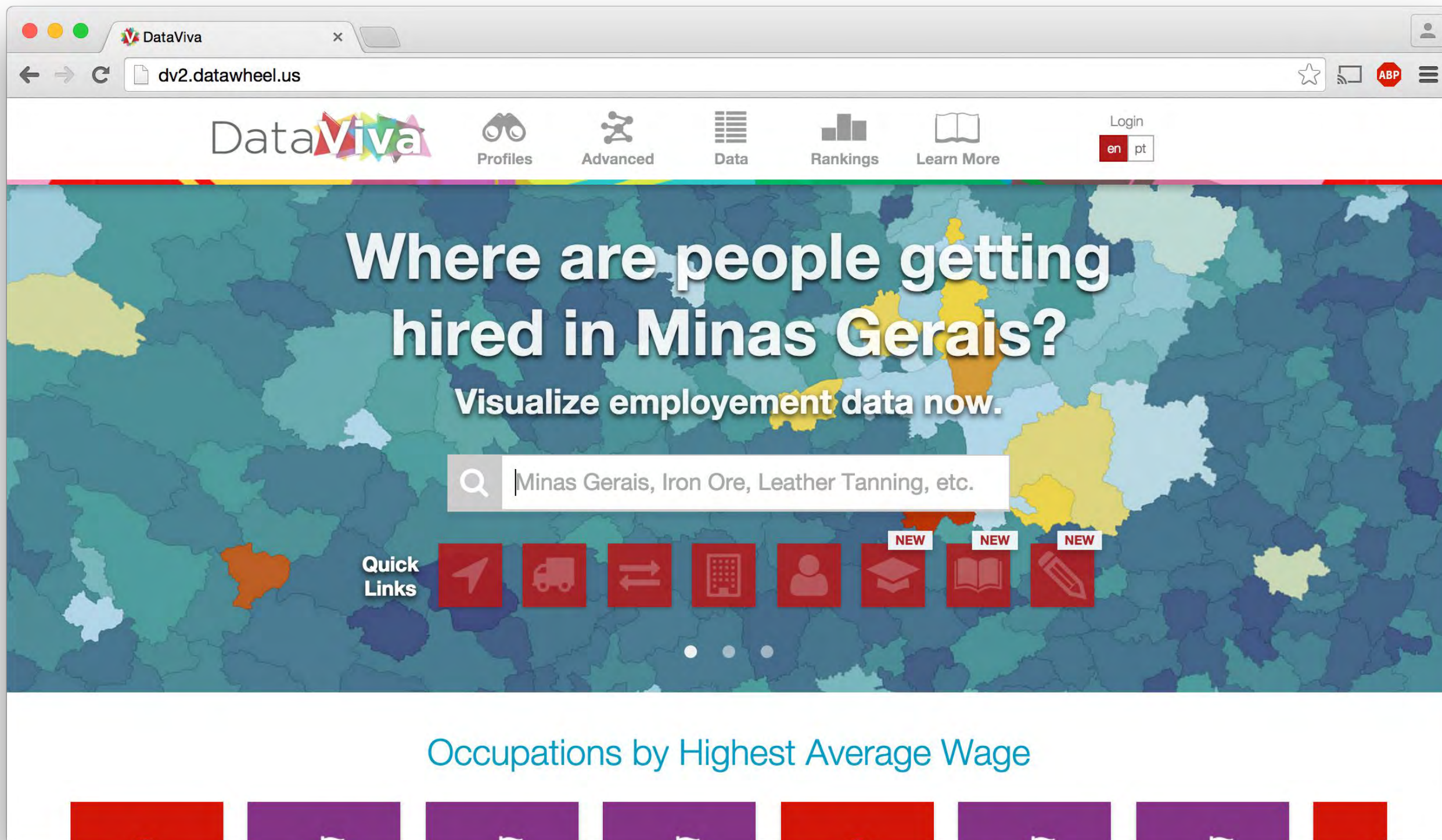
- Other Prepared Meat
- Other Plastic Sheetings
- Cleaning Products
- Corrugated Paper
- Particle Board
- Plastic Building Materials
- Bathroom Ceramics
- Flavored Water
- Other Aluminium Products
- Aluminium Structures
- Insulated Wire
- Toilet Paper
- Aluminium Bars

Chapter 3

DataViva

Subnational data for the Brazilian Economy

<http://dataviva.info/>



DataViva

x

dv2.datawheel.us

ABP

DataViva

Profiles

Advanced

Data

Rankings

Learn More

Login

enpt

Where are people getting hired in Minas Gerais?

Visualize employment data now.

