Creating Better Understanding of Your Data through Effective Use of Data Visualizations

eHealth 2015

Canadian Institute for Health Information
Institut canadien d'information sur la santé

Presenters

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Overview

- About the Canadian Institute for Health Information (CIHI)

- About Integrated eReporting at CIHI

- Creating Effective Data Visualizations

- Demo - Use of Data Visualization in CIHI Products

- Questions and Discussion

CIHI Values

Better data.

Better decisions.

Healthier Canadians

CIHI's Mandate

To lead the development and maintenance of comprehensive and **integrated** health information that:

- Enables sound policy; and

- Provides effective health system management to improve health and health care.

Performance Reporting and Digital Analytics

- A few years ago, the Integrated eReporting (IeR) team was established at CIHI to support CIHI's strategic goals of providing system decision makers with **integrated access to information**.

- Since then, the team has been working in close collaboration with other departments at CIHI to build products for our stakeholders that follow the key principles established for this work.
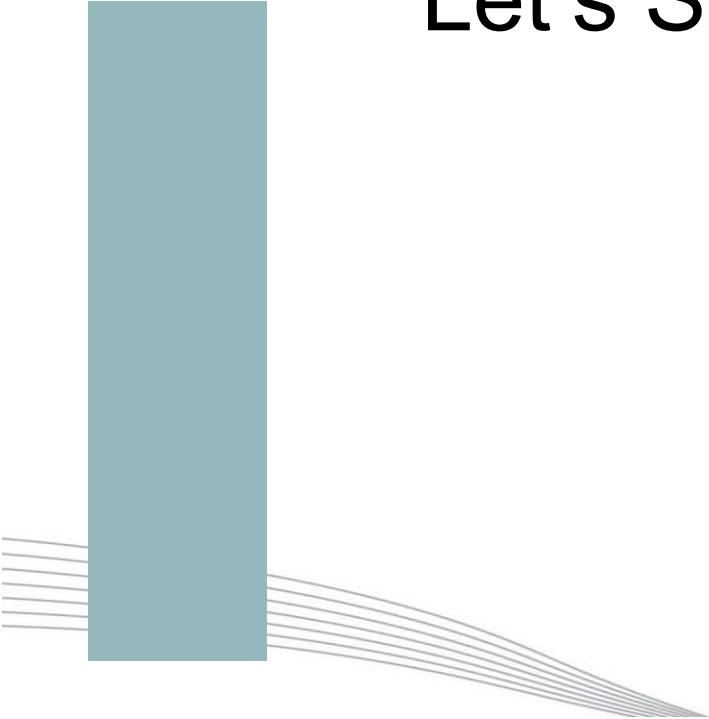
Integrated eReporting Key Principles
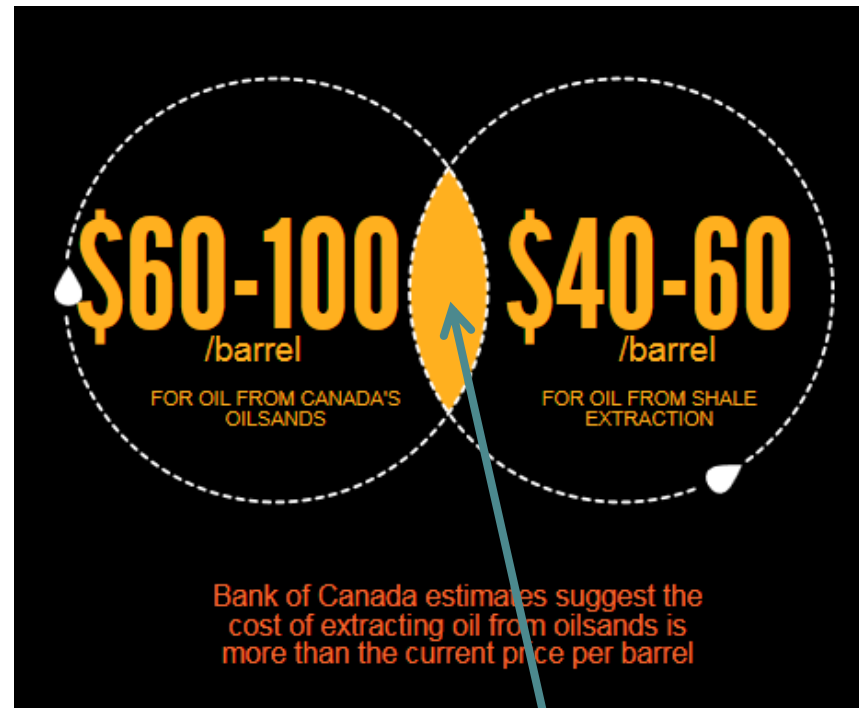
Meet our clients' needs

