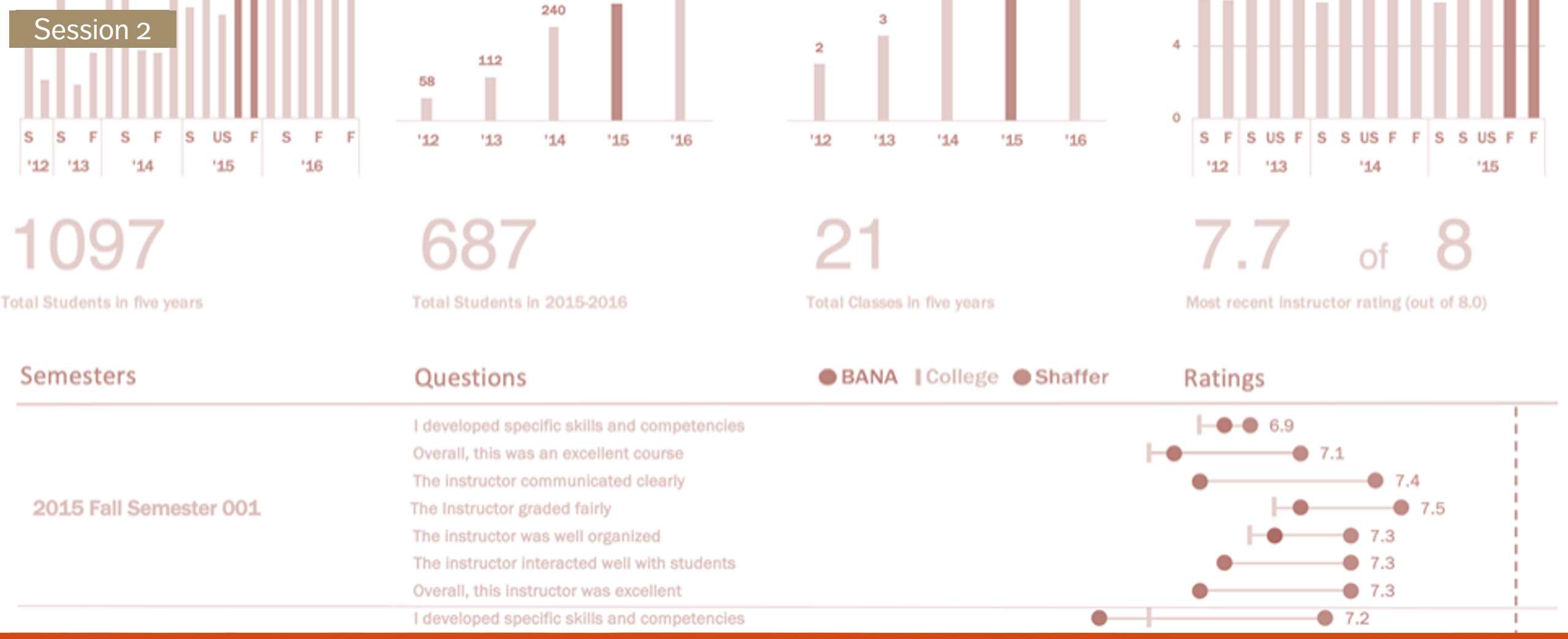
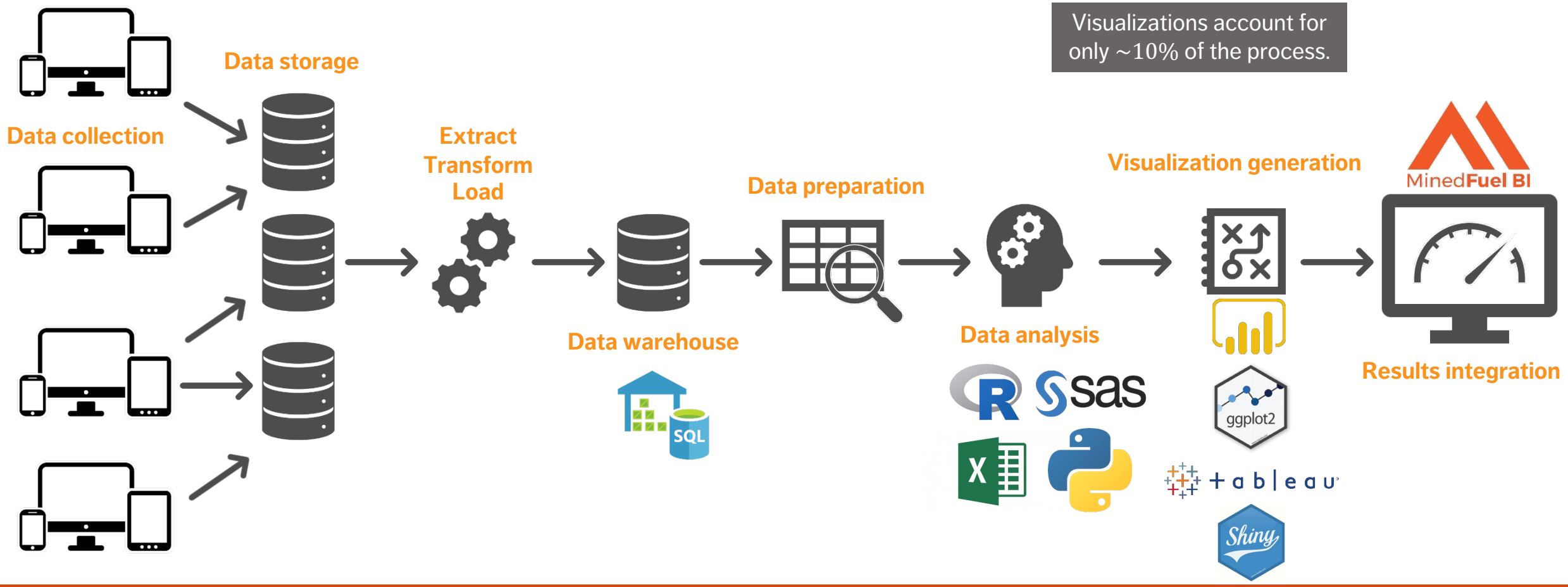


5. Dashboards

Data Environment



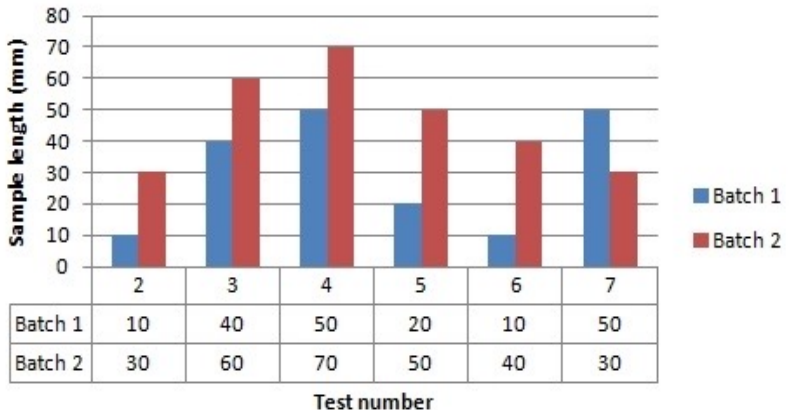
Overview

The past is **data-driven**:

- mostly Excel (or reporting tools like Cognos)
- mostly numbers, tables and non-interactive graphs
- distributed on desktop computers, by email, in PowerPoint presentation
- static, mostly backwards looking (lagging indicators)
- KPIs and dashboards were somewhat contrived

North Region Unit Sales by City

Region	Jan-06	Feb-06	Mar-06	Apr-06	May-06	Jun-06	Jul-06
Actuals							
Seattle	111	653	1,598	3,411	3,972	5,092	5,29
Boise	26,779	27,867	29,153	30,557	33,402	35,400	35,45
Portland	33,078	34,401	37,535	39,916	41,357	45,306	46,67
Spokane	25,417	26,669	28,092	29,020	29,674	30,501	30,83
North Region	**199,841**	**211,053**	**226,789**	**242,957**	**256,605**	**273,640**	**277,77**
Plan							
Seattle	693	468	790	1,383	2,205	3,180	4,21
Boise	29,525	26,062	27,088	28,269	29,536	30,821	32,16
Portland	32,276	34,708	36,737	38,857	41,066	43,364	45,75
Spokane	30,500	26,644	27,987	29,430	30,994	32,594	34,23
North Region	**191,783**	**203,916**	**216,524**	**230,474**	**246,390**	**263,378**	**281,22**
Variance							
Seattle	-582	185	808	2,029	1,767	1,912	1,07
Boise	-2,746	1,805	2,064	2,288	3,866	4,578	3,28
Portland	802	-307	798	1,059	291	1,942	92
Spokane	-5,082	25	105	-410	-1,320	-2,093	-3,39