Quick Links

refrig

Refrigerators
Product - Position

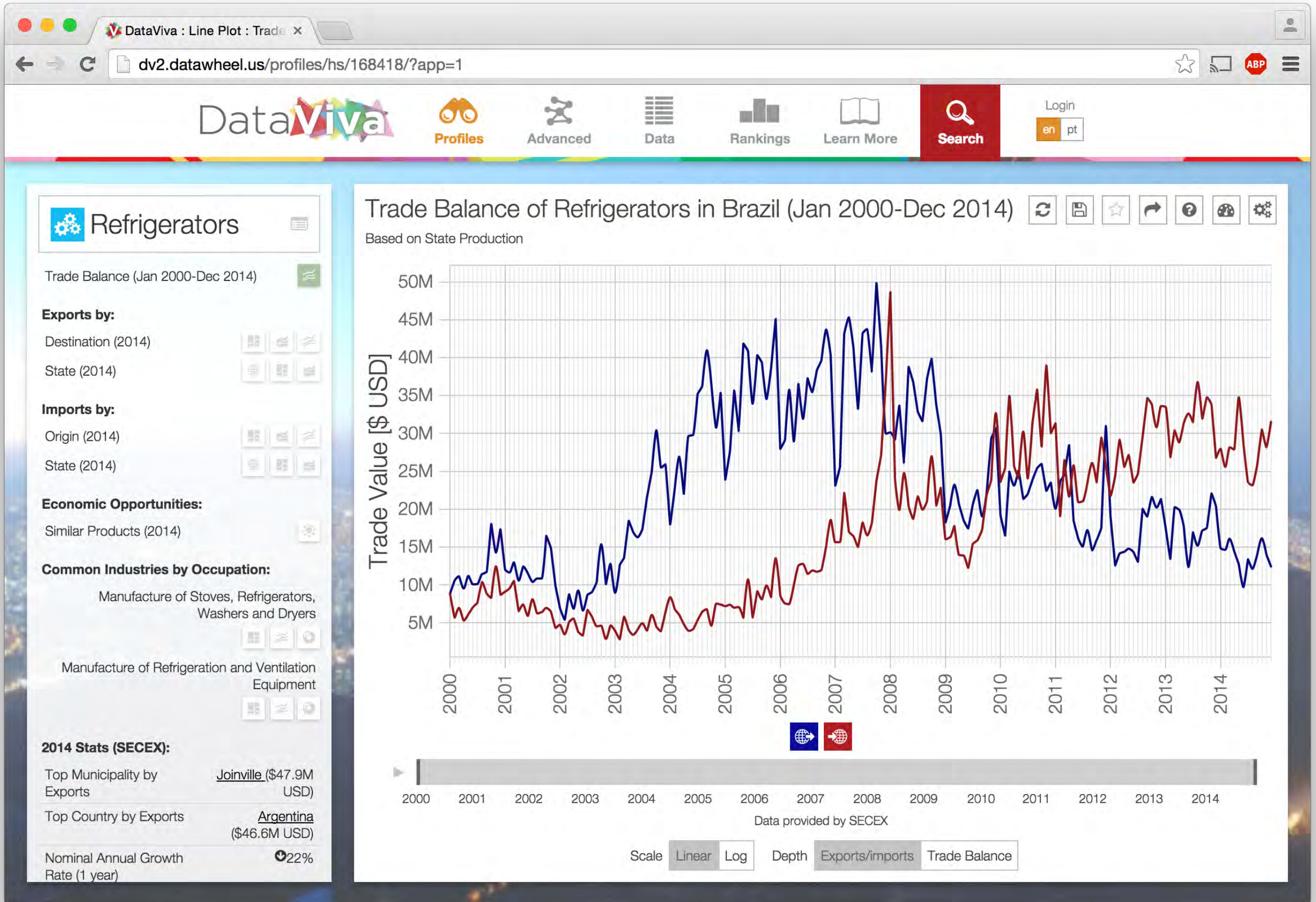
Manufacture of stoves, refrigerators, washers and dryers
Industry - Class