Be efficient and standardized

Improve the user experience

Let's Start with a Few Examples

The Visual Should Capture Your Message

Source: CTV News

There is no overlap in these figures! Why a Venn diagram?
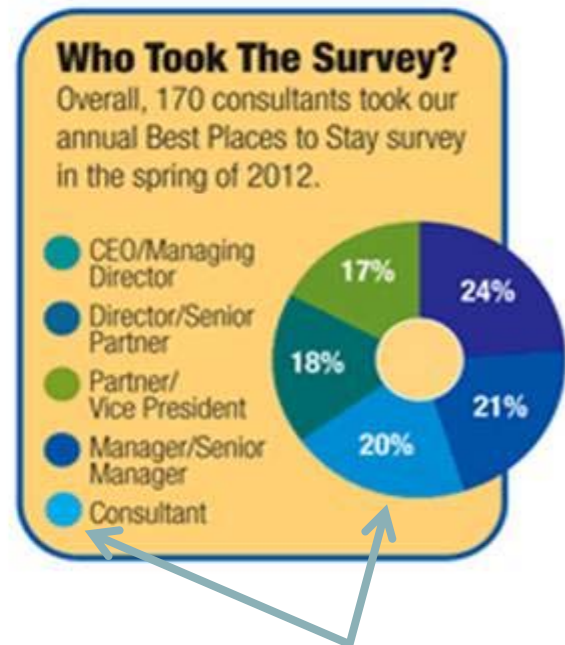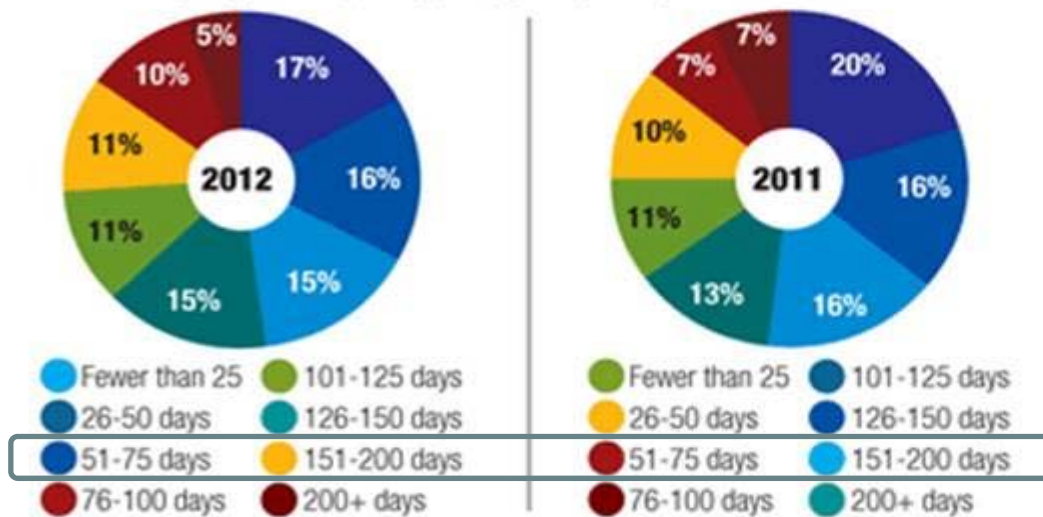
The Visual Should Capture Your Message

Who buys our oil?

Close to 100 % of Canada's oil exports go to the U.S.

U.S. crude oil imports - 40% Canadian

USA (100%)
Crude Exports

Where is the other 60%?

Not the Japanese flag…

Colour and Comparisons

How many nights do you typically stay away from home due to work?