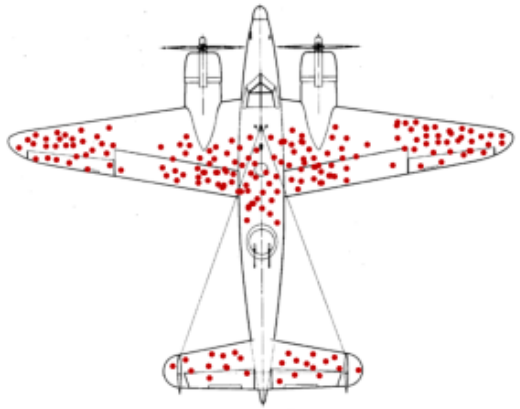
	2	3	4	5	6	7
Batch 1	10	40	50	20	10	50
Batch 2	30	60	70	50	40	30

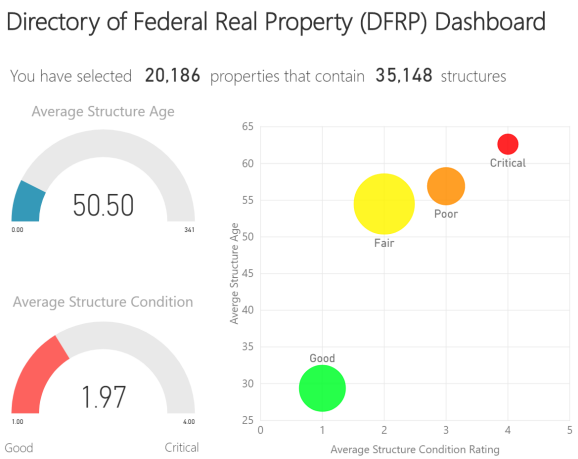
Overview

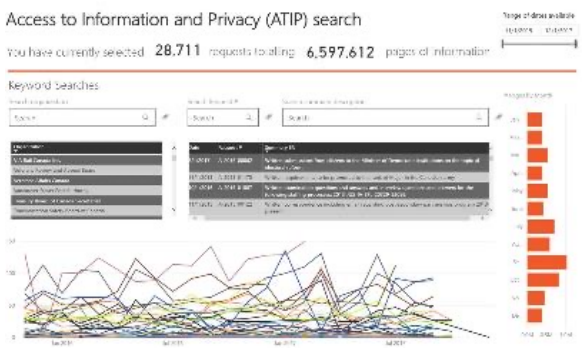
The future is **story-driven**:

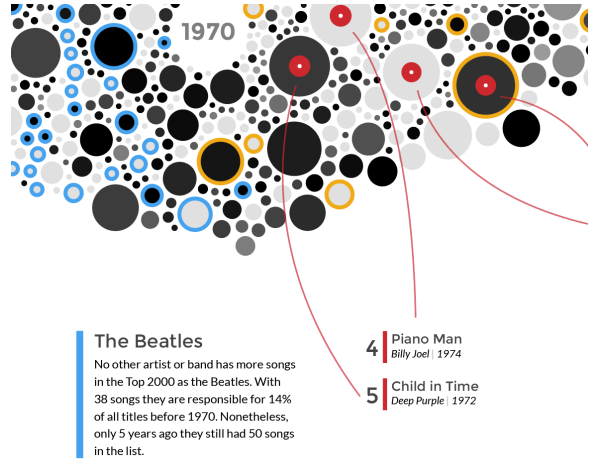
- new tools: Power BI, Tableau, Qlickview, Shiny, etc.
- mostly visualizations, occasional numbers and tables
- distributed on the web (internal and external)
- dynamic and both backwards and forwards looking (leading and lagging indicators)
- data for everyone

Defining Context









Seconds | **Minutes** | **Fraction of Hour** | **Hours**

← **Infographics/Data Viz** →

← **Dashboards** →

← **Reports and Exploration** →

← **Data Art** →

[Wexler, Shaffer, Cotgreave, *The Big Book of Dashboards*]

Dashboards

A **dashboard** is any visual display of data used to monitor conditions and/or facilitate understanding.

Examples:

- interactive display that allows people to explore motor insurance claims by city, province, driver age, etc.
- PDF showing key audit metrics that gets e-mailed to a Department's DG on a weekly basis.
- wall-mounted screen that shows call centre statistics in real-time.
- mobile app that allow hospital administrators to review wait times on an hourly- and daily-basis for the current year and the previous year.

Some Questions To Consider

In a car's dashboard, a small number of **key indicators** (speed, gasoline level, etc.) need to be understood **at a glance**. Dashboard designs that do not take these characteristics under consideration have catastrophic consequences.

The following questions need to be answered prior to the dashboard being designed:

- who is the dashboard's consumer?
- what story does the dashboard tell?
- what data (categories) will be used?
- what will appear on the dashboard?
- how can the dashboard help the consumer?

[https://www.geckoboard.com/blog/building-great-dashboards-6-golden-rules-to-successful-dashboard-design, article removed]

Dashboard Design Guidelines

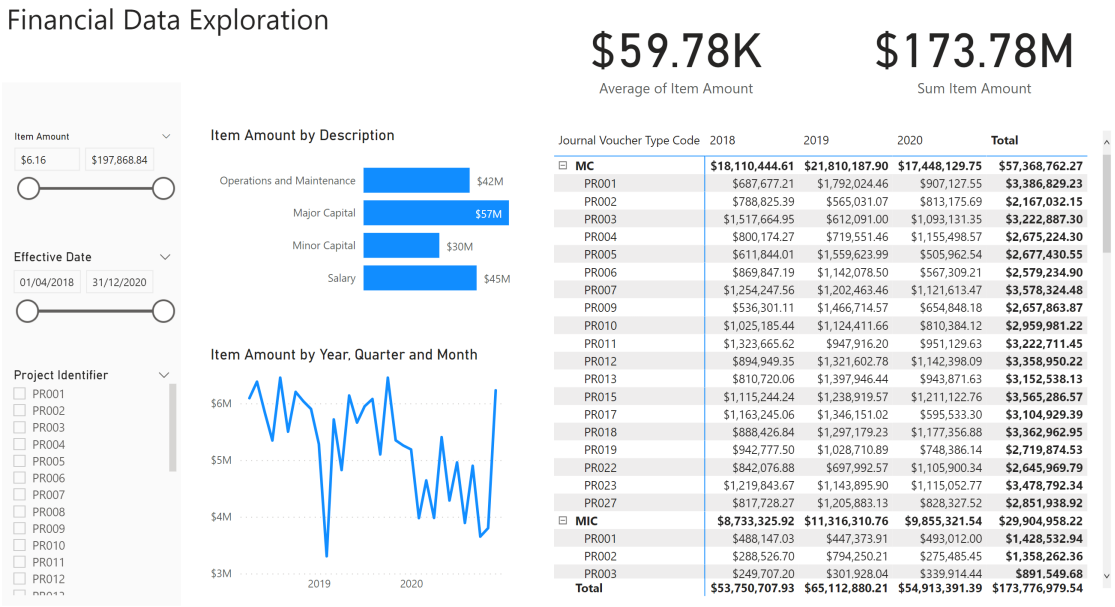
Nick Smith suggests the following 6 Golden Rules:

- **Consider the audience** (who are you trying to inform? does the DG really need to know that the servers are operating at 88% capacity?)
- **Select the right type of dashboard** (operational, strategic/executive, analytical)
- **Group data logically, use space wisely** (split functional areas: product, sales/marketing, finance, people, etc.)
- **Make the data relevant to the audience** (scope and reach of data, different dashboards for different departments, etc.)
- **Avoid cluttering the dashboard** (present the most important metrics only)
- **Refresh your data at the right frequency** (real-time, daily, weekly, monthly, etc.)

