



Helping users think with data

Statistical communication at the BoC

"Communication on central bank statistics: unlocking the next level"

Joint Banco de Portugal and IFC Conference

Andrew Geraghty - Bank of Canada

September 20th 2022

70%

89%



A stock photography central
bank...

A group of four diverse young adults are sitting around a dark wooden table in a warm, rustic cafe. A woman with curly hair is laughing and holding a white coffee cup. A man with curly hair is smiling behind her. A woman with blonde hair is laughing with her hand on her chin. A man with a beard is laughing on the right side of the frame. On the table are coffee cups, a small potted plant in a repurposed can, and a smartphone. In the background, there are wooden shelves filled with various bottles and warm pendant lights.

The BoC's website
and data offerings
are amazing.



OMG, are they ever!



They make things
so
understandable.



I've got to check
them out...

Bloomberg Billionaires Index

View profiles for each of the world's 500 richest people, see the biggest movers, and compare fortunes or track returns.

As of September 7, 2022

The Bloomberg Billionaires Index is a daily ranking of the world's richest people. Details about the calculations are provided in the net worth analysis on each billionaire's profile page. The figures are updated at the close of every trading day in New York.

Rank	Name	Total net worth	\$ Last change	\$ YTD change	Country / Region	Industry
1	Elon Musk	\$251B	+\$6.46B	-\$19.7B	United States	Technology
2	Jeff Bezos	\$153B	+\$3.41B	-\$39.5B	United States	Technology
3	Gautam Adani	\$143B	-\$532M	+\$66.3B	India	Industrial
4	Bernard Arnault	\$132B	+\$2.07B	-\$45.5B	France	Consumer
5	Bill Gates	\$115B	+\$1.57B	-\$23.5B	United States	Technology
6	Larry Page	\$100B	+\$2.22B	-\$28.4B	United States	Technology
7	Warren Buffett	\$97.8B	+\$1.19B	-\$11.1B	United States	Diversified



Neil deGrasse Tyson ✓

@neiltyson · [Follow](#)



Not that anybody asked, but @JeffBezos' 150-Billion dollars, can stack four miles high. And with what's left over, if laid end-to-end, can circle Earth 178 times, and then reach the Moon...and back...twenty times.

And it still leaves a half-million dollars for him to play with.