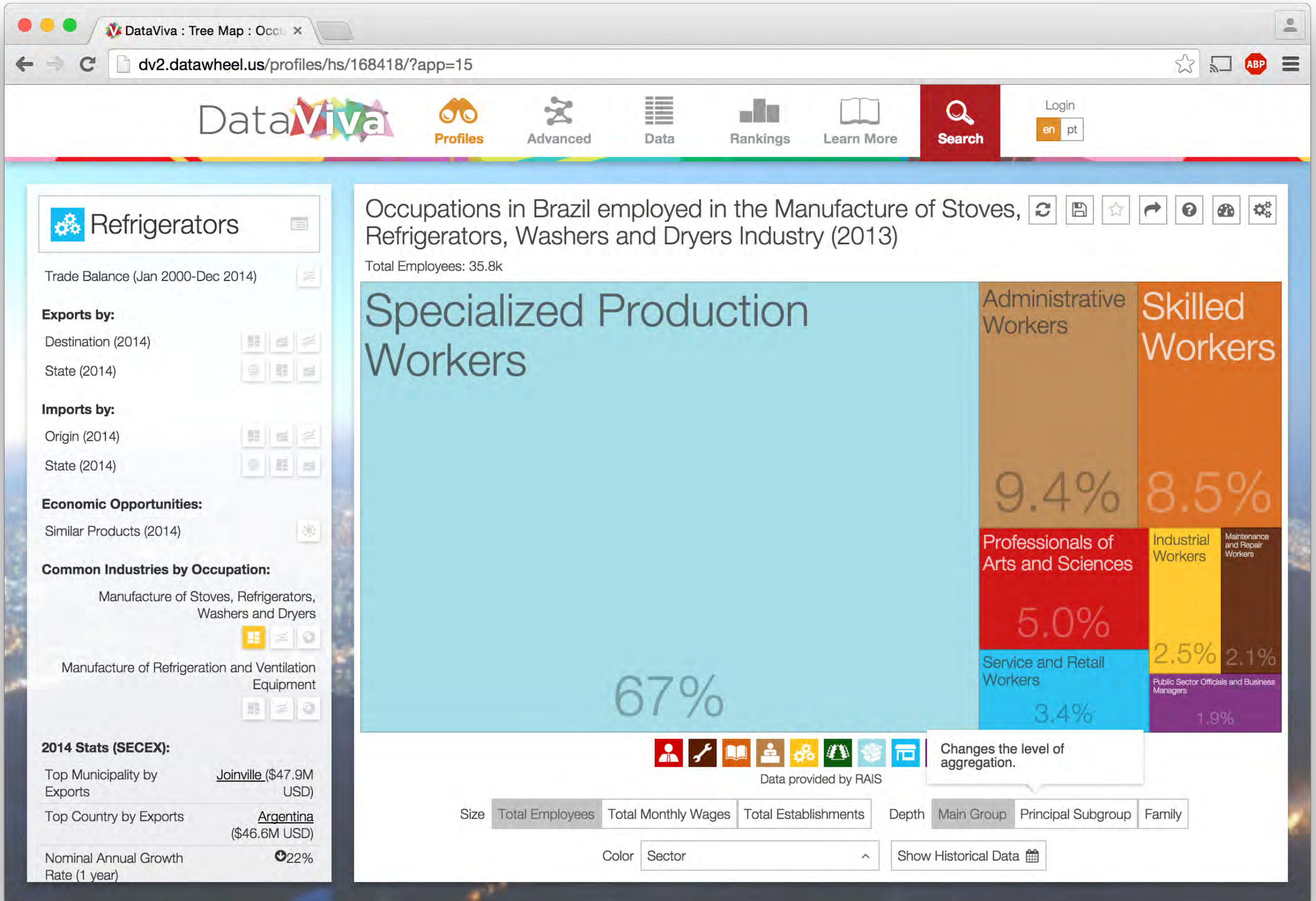
Manufacture of refrigeration and ventilation equipment
Industry - Class

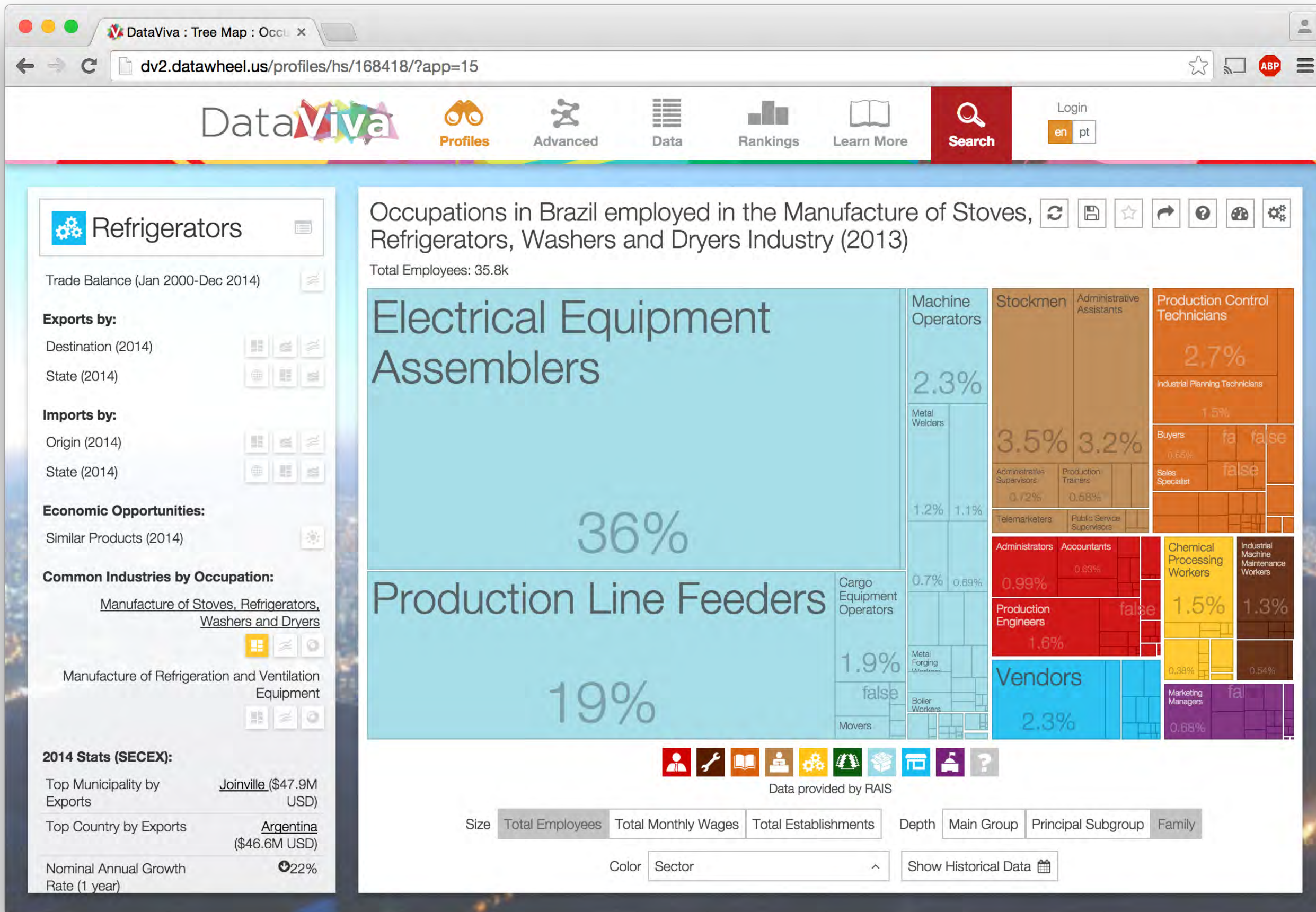
Refrigeration Installers
Occupation - Family