Dashboard Types

Exploration: using visualizations as a tool to explore/understand the data

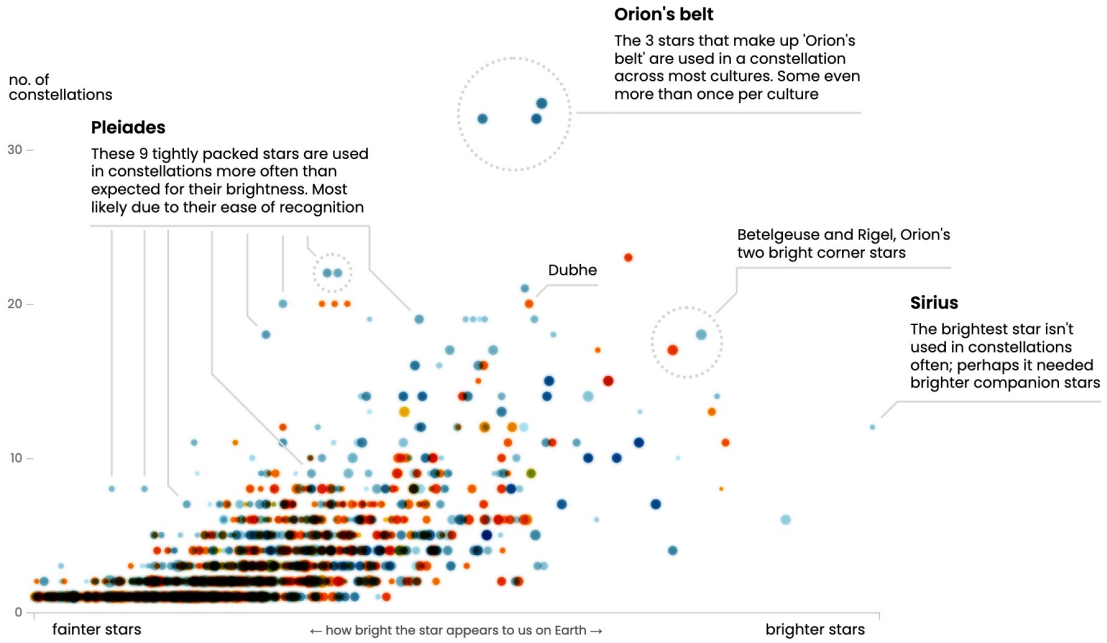
- high level of interactivity
- high level of detail
- **all** aspects of data should be represented (tables, columns, calculations etc.)
- no annotations or explanations required



Dashboard Types

Storybook: using visualizations as a tool to explain the data and communicate the story

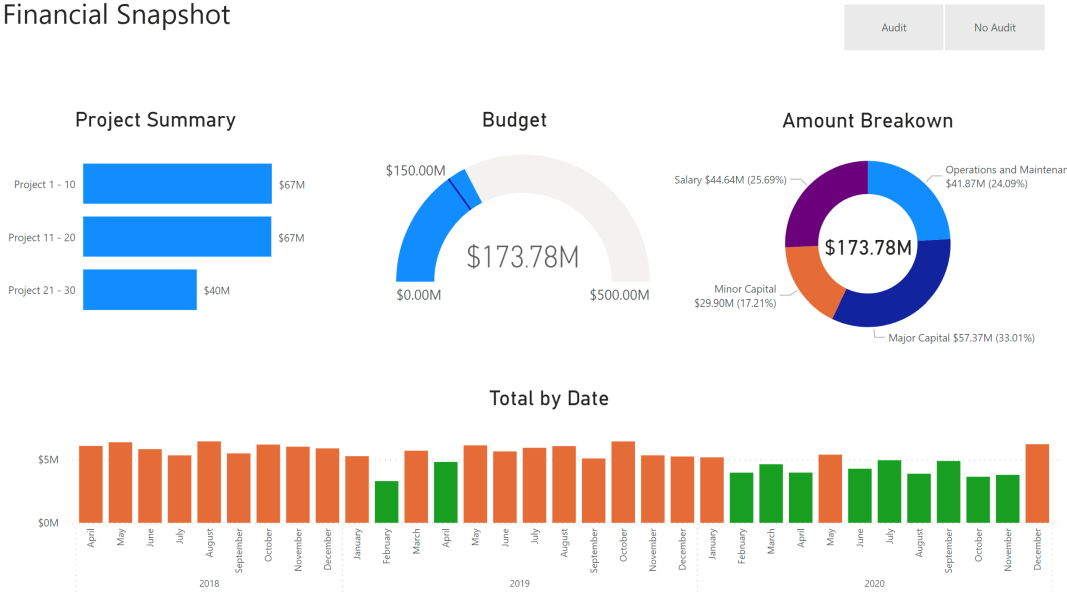
- low level of interactivity
- low level of detail
- key aspects of data should be represented
- annotations and explanations drive the “story”



Dashboard Types

Situational Awareness: using visualizations as a tool to provide a snapshot of the data

- medium level of interactivity
- not “scripted” but well organized (e.g., categorized)
- summary data should be represented
- anomalies are highlighted
- often used for internal presentations



Session 2

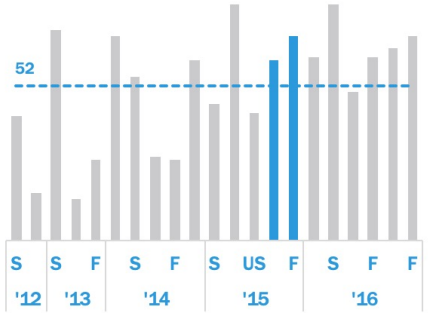
[https://dashboard.edmonton.ca]

Session 2

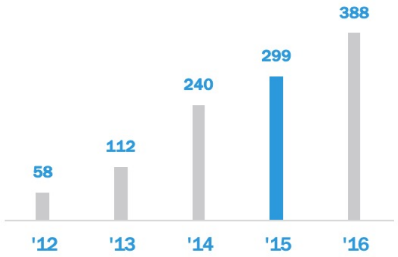
Course Metrics

[https://bigbookofdashboards.com/dashboards.html]

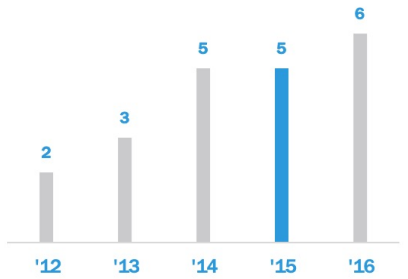
Students



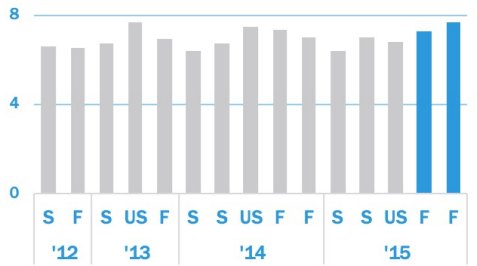
Enrollments



Classes



Ratings



1097

Total Students in five years

687

Total Students in 2015-2016

21

Total Classes in five years

7.7 of **8**

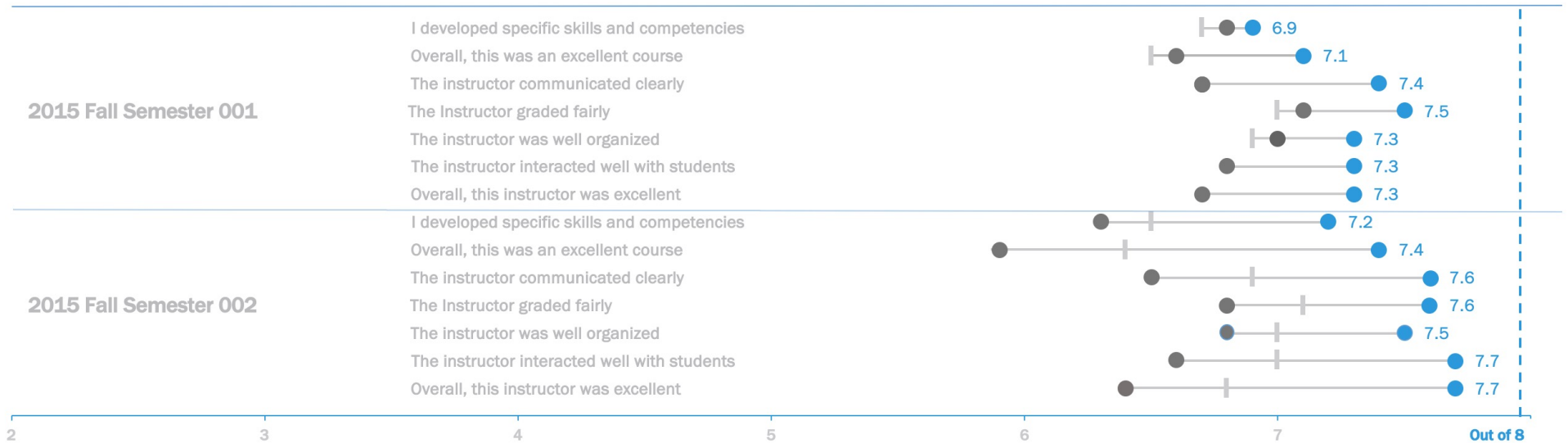
Most recent instructor rating (out of 8.0)

Semesters

Questions

BANA College Shaffer

Ratings



Course Metrics Dashboard created by Jeffrey A. Shaffer. Data from University of Cincinnati Course Evaluations. Blue indicates the 2 most recent rating periods.

Suggested Reading

Dashboards

Data Understanding, Data Analysis, Data Science
Data Visualization and Data Exploration

Introduction to Dashboards

Exercises

Dashboards

1. In teams or individually, identify a few data visualizations that appeal to you. What is the story being told by the visualization? What kind of data is needed to build these visualizations?