8:46 PM · Jul 18, 2019



22.4K



Reply



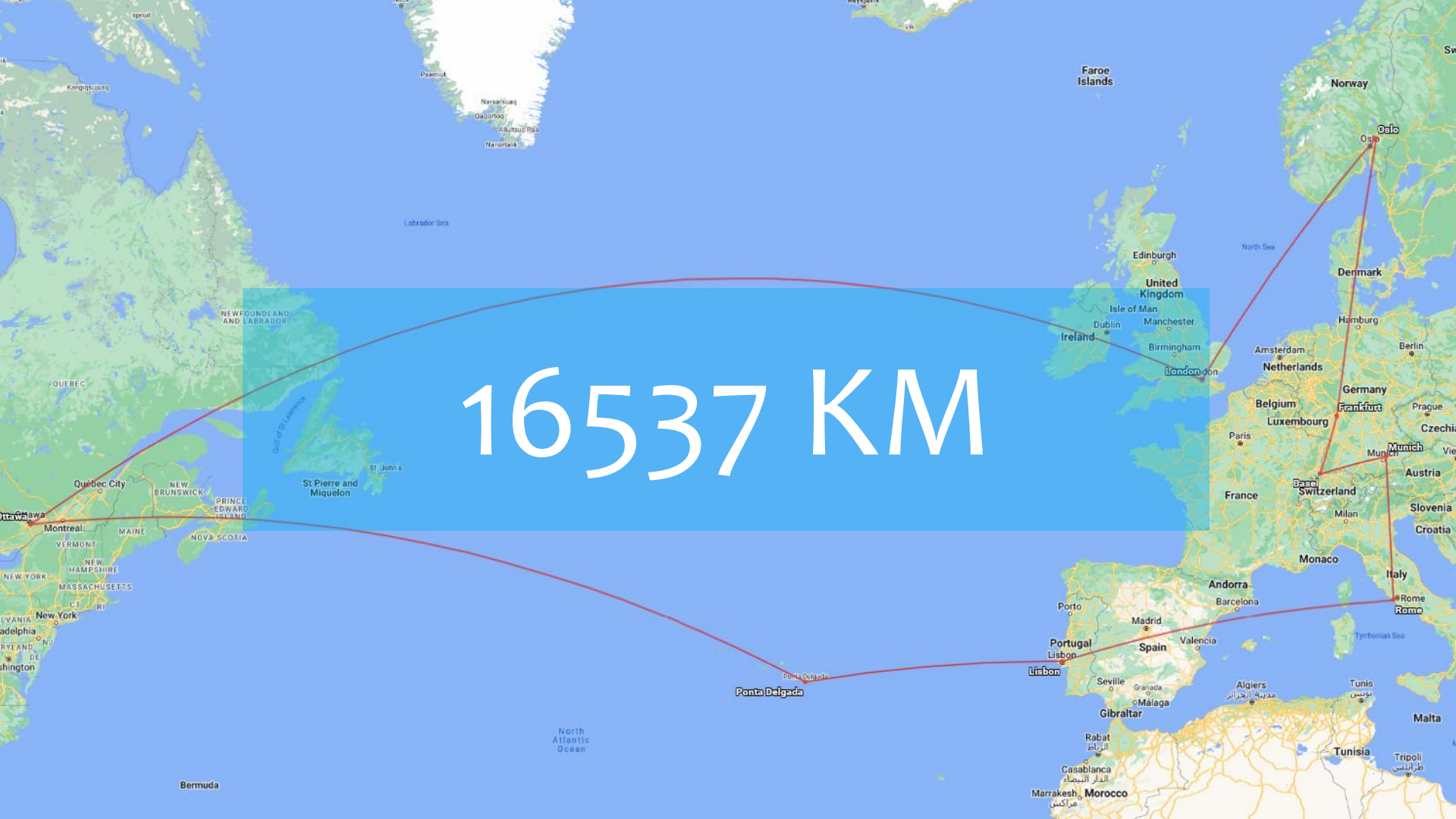
Share

[Read 1K replies](#)



0.11 mm

16537 KM





sense-mak·ing/'sens,mākiNG/(noun)

the action or process

of *making sense* of or *giving meaning* to something,
especially new developments
and collective experiences

"All the News
That's Fit to Print"

The New York Times

Late Edition

Today, morning clouds giving way to sunshine by the afternoon, high 65. Tonight, cloudy, low 54. Tomorrow, clouds giving way to sunshine, high 70. Weather map is on Page 23.

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NEW YORK, SUNDAY, MAY 24, 2020

\$6.00

U.S. DEATHS NEAR 100,000, AN INCALCULABLE LOSS

They Were Not Simply
Names on a List.
They Were Us.

Numbers alone cannot possibly measure the impact of the coronavirus on America, whether it is the number of patients treated, jobs interrupted or lives cut short. As the country nears a grim milestone of 100,000 deaths attributed to the virus, The New York Times scoured obituaries and death notices of the victims. The 1,000 people here reflect just 1 percent of the toll. None were mere numbers.

Patricia Dowd, 57, San Jose, Calif., auditor in Silicon Valley • **Marion Krueger**, 85, Kirkland, Wash., great-grandmother with an easy laugh • **Jermaine Ferro**, 77, Lee County, Fla., wife with little time to enjoy a new marriage • **Cornelius Lawyer**, 84, Bellevue, Wash., sharecropper's son • **Loretta Mendoza Dionisio**, 68, Los Angeles, cancer survivor born in the Phil-

real joker • **Michael Sorkin**, 71, New York City, champion of social justice through architecture • **George Valentine**, 66, Washington, D.C., lawyer who mentored others • **James Quigley**, 77, Chicago, rebel of the family • **Sherman Pittman**, 61, Chicago, dedicated his life to his church and his neighborhood • **Susan McPherson Gottsegen**, 74, Palm Beach, Fla., loyal and generous friend to many • **Andreas Koutsoudakis**, 59, New York City, trailblazer for TriBeCa • **Bob Barnum**, 64, St. Petersburg, Fla., leader in Florida Pride events • **Noel Sinkiat**, 64, Olney, Md., nurse planning for retirement • **Thomas E. Anglin**, 85, Cumming, Ga., created many wonderful memories for his family • **Robert Manley Argo Jr.**, 75, South Bay, Calif., member of Del Amo Flyers • **Michael McKinnell**, 84, Beverly, Mass., architect of Boston's monumental City Hall • **Huguette Dorsey**, 94, Somerville, N.J., coached several championship-winning junior high girls basketball teams • **Lynne Sierra**, 68, Roselle, Ill., grandmother who was always full of ideas • **Louvenia Henderson**, 44, Tonawanda, N.Y., proud single mother of three • **Carol Sue Rubin**, 69, West Bloomfield, Mich., loved travel, mahjong and crossword