Refrigeration Workers
Occupation - Family

dv2.datawheel.us/profiles/hs/168418







Trade Balance (Jan 2000-Dec 2014)

Exports by:

Destination (2014)

State (2014)

Imports by:

Origin (2014)

State (2014)

Economic Opportunities:

Similar Products (2014)

Common Industries by Occupation:

Manufacture of Stoves, Refrigerators,
Washers and Dryers

Manufacture of Refrigeration and Ventilation Equipment

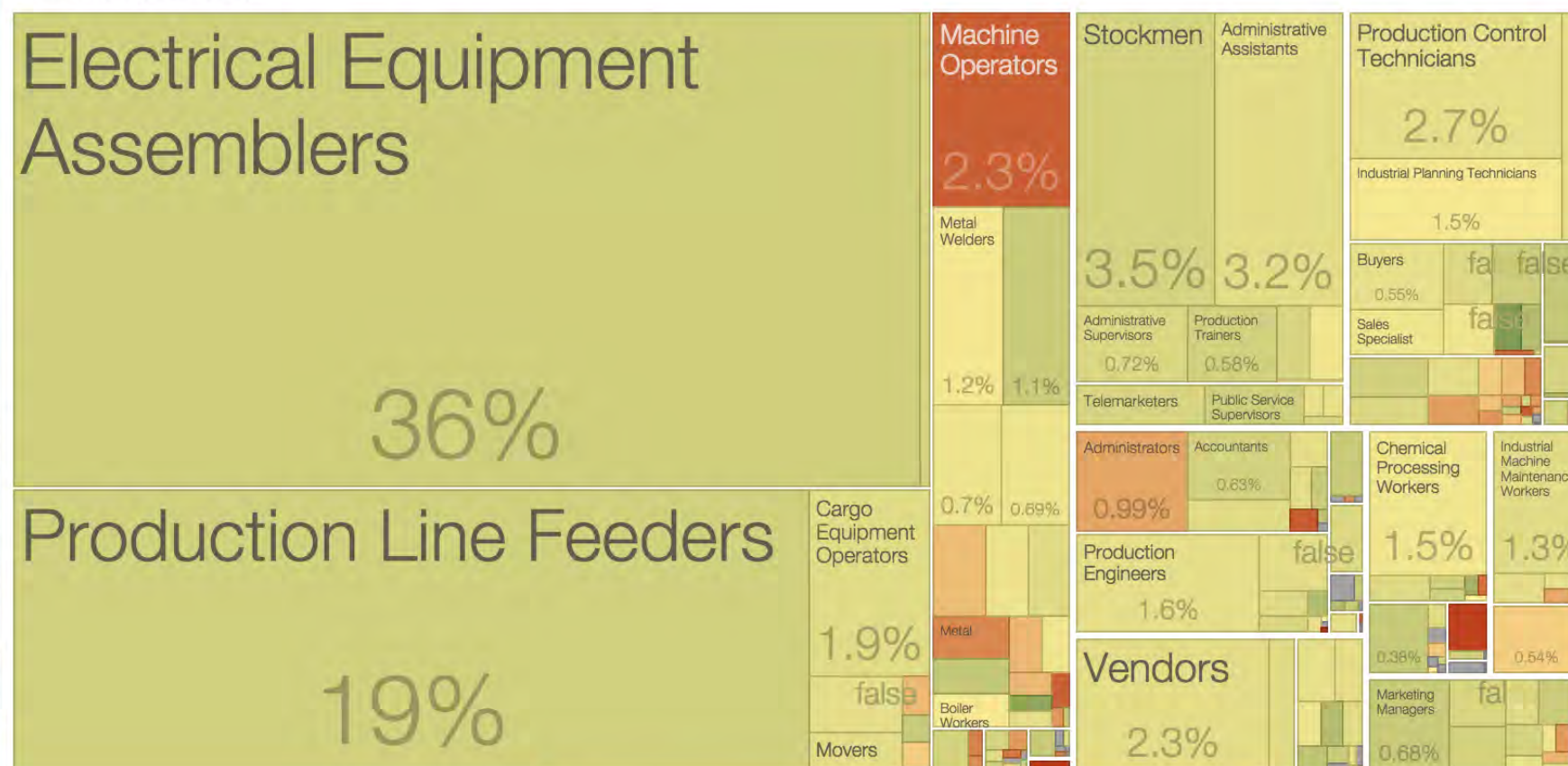
2014 Stats (SECEX):

Top Municipality by Exports Joinville (\$47.9M USD)

Top Country by Exports Argentina
(\$46.6M USD)