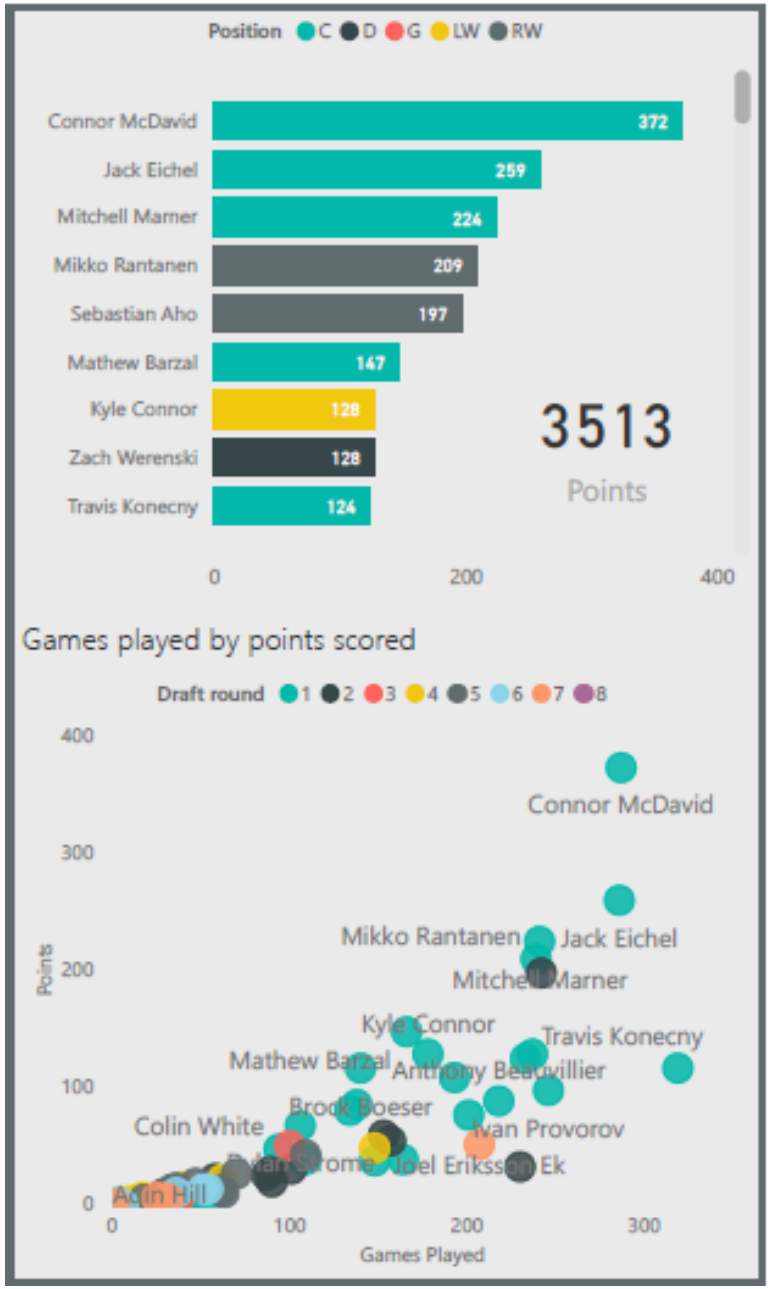
2. In teams or individually, identify work scenarios for which data visualization could prove useful. What insight could be drawn from such visualizations? Would such visualizations get a buy-in from your supervisors/employers? How much work would be required to get from design to completion? Are the obstacles mostly of a technical nature? Related to data procurement?

3. Consider the following dashboards. Can you figure out, at a glance, who their audience is? What are their types? Their strengths and limitations? How could you improve them?

Session 2

2015 NHL Draft Class

Top Scorers

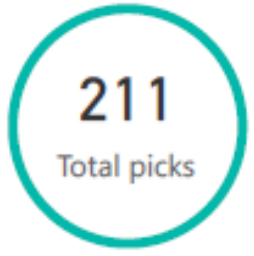


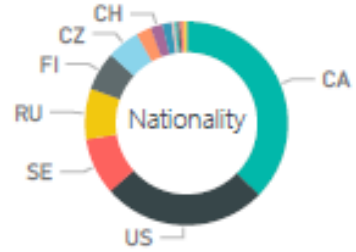
Games played by points scored

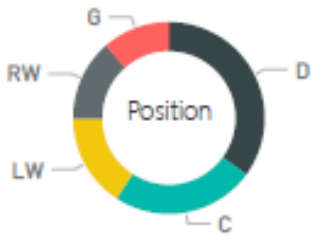
Select NHL team

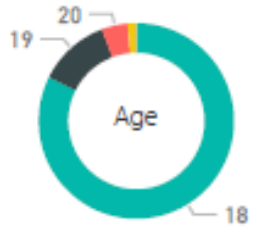
All

Overall	Player	Team	Position	Games Played
1	Connor McDavid	Edmonton Oilers	C	287
2	Jack Eichel	Buffalo Sabres	C	286
3	Dylan Strome	Arizona Coyotes	C	106
4	Mitchell Marner	Toronto Maple Leafs	C	241
5	Noah Hanifin	Carolina Hurricanes	D	319
6	Pavel Zacha	New Jersey Devils	C	201
7	Ivan Provorov	Philadelphia Flyers	D	246
8	Zach Werenski	Columbus Blue Jackets	D	237
9	Timo Meier	San Jose Sharks	RW	193
10	Mikko Rantanen	Colorado Avalanche	RW	239