jazz trumpet virtuoso • **Cristina**, 64, New York City, downtown New York singer with a cult following • **Robert H. Westphal**, 75, Fond du Lac, Wis., statesman in the construction industry • **Clair Dunlap**, 89, Washington, pilot still teaching people to fly at 88 • **Marylou Armer**, 43, Sonoma Valley, Calif., veteran police detective • **Regina D. Cullen**, 81, Shrewsbury, Mass., small in stature but strong in spirit • **Sandra Santos-Vizcaino**, 54, New York City, beloved public school teacher • **Frank Gabrin**, 60, New York City, emergency room doctor who died in husband's arms • **Sterling E. Matthews**, 60, Midlothian, Va., cancer survivor who served as a deacon • **Alby Kass**, 89, California, lead singer of a Yiddish folk group • **Roger Eckart**, 78, Indiana, retired firefighter and old-school barber • **Martin Douglas**, 71, New York City, maestro of a steel-pan band • **Daniel Spector**, 68, Memphis, mentor to other Memphis artists • **Mary Minervini**, 91, Oak Lawn, Ill., sign-language interpreter • **Salomon S. Podgursky**, 84, Morristown, N.J., loved to figure out how things worked • **Dale E. Thurmond**, 65, Lexington, Ky., tailor known for his exacting work and strong opinions • **Ellis Marsalis**, 85, New Orleans,

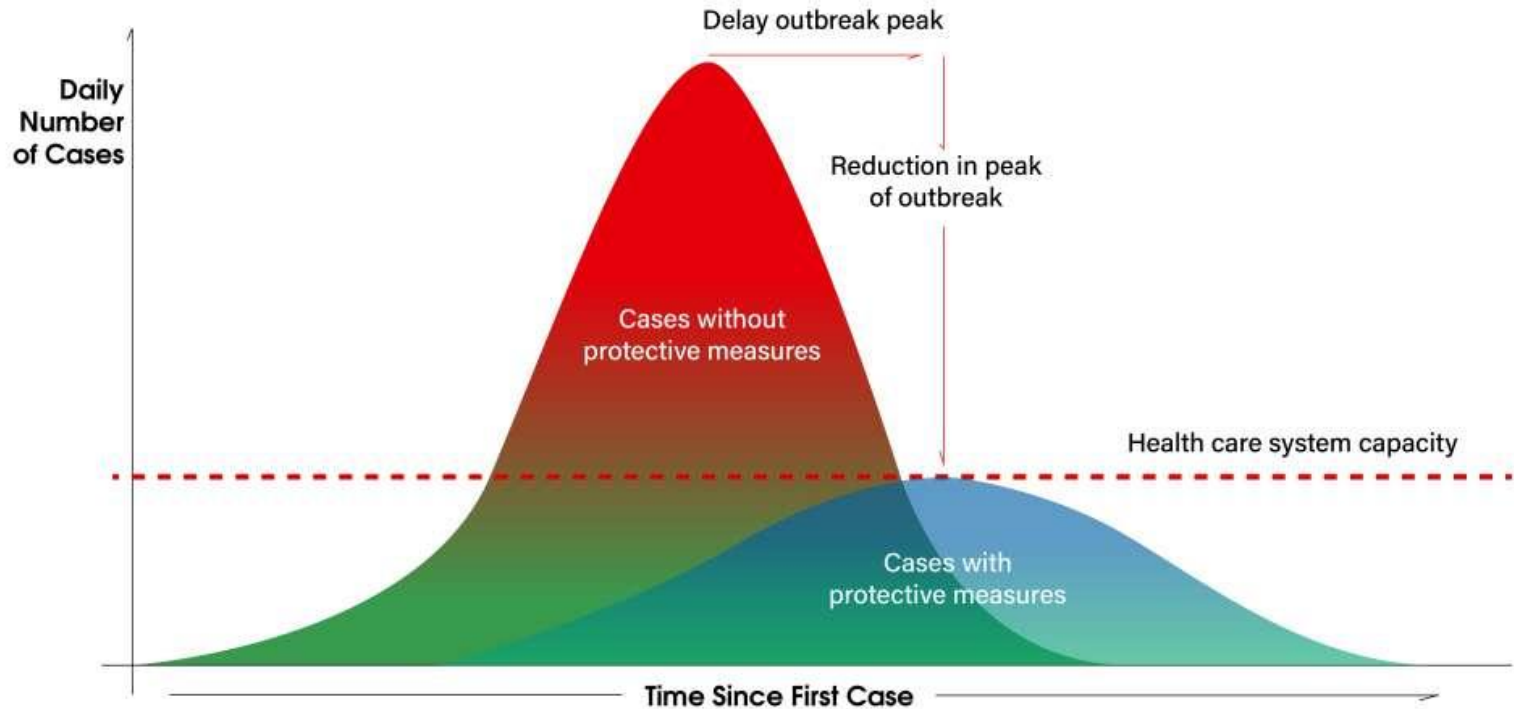
Bailargeon, 72, Dennisport, Mass., true outdoorsman • **Viral Darukhanawala**, 77, Hoffman Estates, Ill., worker at O'Hare International Airport • **Chester Dwulet**, 68, Burlington, Mass., proud Union Ironworker of Local 7 for 45 years • **John Timothy Barr**, 76, Rochester Hills, Mich., trustee for the Retired Detroit Police and Firefighters Association • **Julie Butler**, 62, New York City, veterinarian who served Harlem • **Lila A. Fenwick**, 87, New York City, first black woman to graduate from Harvard Law School • **Vincent Lioni**, 60, New York City, Met Opera violist and youth orchestra conductor • **Ann Youngerman Smoler**, 87, New York City, had a passion for social justice • **Thomas Waters**, 56, New York City, armed the affordable housing movement with data and analysis • **Luke Workoff**, 33, Huntington, N.Y., his relentless passion was for his family and friends • **José Diaz-Ayala**, 38, Palm Beach, Fla., served with the Palm Beach County Sheriff's Office for 14 years • **Antonio Nieves**, 73, Chicago, always seemed to be busy with some home project • **Jeanne Hammond Byrnes**, 97, Danbury, Conn., received numerous awards for her accounting skills • **Alice Coopersmith**