Nominal Annual Growth Rate (1 year)  22%

Total Employees: 35.8k

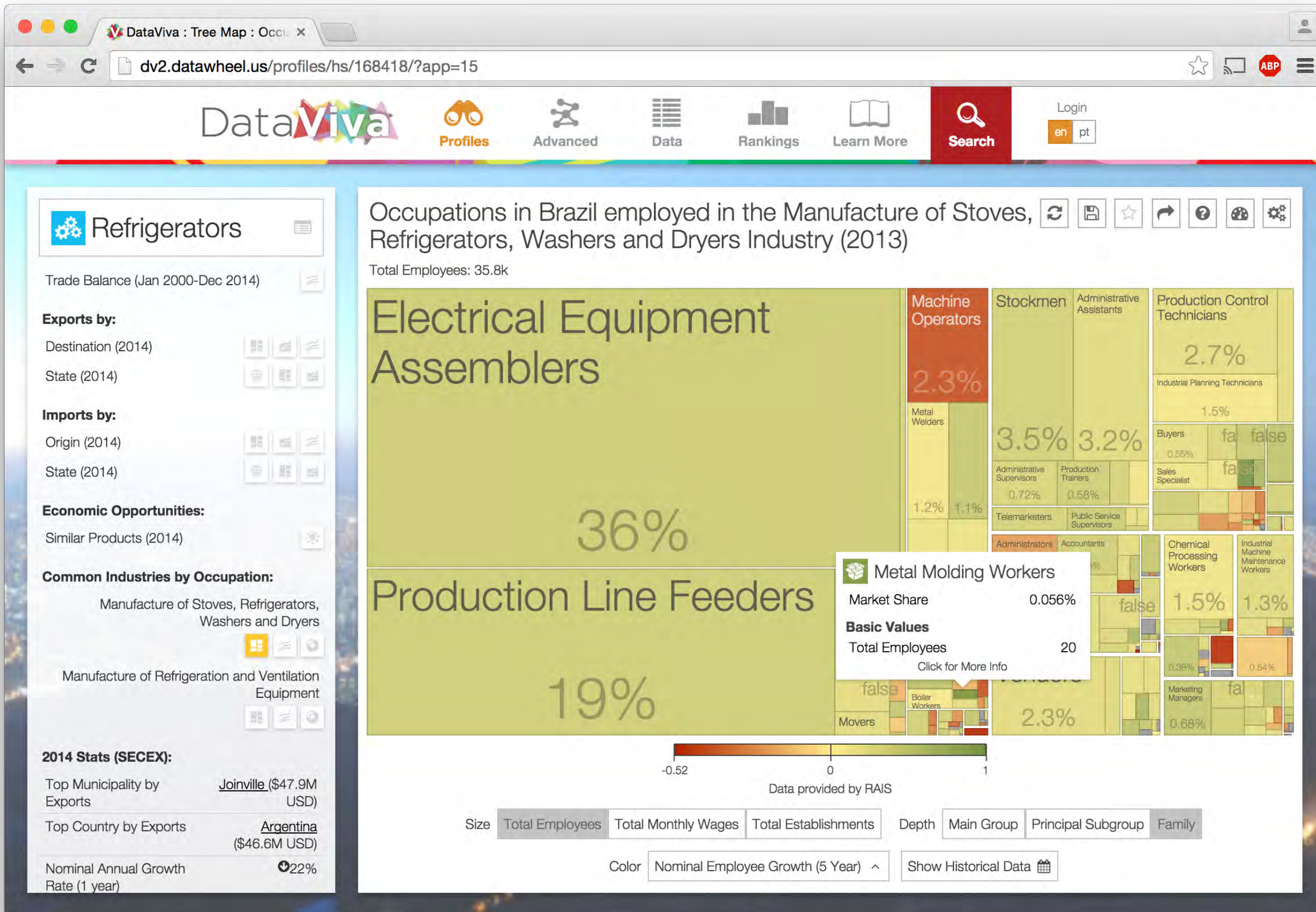


Data provided by RAIS

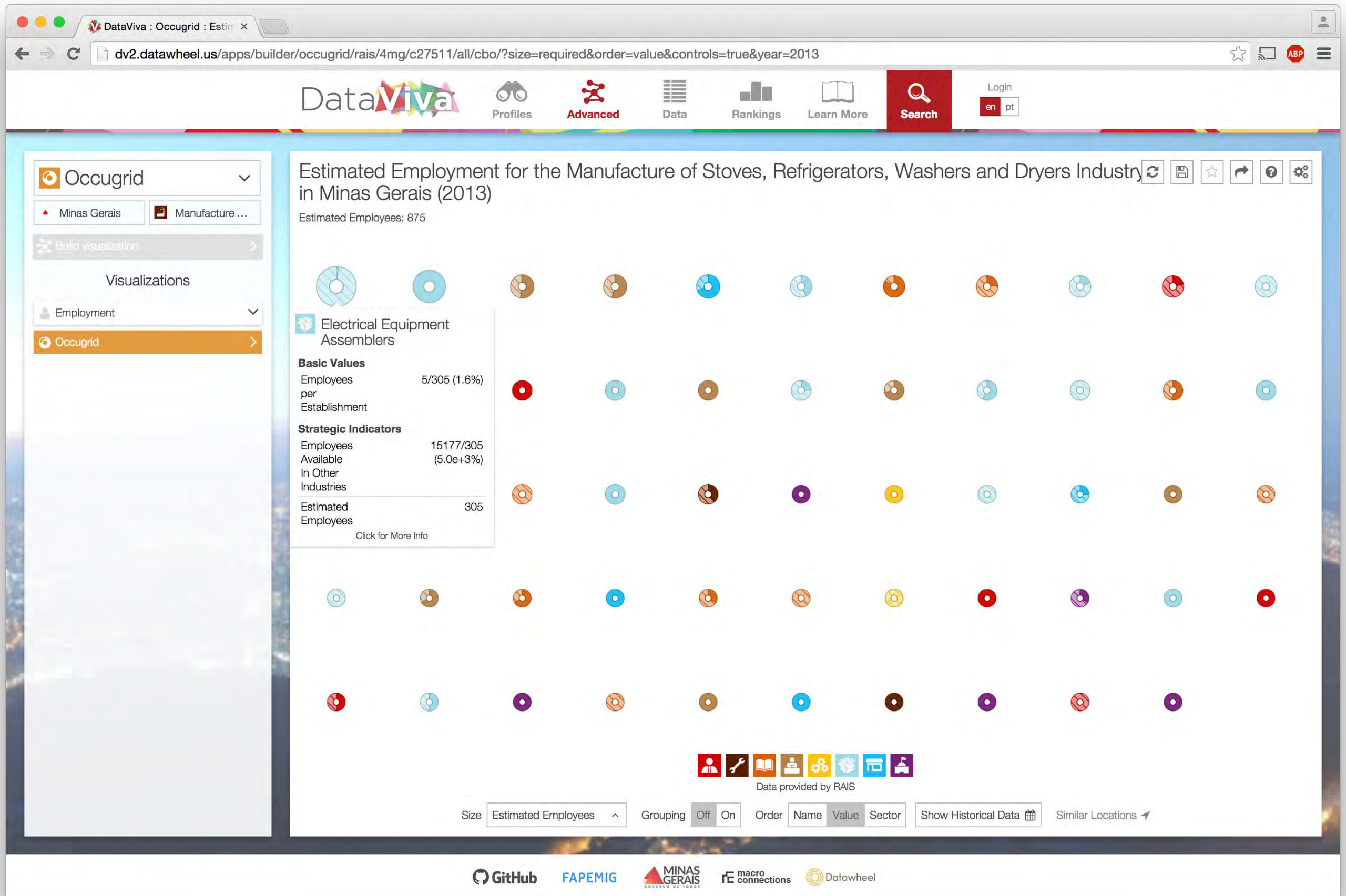
Size	Total Employees	Total Monthly Wages	Total Establishments	Depth	Main Group	Principal Subgroup	Family
------	-----------------	---------------------	----------------------	-------	------------	--------------------	--------

Color	Nominal Employee Growth (5 Year) ^
-------	------------------------------------

Show Historical Data 



Show Historical Data



Unintended Consequences

THE BASIC CALL STRUCTURE

This is the URL structure used: `/CLASSIFICATION/TRADE_FLOW/YEAR/ORIGIN/DESTINATION/PRODUCT/`.

Where **TRADE_FLOW** is one of the these

Where **ORIGIN** is one of the these

Where **DESTINATION** is one of the these

Where **PRODUCT** is one of the these

Where **YEAR** is one of the these

You will notice that this URL structure has the following parameters: **YEAR / ORIGIN / DESTINATION / PRODUCT** which is a byproduct of the bilateral nature of the underlying dataset.

SAMPLE API URL:

http://atlas.media.mit.edu/CLASSIFICATION/TRADE_FLOW/YEAR/ORIGIN/DESTINATION/PRODUCT/

URI OPTIONS

Classification

Classification ID	Description
sitc	Uses the SITC trade classification .
hs	Uses the HS (Harmonized System) trade classification .

Trade flows

Trade Flow	Description
export	Change direction of trade flow to show export values.
import	Change direction of trade flow to show import values.

Countries

Country	Description
show	Keyword used to show all bilateral countries.
all	Keyword to use all bilateral countries in the query.
3_character_id	Search: View as list below →

Products

W Beer – Wikipedia, the free

<https://en.wikipedia.org/wiki/Beer>

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Beer

From Wikipedia, the free encyclopedia

This article is about the alcoholic beverage. For other uses, see [Beer \(disambiguation\)](#).

Beer is an [alcoholic beverage](#) produced by the [saccharification](#) of [starch](#) and [fermentation](#) of the resulting sugar. The starch and saccharification [enzymes](#) are often derived from malted cereal grains, most commonly [malted barley](#) and malted wheat.^[1] Most beer is also flavoured with [hops](#), which [add bitterness](#) and act as a natural [preservative](#), though other flavourings such as herbs or fruit may occasionally be included. The preparation of beer is called [brewing](#).