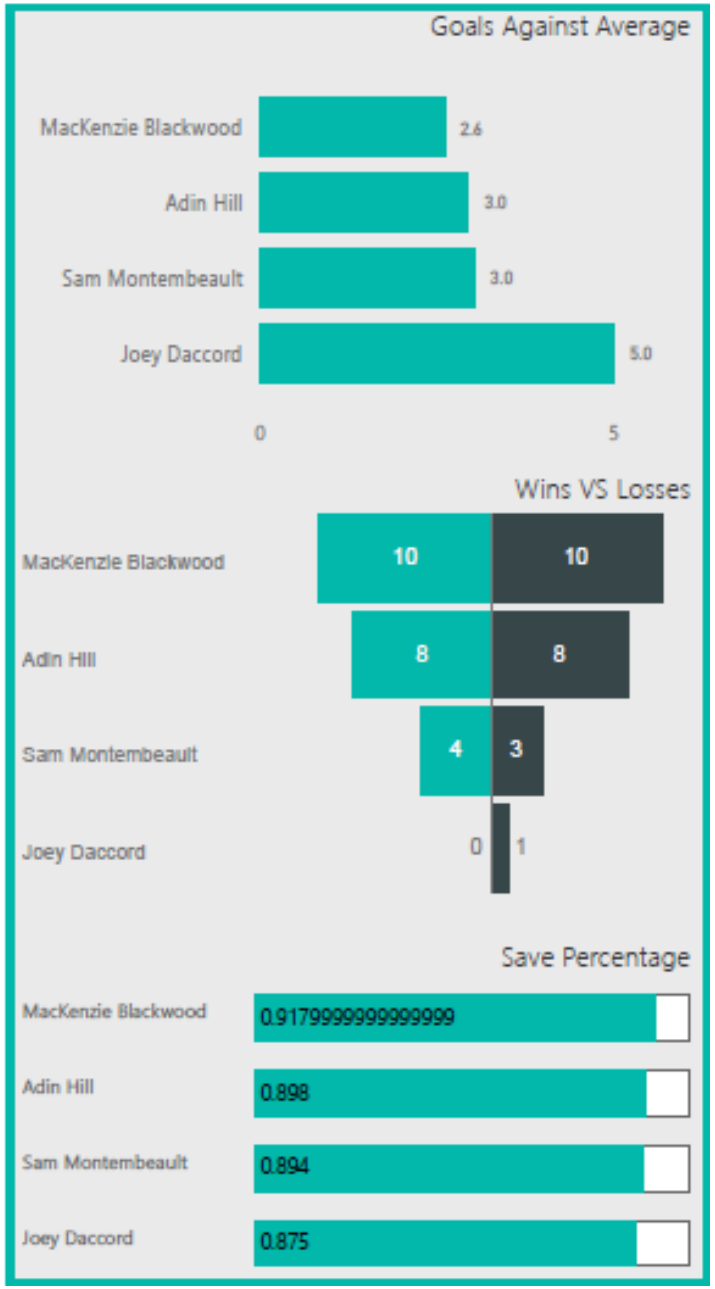






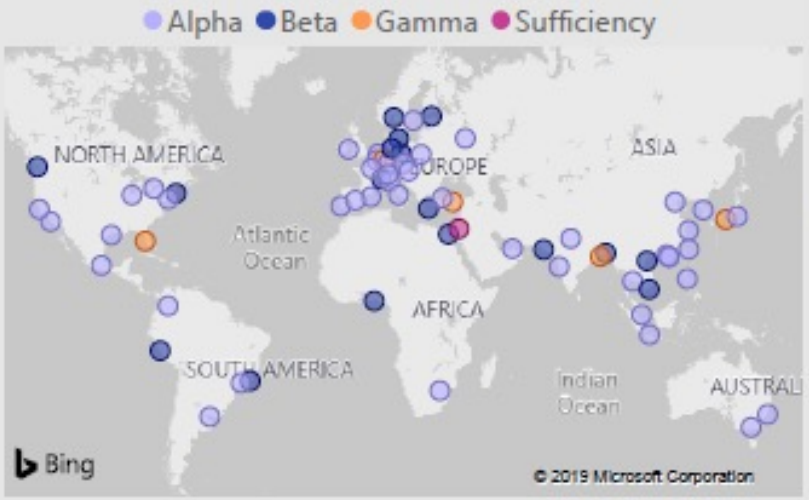


Goalies



Session 2

Global Cities Overview



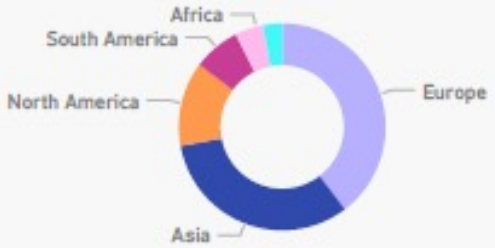
68
Cities

44
Countries

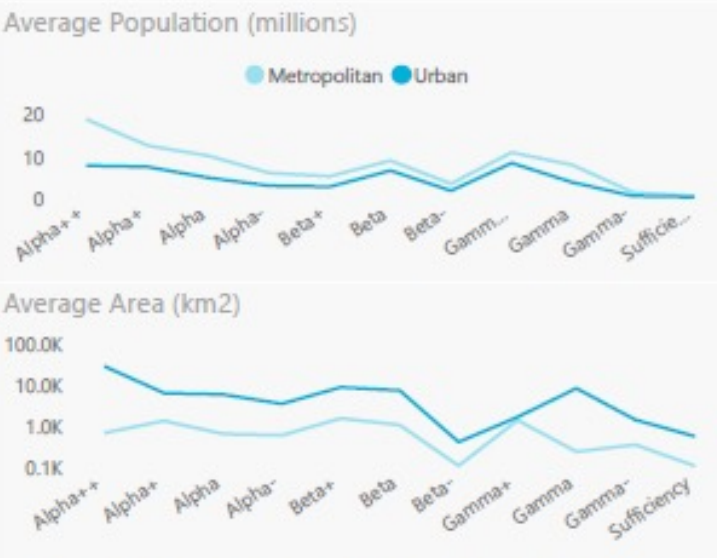
- Alpha
- Beta
- Gamma
- Sufficiency

City	Country	Rating
Bangkok	Thailand	Alpha
Brussels	Belgium	Alpha
Buenos Aires	Argentina	Alpha
Chicago	USA	Alpha
Frankfurt	Germany	Alpha
Guangzhou	China	Alpha
Istanbul	Turkey	Alpha
Jakarta	Indonesia	Alpha
Los Angeles	USA	Alpha
Madrid	Spain	Alpha
Melbourne	Australia	Alpha
Mexico City	Mexico	Alpha
Milan	Italy	Alpha
Moscow	Russia	Alpha

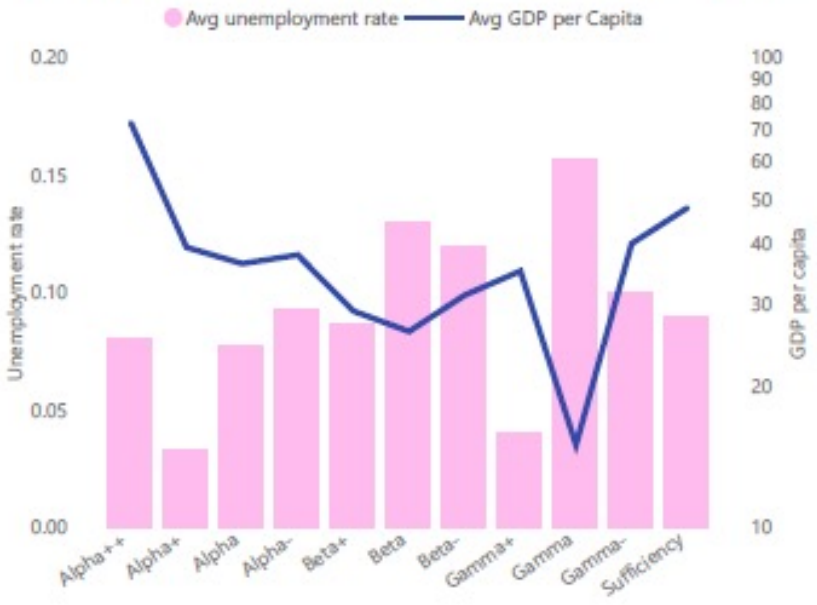
Summary



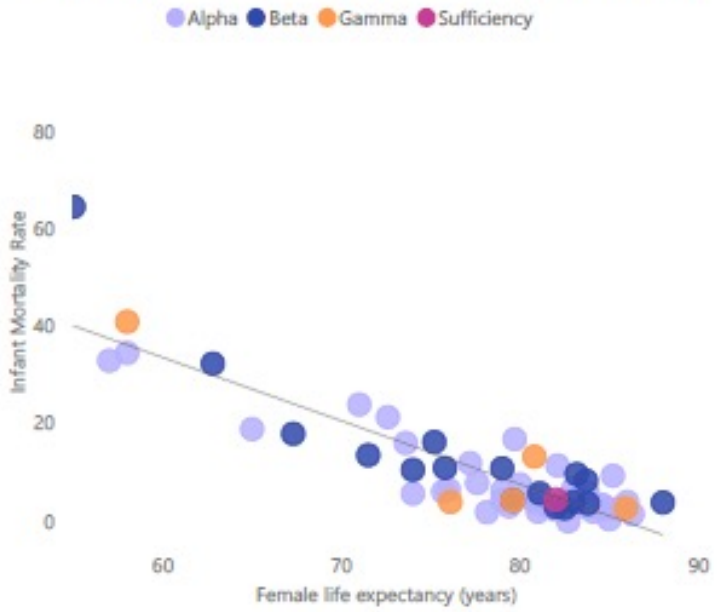
Metro vs Urban



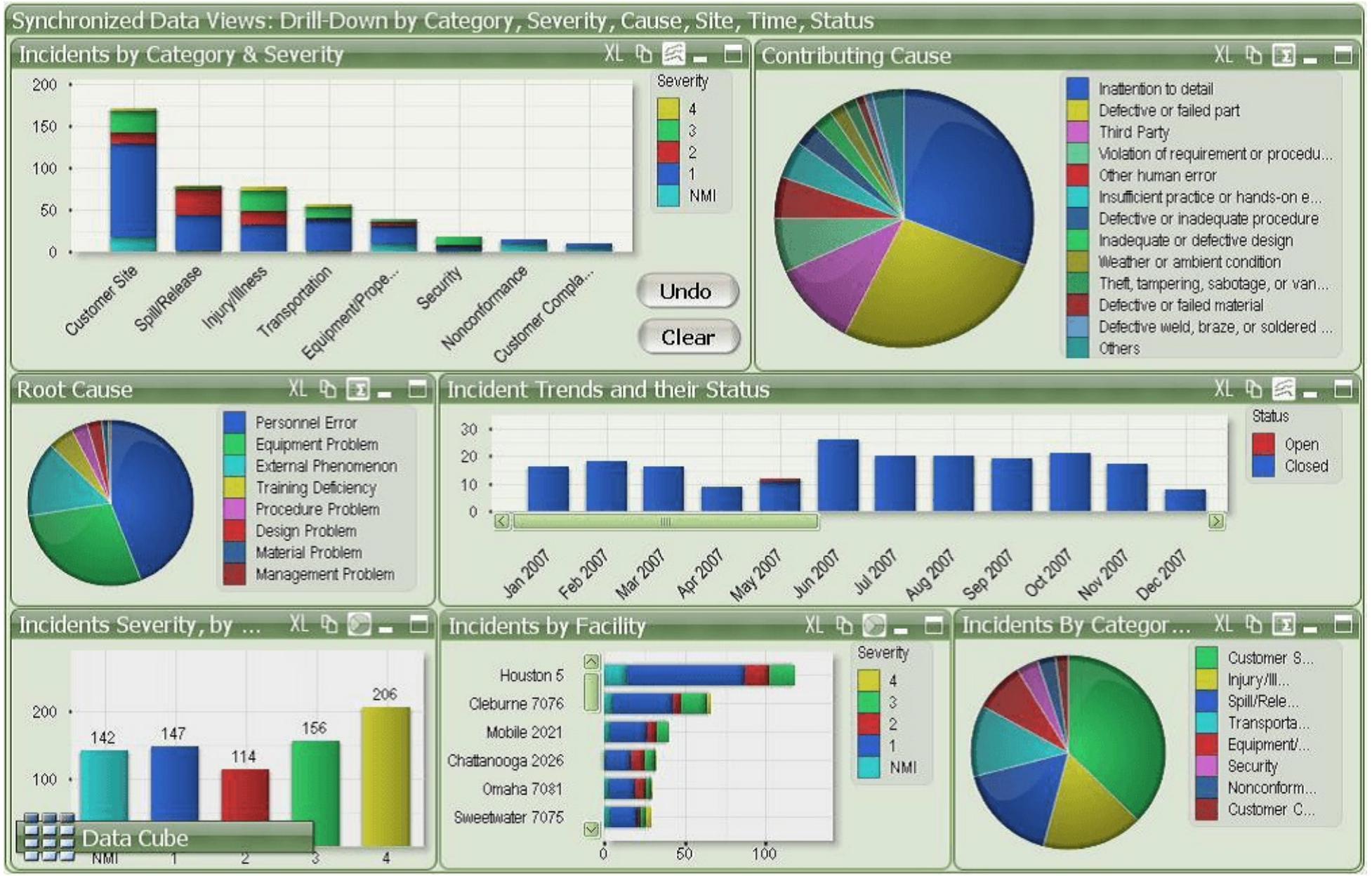
Average unemployment rate vs GDP per capita