spirit • **Jack Butler**, 78, Indiana, lived in the house he grew up in • **Susan Grey Hopp Crofoot**, 97, Westwood, N.J., took great joy in writing little ditties under her pen name, Penelope Penwiper • **James David Gewirtzman**, 72, New City, N.Y., spent some of his happiest hours hiking in the Adirondacks • **Henry F. Graff**, 98, Greenwich, Conn., Columbia University historian of U.S. presidents • **Mari Jo Davitto**, 82, Thornton, Ill., people were her hobby • **Yaakov Perlow**, 89, New York City, leader of the Novominsker Hasidic dynasty • **Joseph F. Kelly**, 81, New York City, did two tours through the Panama Canal to Antarctica • **John Prine**, 73, Nashville, country-folk singer who was a favorite of Bob Dylan • **Perry Buchalter**, 63, Florida, quiet hero • **Monica Maley**, 74, Rehoboth Beach, Del., loved animals, had dogs and cats, and rode horses • **Thomas Tarbell Russell**, 83, Longmeadow, Mass., mentored by the computer science pioneer Grace Hopper • **Ruth Skapinok**, 85, Roseville, Calif., backyard birds were known to eat from her hand • **Faralyn Havir**, 92, Minnesota, her favorite thing was meeting new people • **Torin Jamal Howard**, 26, Waterbury, Conn., gentle giant, athlete and musi-

II, 69, Fremont, Ohio, known throughout Ohio for his knowledge of local history • **Harley E. Acker**, 79, Troupsburg, N.Y., discovered his true calling when he started driving a school bus • **Arlo Rawls**, 81, Chicago, caretaker of her neighborhood • **Roger Liddell**, 65, Flint, Mich., brought smiles to everyone he interacted with • **Luther Coleman**, 108, Evergreen Park, Ill., man who seemed to know everything • **Denise Camille Buzek**, 72, Bristol, Conn., loved writing birthday and holiday cards, poems and lists • **Charles Constantino**, 86, Menlo Park, N.J., worked 40 years for The New York Times • **Ben Doherty**, 83, Boston, stockbroker who founded Doherty Financial Services • **John Horton Conway**, 82, New Brunswick, N.J., mathematician known as the "magical genius" • **Stanley Chera**, 77, New York City, developer and friend of the president • **Robby Browne**, 72, New York City, Realtor and philanthropist who socialized with celebrities • **Wynn Handman**, 97, New York City, acting teacher and a founder of the American Place Theater • **Adam Kovacs**, 72, New York City, cartoonist and an expert on musicals • **Peter Brown**, 53, New Jersey, manager of the S.W. Brown & Son Funeral

Transforming numbers into
narratives is becoming part of
every leader's job.

Flattening The Curve



Source: adapted from the CDC / The Economist

iflscience.com

“

We are Canada's central bank. We work to preserve the value of money by keeping inflation low and stable.

”