Who Took The Survey?
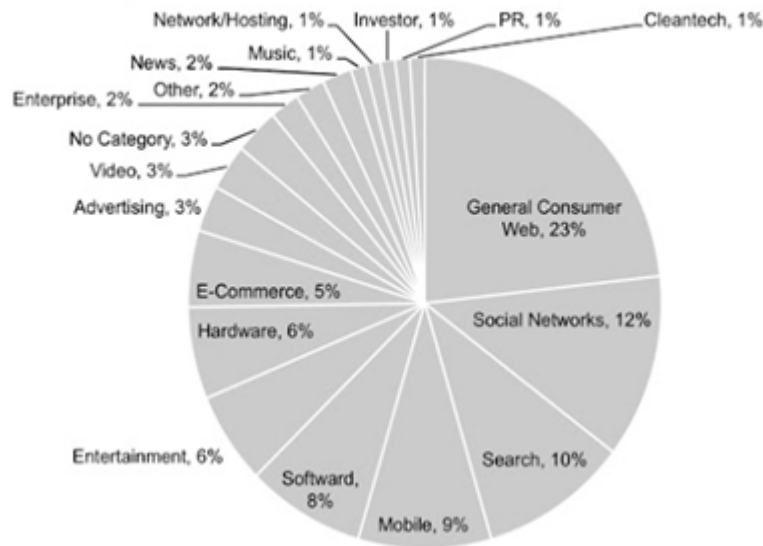Overall, 170 consultants took our annual Best Places to Stay survey in the spring of 2012.

How quickly can you match the colour to the slice?

Source: Storytelling with Data Blog

Which More Clearly Conveys the Information?

TechCrunch Coverage: 2005 - 2011

TechCrunch Coverage: 2005 - 2011

Category	Percentage
General Consumer Web	23%
Social Networks	12%
Search	10%
Mobile	9%
Softward	8%
Entertainment	6%
Hardware	6%
E-Commerce	5%
Advertising	3%
Video	3%
No Category	3%
Enterprise	2%
Other	2%
News	2%
Music	1%
Network/Hosting	1%
Investor	1%
PR	1%
Cleantech	1%

Source: Storytelling with Data Blog

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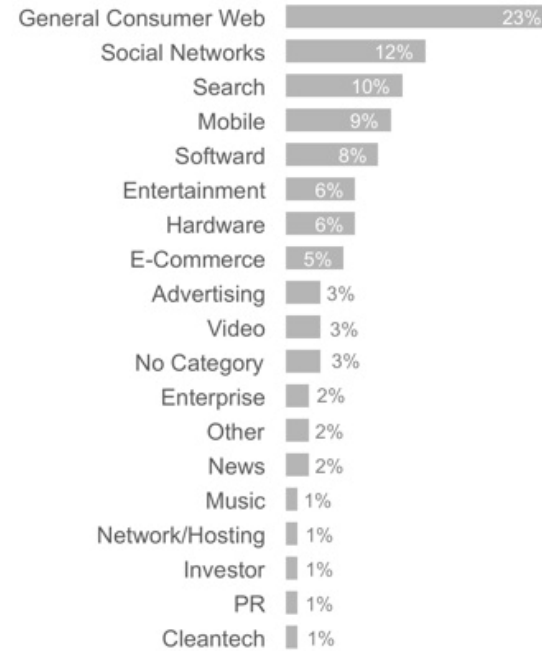
Map Visualization – Cholera Example

London, England

John Snow, 1854

Plotting the locations of cholera deaths on a hand-drawn map revealed **spatial clustering** around the Broad Street public water pump, which turned out to be the source of the cholera outbreak.

Source: The Guardian Data Blog

Creating Effective
# Data Visualizations

Data Visualization Best Practices

When you are deciding on how best to display your data consider:

- Who is your audience?

- What is the purpose of the visualization?

  – Presenting a single fact

  – Providing a summary of a specific topic from a number of different angles (trends over time, comparative results, etc.)