Beer is the world's most widely consumed [alcoholic beverage](#),^[2] and is the third-most popular drink overall, after [water](#) and [tea](#).^[3] It is thought by some to be the oldest fermented beverage.^{[4][5][6][7]}

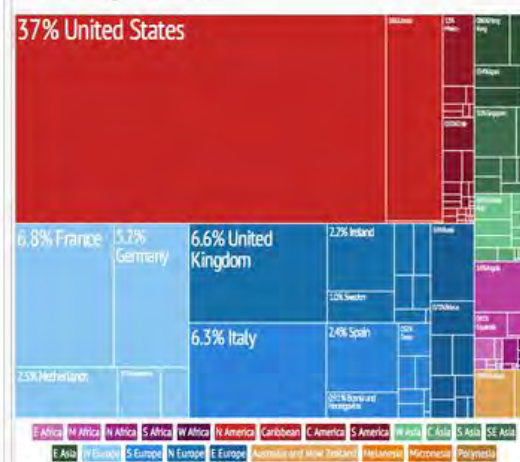
Some of humanity's earliest known writings refer to the production and distribution of beer: the [Code of Hammurabi](#) included laws regulating beer and beer parlours,^[8] and "The Hymn to [Ninkasi](#)", a prayer to the Mesopotamian goddess of beer, served as both a prayer and as a method of remembering the recipe for beer in a culture with few literate people.^{[9][10]} Today, the brewing industry is a global business, consisting of several dominant [multinational companies](#) and many thousands of smaller producers ranging from [brewpubs](#) to [regional](#)



Schlenkerla Rauchbier being poured from a cask

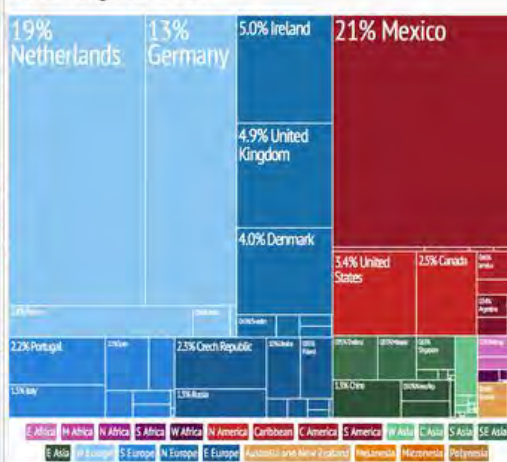
Brewing at home is subject to regulation and prohibition in many countries. Restrictions on homebrewing were lifted in the UK in 1963,^[76] Australia followed suit in 1972,^[77] and the USA in 1978, though individual states were allowed to pass their own laws limiting production.^[78]

Who imports Beer?



Beer Imports by Nation. From MIT/Harvard MIT/Harvard Atlas of Economic Complexity

Who exports Beer?



Beer Exports by Nation. From MIT/Harvard MIT/Harvard Atlas of Economic Complexity

Varieties

Main article: [Beer style](#)

While there are many types of beer brewed, the basics of brewing beer are shared across national and cultural boundaries.^[79] The traditional European brewing regions—[Germany](#), [Belgium](#), [England](#) and the [Czech Republic](#)—have local varieties of beer.^[80]

English writer [Michael Jackson](#) in his 1977 book *The World Guide To Beer* categorised beers



W Economy of China - Wikip

← → ↺ https://en.wikipedia.org/wiki/Economy_of_China ☆ 🔍 📄 📖 ABP ☰

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Economy of China

From Wikipedia, the free encyclopedia

For other meanings of "China's Economy", see [Economy of China \(disambiguation\)](#).

The **socialist market economy**^[16] of China is the world's second largest economy by nominal GDP and by purchasing power parity after the United States.^[1] It is the world's fastest-growing major economy, with growth rates averaging 10% over the past 30 years.^[17]

China is also the largest **exporter** and second largest **importer** of goods in the world. China is the largest manufacturing economy in the world,^[18] outpacing its world rival in this category, the **service-driven economy** of the United States of America. **ASEAN–China Free Trade Area** came into effect on 1 January 2010. China–Switzerland FTA ^[19] is China's first FTA with a major European economy, while **China–Pakistan Free Trade Agreement** came in effect in 2007 is the first FTA signed with a **South Asian** state. The **economy of China** is the fastest growing consumer market in the world.^[20]

On a **per capita income** basis, China ranked 87th by nominal GDP and 92nd by GDP (PPP) in 2012, according to the **International Monetary Fund** (IMF). The

Economy of China



Pudong in Shanghai in January 2014.

Rank	2nd (nominal) / 2nd (PPP)
Currency	Renminbi (RMB); Unit: Yuan (CNY)

External trade [edit]

Main article: [History of trade of the People's Republic of China](#)

Further information: [List of the largest trading partners of the People's Republic of China](#)

International trade makes up a sizeable portion of China's overall economy. Being a **Second World** country at the time, a meaningful segment of China's trade with the **Third World** was financed through grants, credits, and other forms of assistance. The principal efforts were made in Asia, especially to **Indonesia**, **Burma**, Pakistan, and **Ceylon**, but large loans were also granted in Africa (**Ghana**, **Algeria**, **Tanzania**) and in the Middle East (**Egypt**). However, after **Mao Zedong's** death in 1976, these efforts were scaled back. After which, trade with developing countries became negligible, though during that time, **Hong Kong** and **Taiwan** both began to emerge as major trading partners.