Policy interest rate

3.25%

Sep 7, 2022

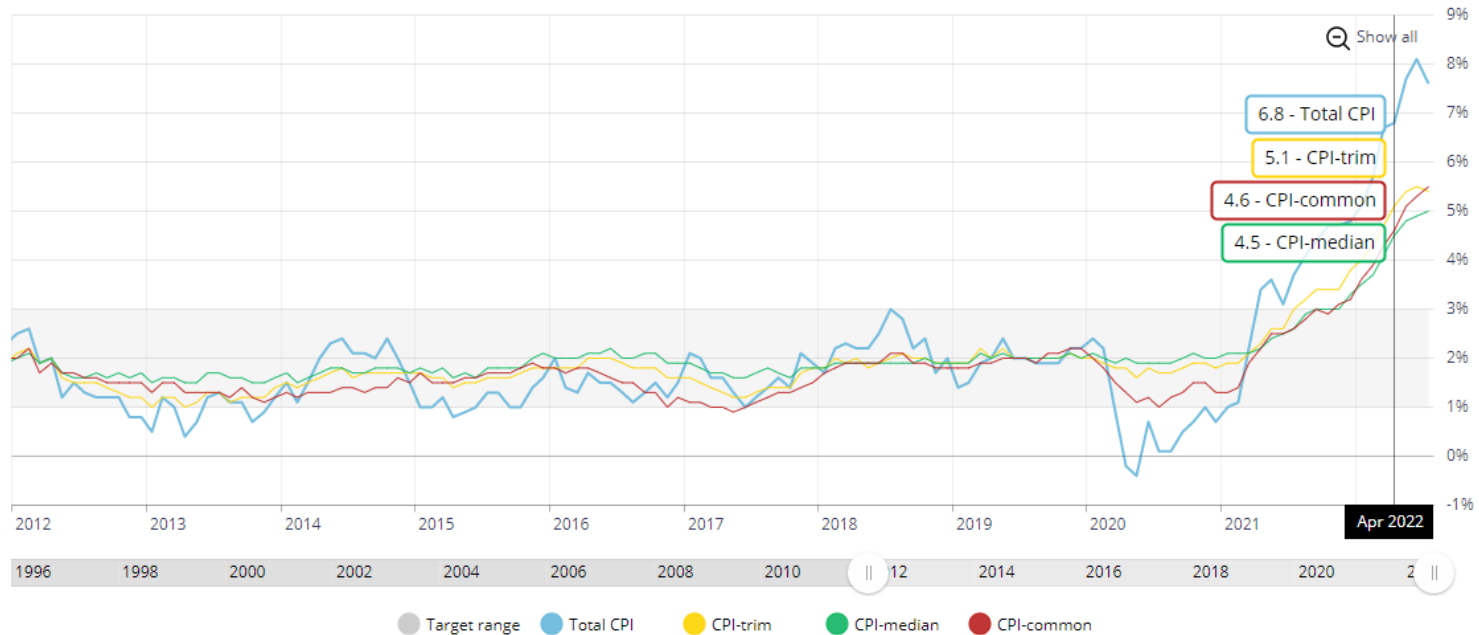
Total CPI Inflation

7.6%

Jul 2022

CPI-trim	5.4%	Jul 2022
CPI-median	5.0%	Jul 2022
CPI-common	5.5%	Jul 2022

Total CPI, CPI-trim, CPI-median, CPI-common and Target Range



We are working at shaping data
into narratives that make clearer
recommendations and inspire
others to act.

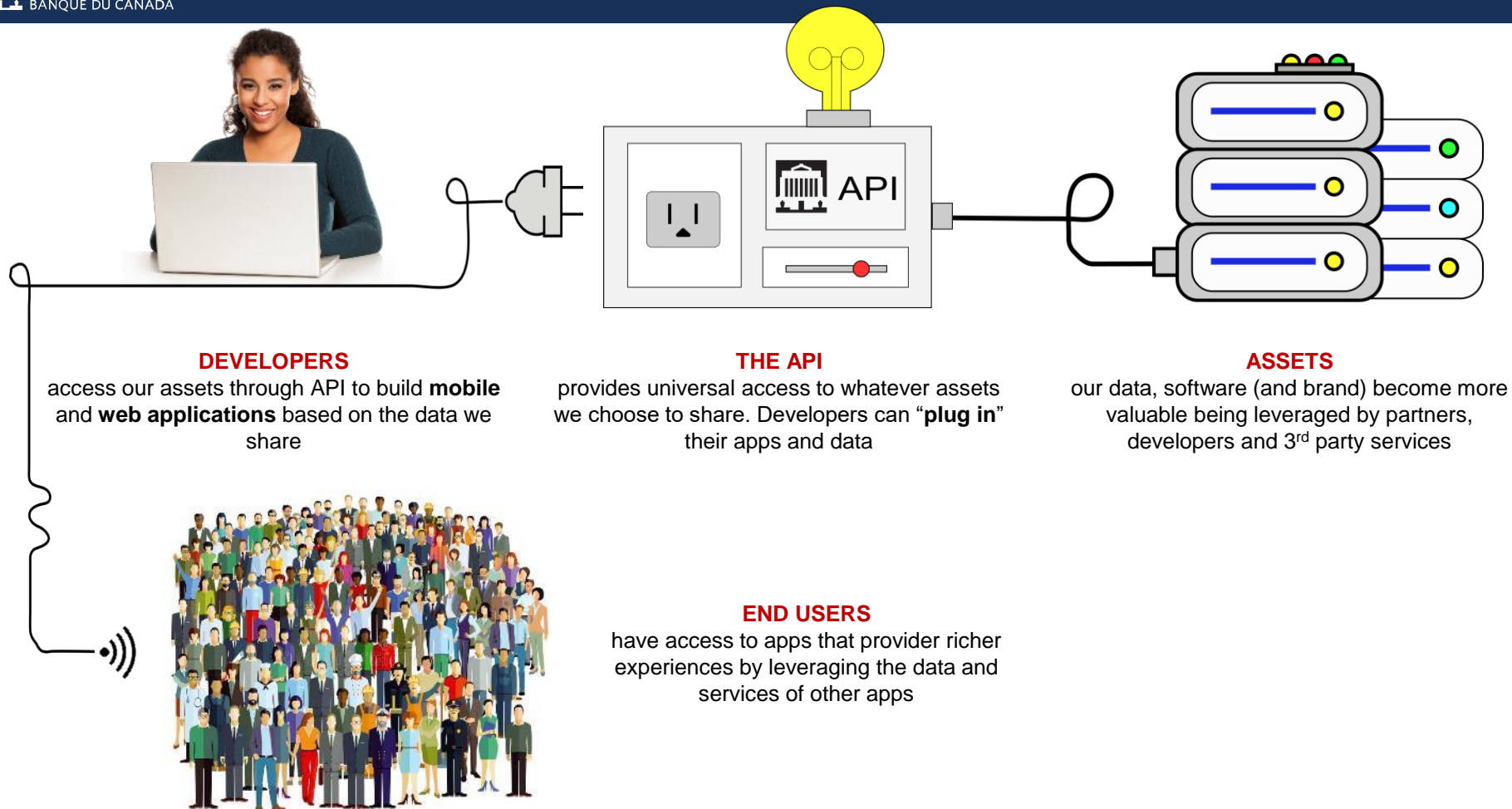
The key attributes of success
don't live in our products or
data offerings.