  – Allowing the user to explore the data and find their own relationships

Data Visualization Best Practices
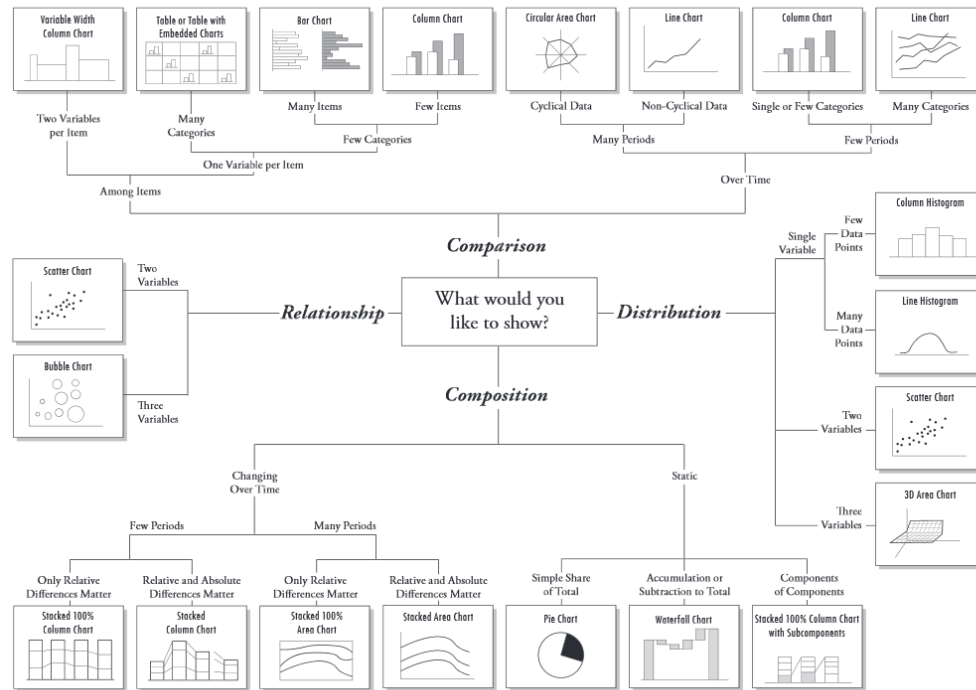
Source: Dr. A. Abela - Extreme Presentation Blog

CIHI's Current eReporting Landscape
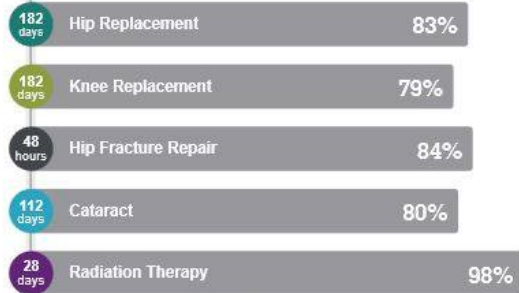
Product	Target Audience	Purpose
• Social Media • YHS: In Brief	Public	• Communicate high level facts • Generate interest and discussion on a topic
• eReporting Dashboards • YHS: In Depth	Health System Managers	• Provide more detailed information on a topic including trends and comparisons
• CIHI Portal • YHS: Insight	Health System Analysts	• Explore relationships and the who, what, why, where and how

*YHS = Your Health System

How long are Canadians waiting for priority procedures?

About 4 out of 5 Canadians have their procedure done within medically acceptable wait times
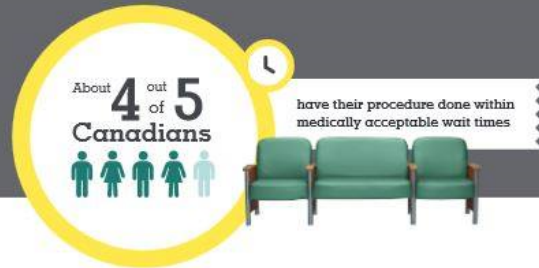
Benchmarks — Amount of time that clinical evidence shows is appropriate to wait for a procedure.

Benchmark	Procedure	Percentage
182 days	Hip Replacement	83%
182 days	Knee Replacement	79%
48 hours	Hip Fracture Repair	84%
112 days	Cataract	80%
28 days	Radiation Therapy	98%

Note: Data reported for April 1 to September 30, 2014.

Detailed information on wait times in Canada can be accessed via CIHI's Wait Times eTool at **waittimes.cihi.ca**.
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Canadian Institute for Health Information
Your Health System

Export   Share

SEE. KNOW. SHARE.