Female life expectancy vs Intant Mortality



[https://www.matillion.com/wp-content/uploads/2014/11/qlikview-poor-use-of-dashboard-software.png]



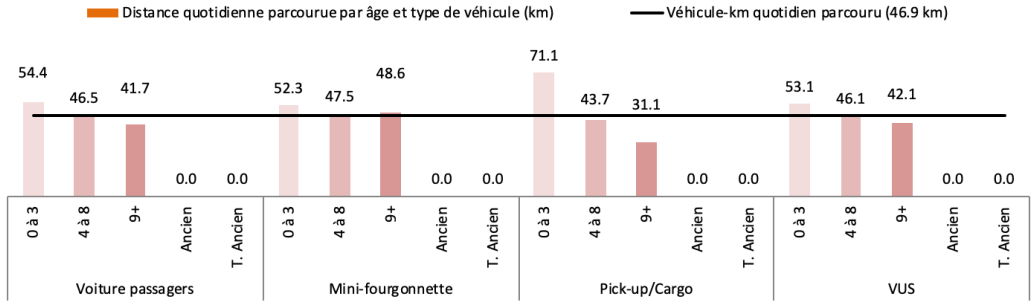
[https://www.geckoboard.com/assets/2-terrible-dashboard-example-min.png]

Session 2

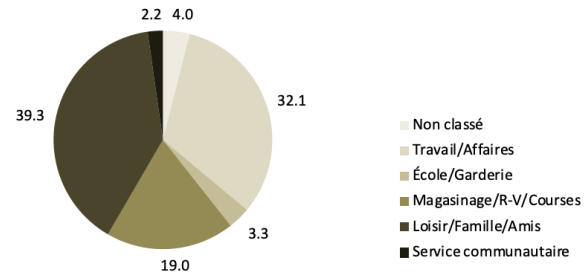
Ontario – 1er trimestre 2012

Caractéristiques des déplacements

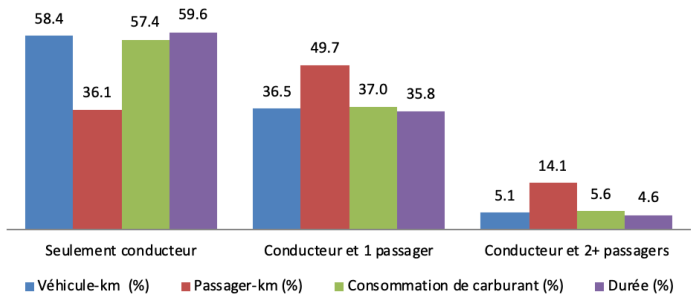
Véhicule-km quotidien parcouru par âge et type de véhicule



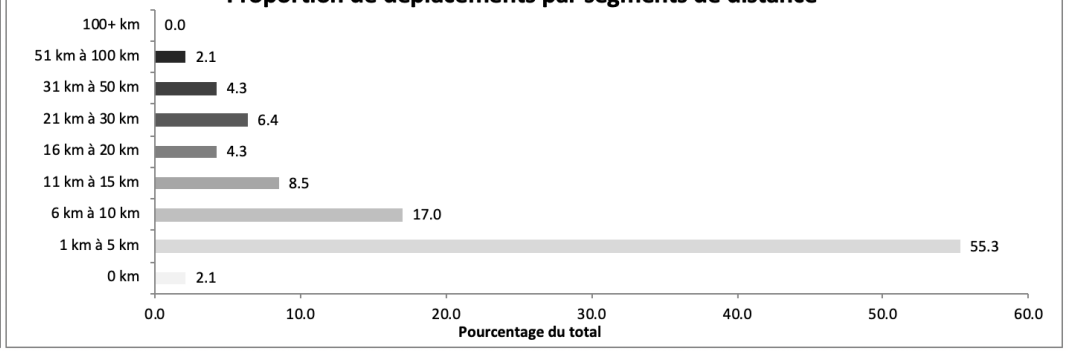
Passager-km quotidien parcouru par but des déplacements (%)



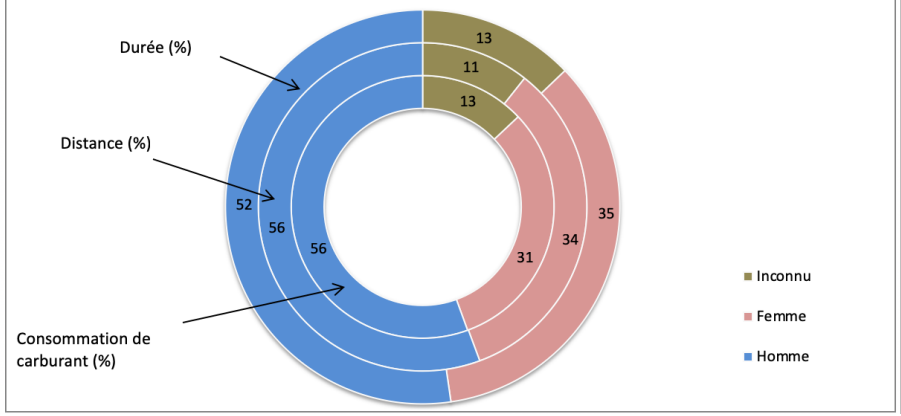
Distance, passager-km parcouru, durée et consommation de carburant par occupation



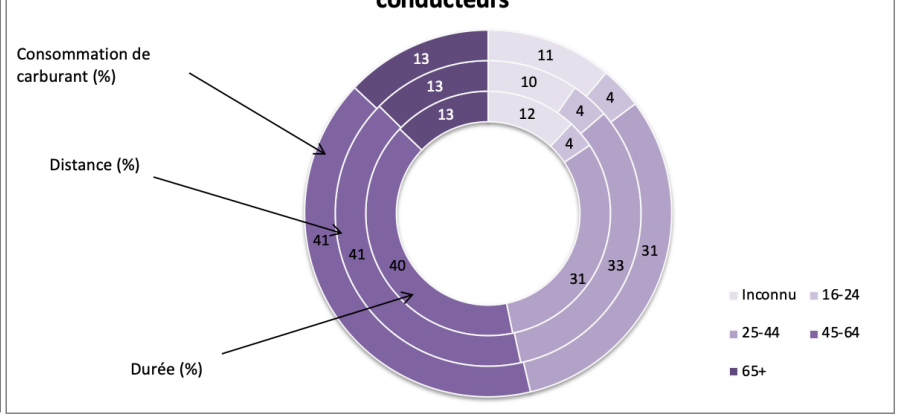
Proportion de déplacements par segments de distance



Durée, distance et consommation de carburant par sexe

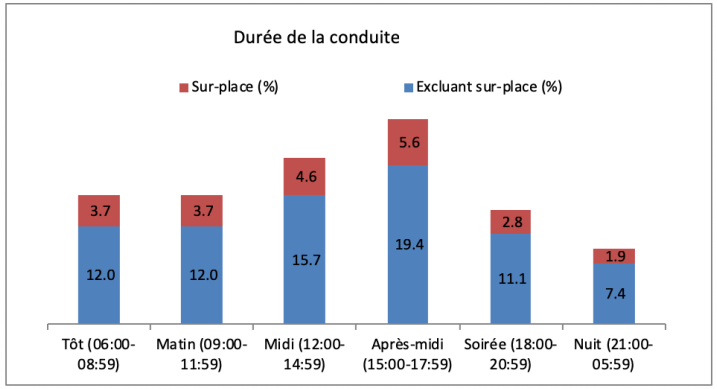


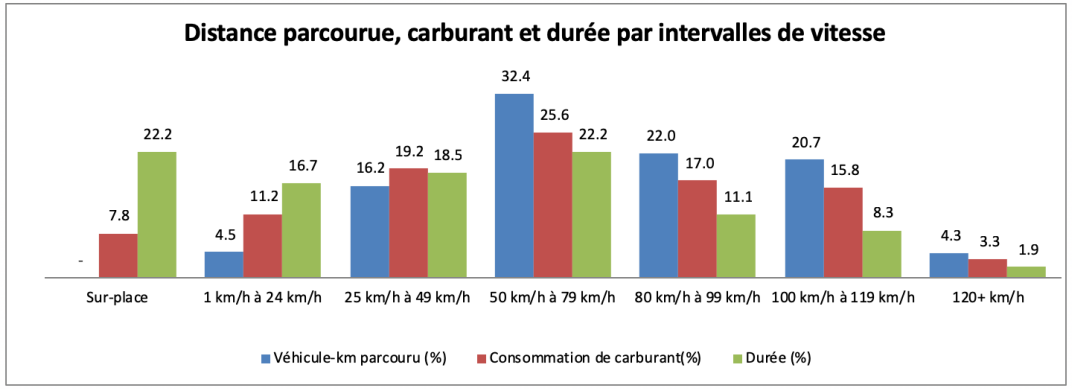
Consommation de carburant, distance et durée par âge des conducteurs