key attributes
live here



Ensuring that others understand what you are proposing must trump any personal or professional preferences you have regarding data.


Application Programming Interface



~ 10,249 series
~ 3.7 million data observations
 >140 BoC users (10% Robots)
> 500,000 public requests per day



DEMO

BANK OF CANADA
BANQUE DU CANADA

FR

Valet API

Formats

Lists

Series

Series Groups

Observations by Series

Observations by Series Group

Foreign Exchange Rates in RSS

Errors

Valet API

The Bank of Canada Valet Web Services offers programmatic access to global financial data. By using the Valet API, you can retrieve financial data and information from the Bank of Canada — such as daily exchange rates of the Canadian dollar against the European euro.

Formats

We provide data in JSON, XML and CSV formats.

Routes

The Valet API offers these routes:

- [Lists](#)
- [Series](#)
- [Series Groups](#)
- [Observations by Series](#)
- [Observations by Series Group](#)
- [Foreign Exchange Rates in RSS](#)

The Base URL of each route is as follows:

<https://www.bankofcanada.ca/volet>

All routes shown below

- must be prefixed by the Base URL
- require at least one `seriesName`, `groupName` or `listName` — but the `format` and `query` parameters of these routes are optional

Formats

A `format` is the file extension of a response returned by Valet. Valet can return data in JSON, XML and CSV formats. The default is JSON. The format is specified by adding a file extension to the end of the request path.

`/observations/seriesNames/format`

Example query:

```
/observations/FXCADUSD/json
/observations/group/FX_RATES_DAILY/xml
```

JSONXMLCSV

Example JSON Response (Formats):

```
{
  "terms": {
    "url": "https://www.bankofcanada.ca/terms/"
  },
  "seriesDetail": {
    "FXCADUSD": {
      "label": "CAD/USD",
      "description": "Canadian dollar to US dollar daily exchange rate",
      "dimension": {
        "key": "d",
        "name": "date"
      }
    }
  },
  "observations": [
    {
      "d": "2017-01-03",
      "FXCADUSD": {
        "v": "9.7443"
      }
    }
  ]
}
```

https://www.bankofcanada.ca/volet/docs#valet_api

https://www.bankofcanada.ca/volet/docs#valet_api



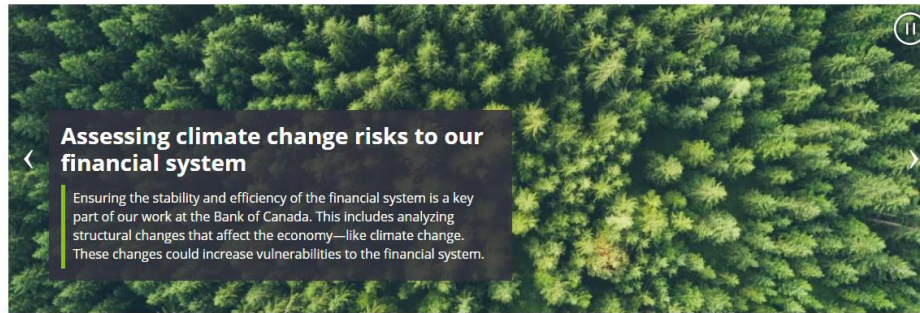
We are Canada's central bank. We work to preserve the value of money by keeping inflation low and stable.