Overall Results for **Toronto Central LHIN**

Total Population	Rural Area Population	Seniors (65 and Older)	Immigrant Population	Aboriginal Population
1,218,907	**NA**	**14.5%**	**40.8%**	**0.8%**

More

This matrix provides a snapshot of how results for hospitals and health regions compare with those of others and change over time. For hospitals, results are compared with the peer group average, with the exception of HSMR. HSMR results are compared with the Canadian average of 100 in 2009–2010. For health regions, results are compared with the national average. The number in each cell represents the number of indicators associated with the cell. Click on the cell to see the names of those indicators.

New indicators, non-directional indicators (for which higher or lower results cannot be defined as better or worse) and those without 3 years of available data are not displayed in the matrix. For more information, see the Methodology document.

📄 Methodology

Colour difference from average is based on a statistical assessment and the desirable direction of the indicator. Green represents the desirable direction for each indicator. For more information, see Help.

Trend Over Time

Comparisons	⬇	〜	⬆	
Above Average	0	7	5	**Repeat Hospital Stays for Mental Illness**
				All Patients Readmitted to Hospital
				Medical Patients Readmitted to Hospital
Same as Average	0	10	1	**Surgical Patients Readmitted to Hospital**
				Patients 19 and Younger Readmitted to Hospital
Below Average	1	5	0	

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Interactive Map: Surgical Patients Readmitted to Hospital (Percentage)

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Visual Data Discovery

- *Visual data discovery tools speed the **time to insight** through the use of visualizations, drag and drop interface, and easy exploration.*
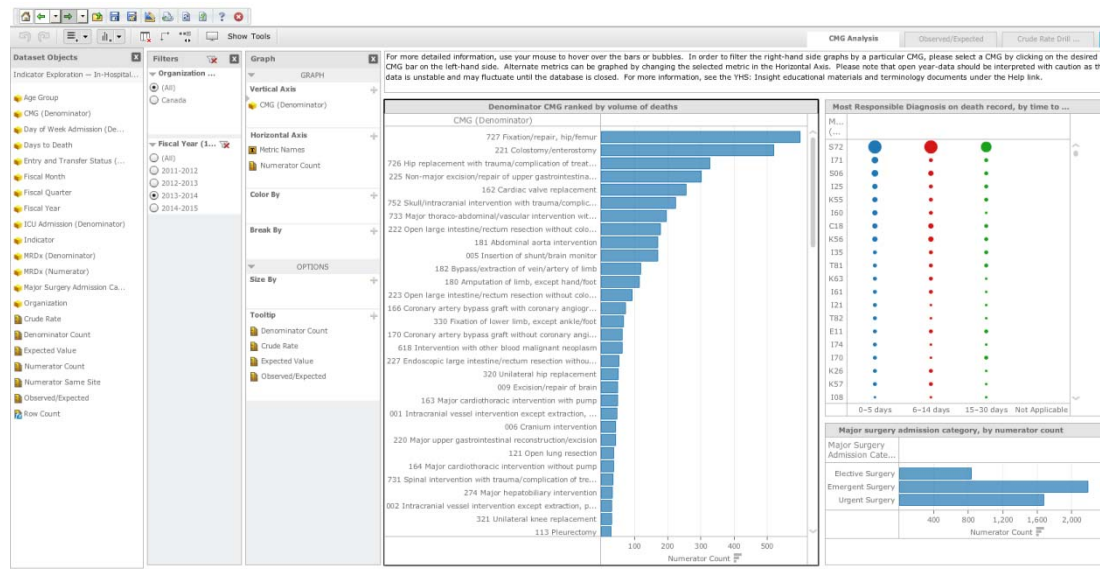
Why Visual Data Discovery?

- Traditional analysis required knowing the question you are trying to answer before you start -

  Versus

  Visual Data Discover allows you to form (and answer) questions as you go.

- Empowering everyone – not just select super-users or IT - to find outliers, nuances and trends in their data

Guided Tour – Visual Data Discovery Demo

Reviewing What We've Learned

Impactful Data Visualizations

- Follow standards (Industry and Corporate)

- Make sure your key message is easily understood

- Know the purpose of your visualization

- Know your target audience's needs

Thank You!
Questions and Discussion?