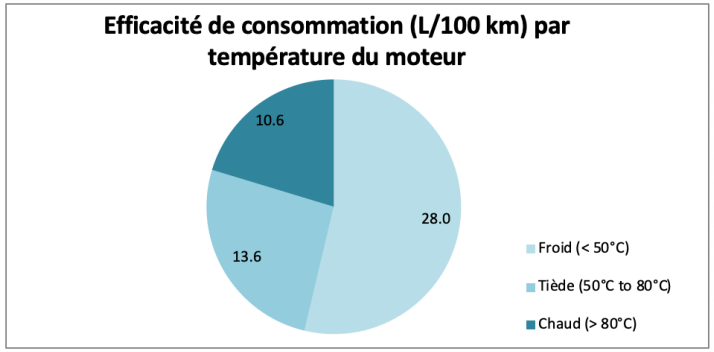


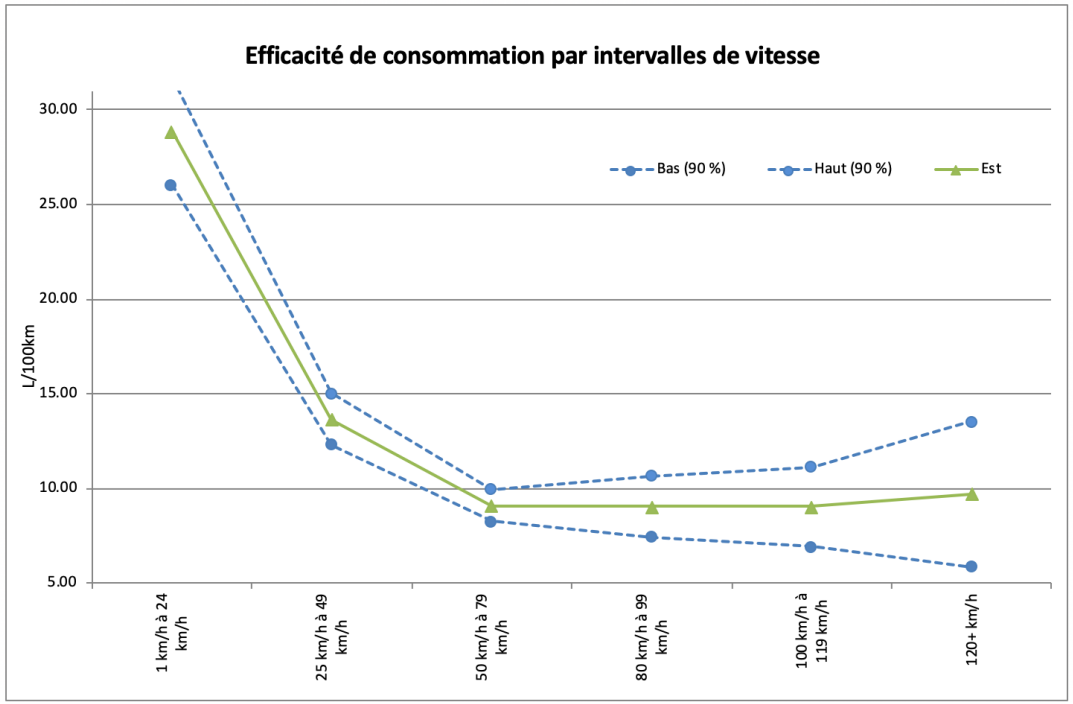
Ontario – 1er trimestre 2012

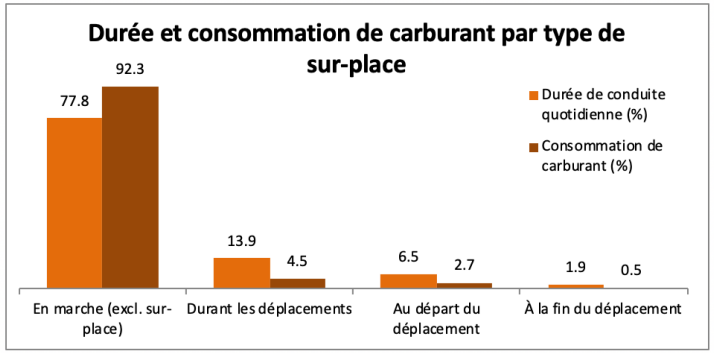
Sous-caractéristiques des déplacements









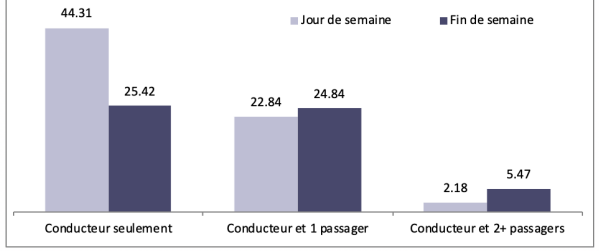


Session 2

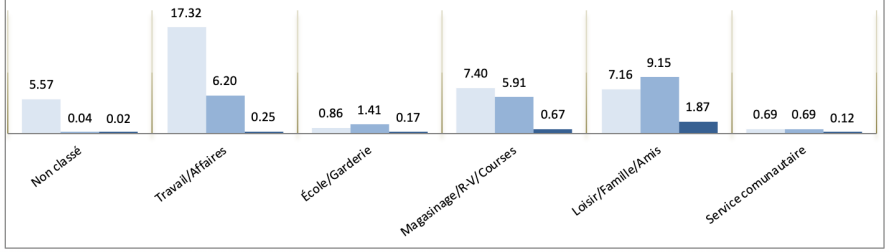
Ontario – 1er trimestre 2012

Caractéristiques mixtes sur les déplacements

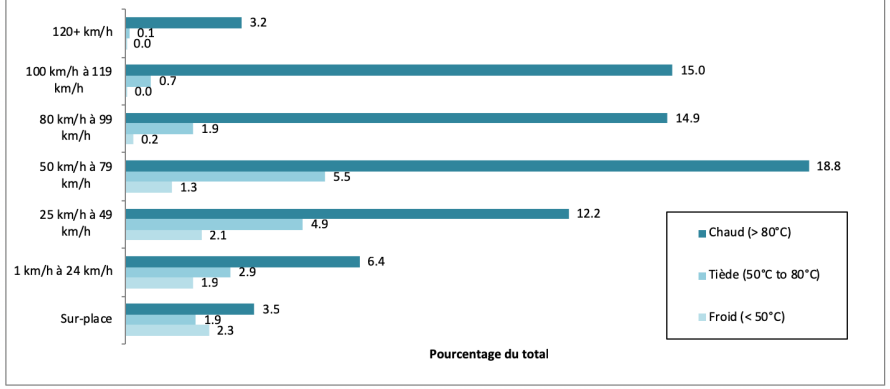
Durée de la conduite (min) par jour-type et occupation



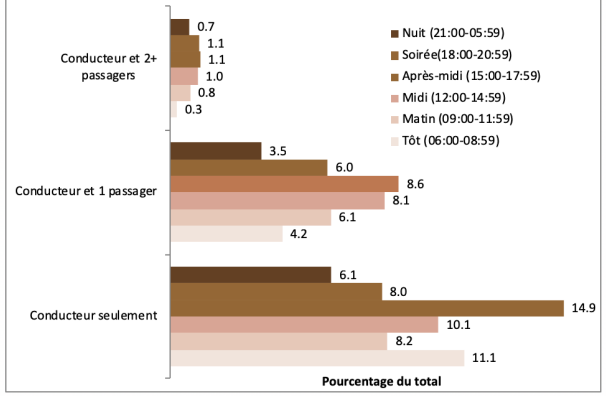
Durée de la conduite (min) par but et occupation