Policy interest rate
3.25%
Sep 7, 2022

Total CPI Inflation
7.6%
Jul 2022

CPI-trim	5.4%	Jul 2022
CPI-median	5.0%	Jul 2022
CPI-common	5.5%	Jul 2022



Assessing climate change risks to our financial system

Ensuring the stability and efficiency of the financial system is a key part of our work at the Bank of Canada. This includes analyzing structural changes that affect the economy—like climate change. These changes could increase vulnerabilities to the financial system.



News

Getting inflation back to normal

September 8, 2022

Speech summary - Carolyn Rogers - Calgary Economic Development - Calgary, Alberta

Speaking a day after the Bank of Canada raised interest rates, Senior Deputy Governor Carolyn Rogers discusses where the economy stands and what the Bank is doing to get inflation back under control.

Content Type(s): Press, Speeches and appearances, Speech summaries | Topic(s): Domestic demand and components, Expectations, Inflation and prices, Interest rates



Bank of Canada
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#YouAskedUs if we printed cash to finance the federal gov't.

We didn't.

 Keep reading to learn how



Banking and Financial Statistics

On this page you can search the [statistical data tables](#). For historical publications, see the [Historical Banking Financial Statistics and Weekly Financial Statistics](#).



Due to the exceptional circumstances related to the current COVID-19 pandemic, there may be a delay in the posting of certain data submissions to the website. During this period, the Bank of Canada will be committed to posting data submissions as soon as practicable. We will return to our regular release schedule once conditions permit.

Contains



Sections

Statuses

35 result(s)

Bank of Canada assets and liabilities: Month-end (formerly B1)

Month-end statement of assets and liabilities as required by the Bank of Canada Act. The figures for the last two reference periods are preliminary and are subject to revision.

Content Type(s): [Banking and Financial Statistics](#)

Bank of Canada assets and liabilities: Weekly (formerly B2)

Weekly Wednesday statement of assets and liabilities as required by the Bank of Canada Act. The figures for the last reference period are preliminary and are subject to revision.

Content Type(s): [Banking and Financial Statistics](#)

Historical positions of members of Payments Canada with the Bank of Canada (formerly B3)

Inactive: Starting June 13, 2022, the Bank of Canada no longer updates this table.

Content Type(s): [Banking and Financial Statistics](#)

Bank of Canada note liabilities (formerly K1)

Bank of Canada note liabilities include notes issued by chartered banks, the Dominion of Canada,



[Home](#) » [Bank notes](#)

Bank notes past and present

Read up on our [current](#) and [past](#) bank notes and find even more information on [related websites](#).

Current bank notes



Canada's Vertical \$10 Note

Explore and share the \$10 polymer bank note featuring Viola Desmond.



Frontiers Series

Canada's polymer bank notes celebrate achievements at home, around the world, and in space.





Overview ^

Introduction

Guiding principles for content

Design v

Components v

Charts v

Accessibility v

Introduction

The Bank of Canada Design System is a “just enough documentation” approach to capturing the patterns and standards of our web framework. It’s an iterative, collaborative resource intended to help scale the Bank’s digitalization efforts.

In this system:

- **Design**—patterns for colour, typography, and layout
- **Components**—usage notes for buttons, banners, and other reusable elements
- **Charts**—standards for choosing and implementing charts
- **Accessibility** guidelines

Content

We’ve embedded content guidance directly into the documentation for this design system. We believe that content and design are symbiotic and inseparable, so we’re taking an integrated approach to documenting them just as we do with implementing them.

That said, we’ve also included our [guiding principles for content](#).

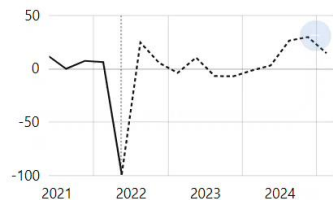


Interactive ToTEM Impulse Responses

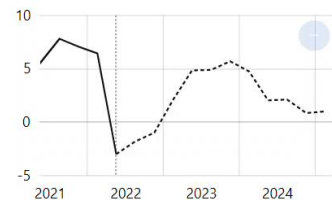
Using June 2022 Case A - TEST DATA

Scenarios

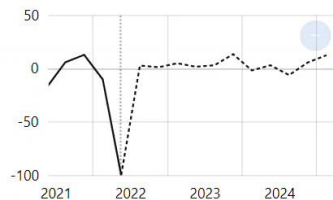
Business investment, %



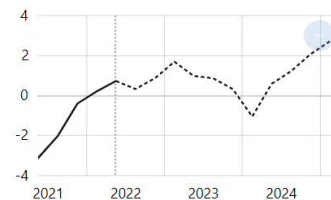
Real effective exchange rate (CAD/ROW), %