Since economic reforms began in the late 1970s, China sought to decentralize its foreign trade system to integrate itself into the international trading system. On November 1991, China joined the **Asia-Pacific Economic Cooperation** (APEC) group, which promotes **free trade** and cooperation the in economic, trade, investment, and technology spheres. China served as APEC chair in 2001, and Shanghai hosted the annual APEC leaders meeting in October of that year.

After reaching a bilateral WTO agreement with the EU and other trading partners in summer 2000, China worked on a multilateral WTO accession package. China concluded multilateral negotiations on its accession to the WTO in September 2001. The completion of its accession protocol and Working Party Report paved the way for its entry into the WTO on December 11, 2001, after 16 years of negotiations, the longest in the history of the **General Agreement on Tariffs and Trade**. However, U.S. exporters continue to have concerns about fair market access due to China's restrictive trade policies and U.S. export restrictions.

Global distribution of Chinese exports in 2006 as a percentage of the top market

China Export Treemap by Product (2012) from Harvard Atlas of Economic Complexity

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A place to showcase innovative and experimental uses of UN Comtrade data. Explore visualizations of huge volume of data and metadata, cutting-edge data extraction tools, and alternative dissemination platforms.

Data Visualization

Global Economic Dynamics

Provided by Bertelsmann Foundation

The "Global Economic Dynamics" (GED) project of the Bertelsmann Foundation is intended to contribute to better understanding of the growing complexity of global economic developments. By using the latest tools and methods for measuring, forecasting and modeling global economic dynamics, the project is designed to make globalization, its economic effects and its political consequences more transparent and understandable.

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The Observatory of Economic Complexity

Provided by MIT

The Observatory of Economic Complexity is a tool that allows users to quickly compose a visual narrative about countries and the products they exchange. The observatory provides access to bilateral trade data for roughly 200 countries, 50 years and 1000 different products of the Harmonized System and SITC.

[Explore »](#)

Interactive Graphic System of International Economic Trends

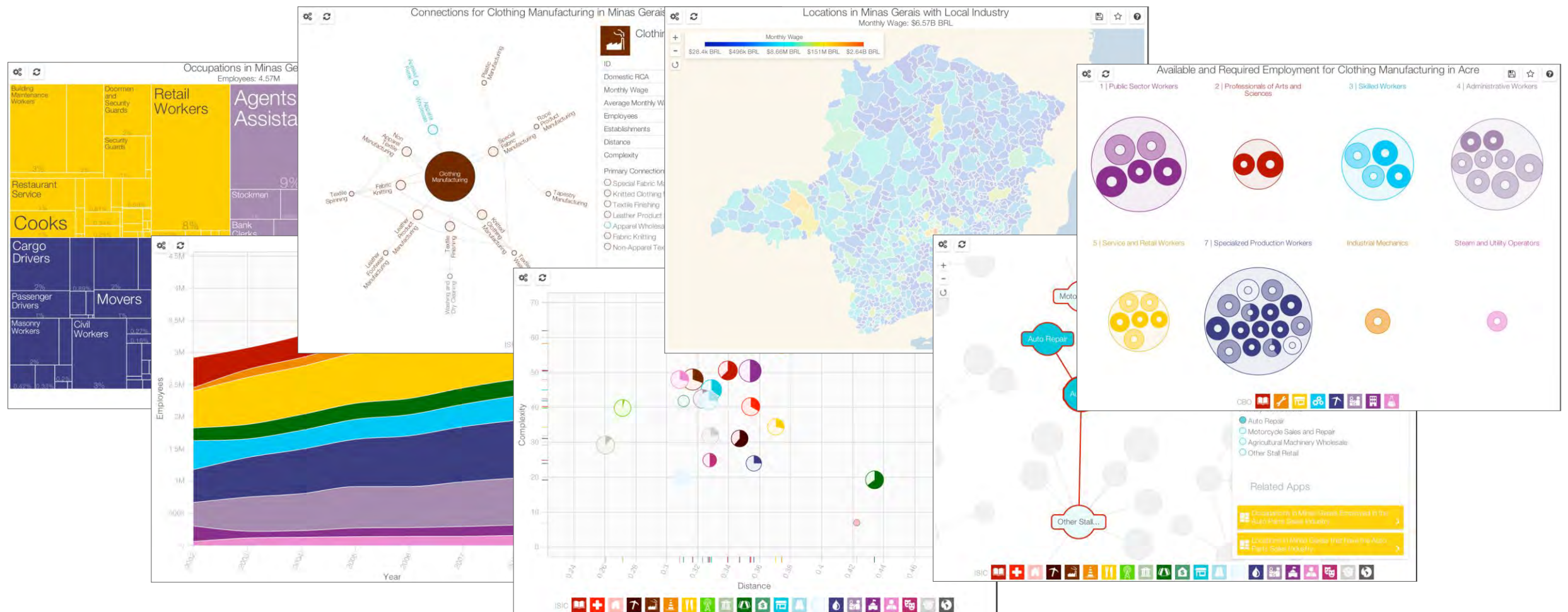
Provided by ECLAC

The Interactive Graphic System of International Economics Trends (SIGCI+) Trade Module is an easy and powerful way to generate analytical graphs, tables and indicators of international merchandise trade statistics by accessing UN Comtrade through web services in real-time. Hence, it is able to provide several trade indicators based on latest available trade data.

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Data visualization made easy.



d3plus.org



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