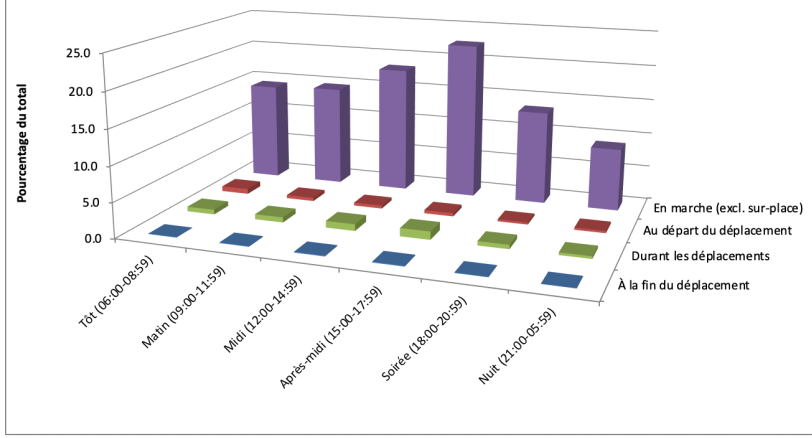
Consommation de carburant par vitesse et température du moteur



Distance par occupation et durée de la conduite



Consommation de carburant par rapport au sur-place et à la durée de la conduite



What-If Analysis: Impact of Minimum Wage

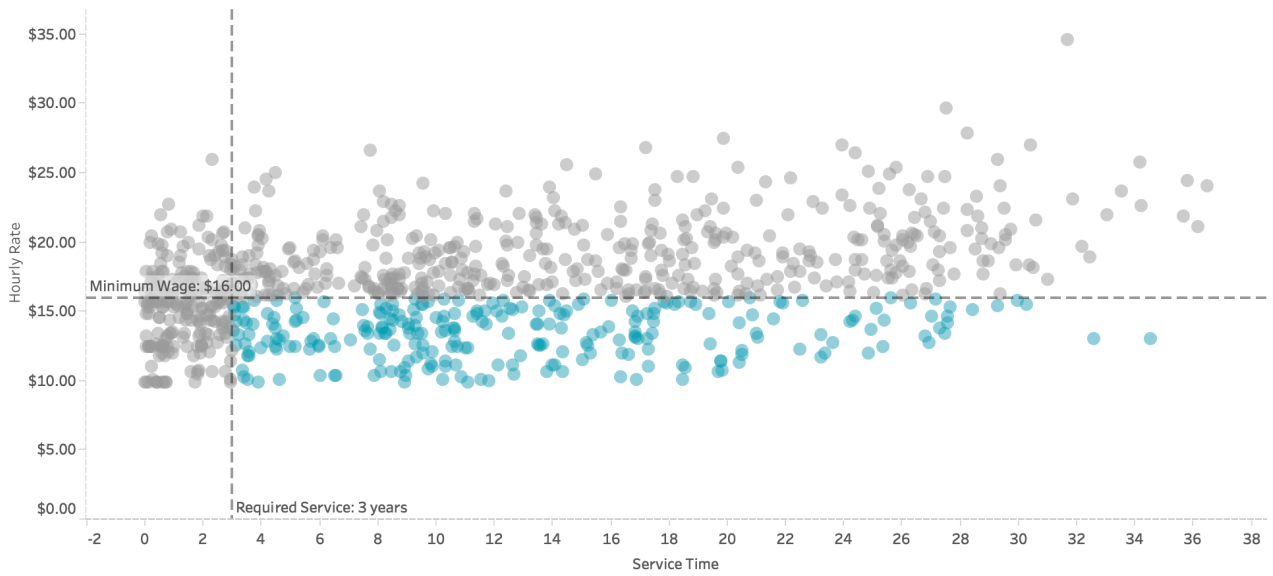
[https://bigbookofdashboards.com/dashboards.html]

Proposed Minimum Wage: $16.00

Required Service: 3

Developed by Matt Chambers
http://sirvizalot.blogspot.com/

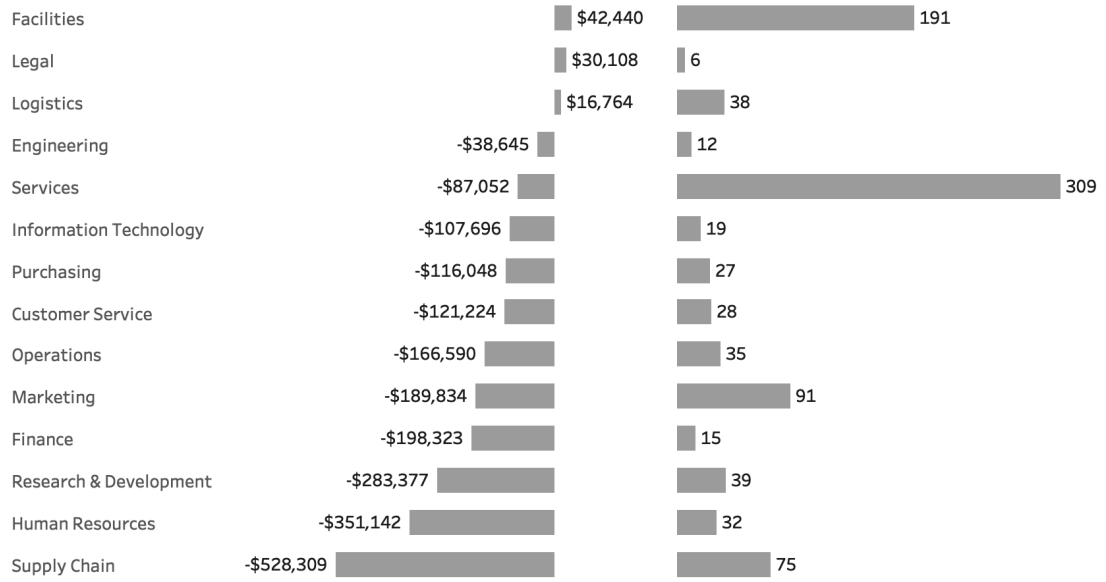
Below 256 (27.9%) | **Above** 661 (72.1%)



Dollar Impact of Minimum Wage: **$1,792,206**

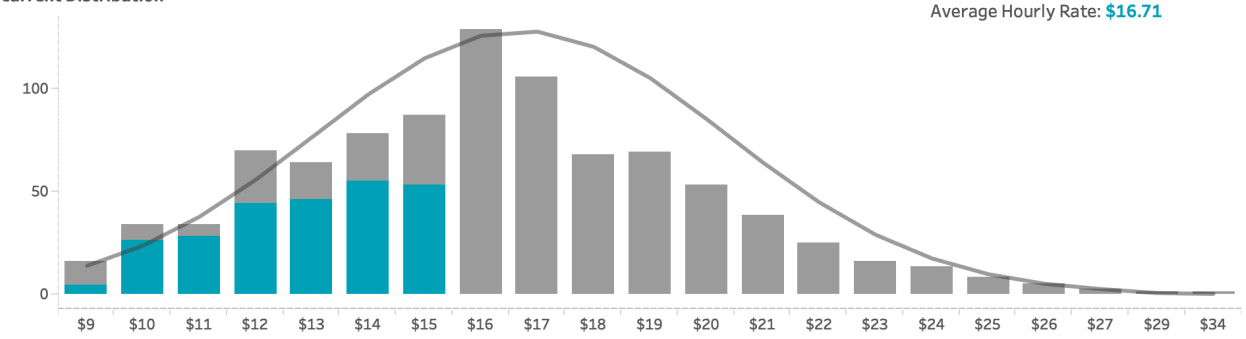
Employees Below Minimum Wage: **661**

Employees Below Minimum Wage: **256**



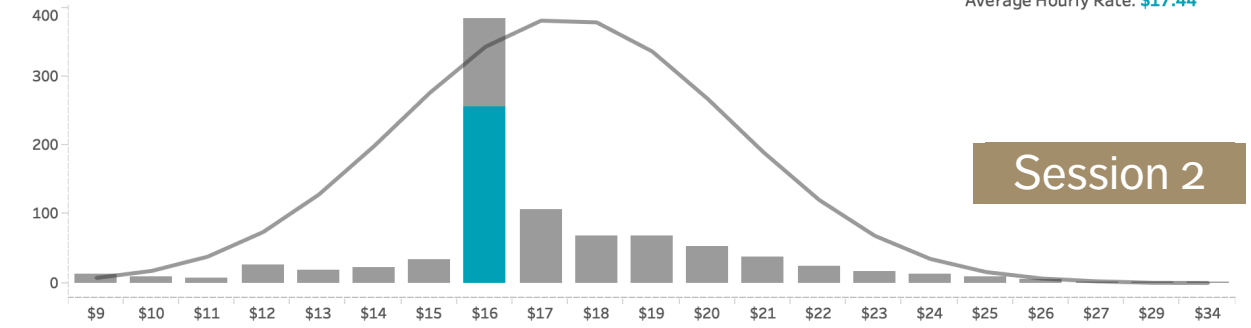
Current Distribution

Average Hourly Rate: **$16.71**



Distribution with Minimum Wage

Average Hourly Rate: **$17.44**



Session 2