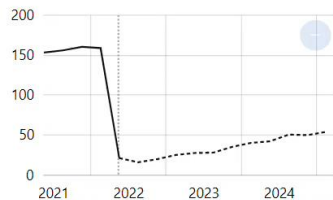
Exports, %



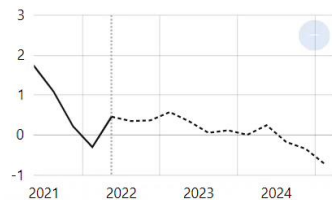
ToTEM output gap, %



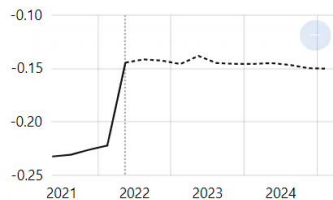
Mortgage debt to disposable income, %



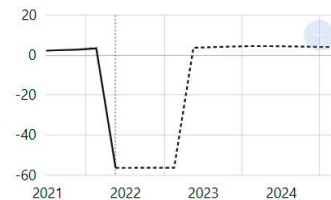
Unemployment gap, %



Real consumption price deflator, %



Core inflation (year-over-year), p.p.



— Staff Outlook

Guided tour

Print

A group of four diverse young adults are sitting around a dark wooden table in a warm, rustic cafe. A woman with curly hair on the left is laughing and holding a white coffee cup. Next to her, a man with curly hair is also laughing. On the right, a woman with blonde hair is laughing with her hand near her face. In the foreground on the right, a man with a beard is laughing and looking towards the group. The table has coffee cups, a small potted plant in a repurposed can, and a smartphone. The background shows a bar area with shelves of bottles and warm lighting.

The BoC's website
and data offerings
are amazing.

A group of four friends are sitting around a dark wooden table in a cafe, laughing and enjoying their time. The woman on the left, with curly hair and a white tank top, is holding a white coffee cup and has a speech bubble above her head that says "I'm amazing!". The man next to her, with curly hair and a dark jacket, is also laughing. The woman on the right, with blonde hair and a beige cardigan, is resting her chin on her hand and laughing. The man on the far right, with a beard and a blue shirt, is leaning in and laughing. On the table, there are coffee cups, a small potted plant in a blue can, and a smartphone. In the background, there are wooden shelves filled with various bottles and jars, and a warm, cozy atmosphere.

I'm amazing!



Influencing action

- Move from making **sense** to making **meaning** by developing a sense of scale
- Transform numbers into narratives that **build shared understanding**
- Give people a sense of control, **let them pull the levers** sometimes
- **Create experiences** that leave people feeling **creative, smart, powerful** and **included**

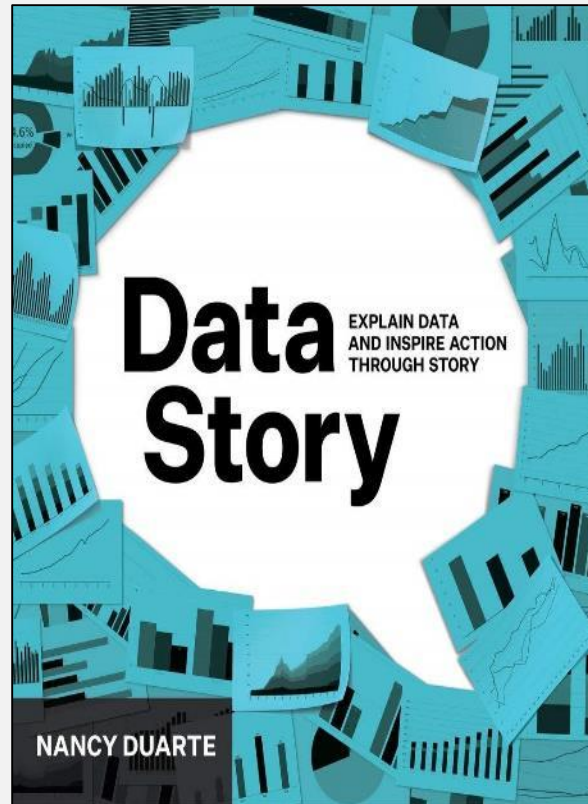
O'REILLY®

Communicating with Data

Making Your Case with Data



Carl Allchin



national bestseller

flow

mihaly
csikszentmihalyi

the psychology of
optimal experience

“Important. . . .

Illuminates the
way to happiness.”

—*New York Times*
Book Review

HARPERPERENNIAL  MODERNCCLASSICS

P.S.
INCLUDES
INTERVIEWS
& MORE

<https://bit.ly/31phU4W>
data