UN GWG on Big Data – Scanner Data

Michael Smedes, Task Team on Scanner Data

Task Team on Scanner Data

- Initial focus on the use of scanner data from retailers to aid the calculation of price indices

- Time frame: April 2017 – April 2017

Task team members

- Nathalie Brault (chair) and Jonathan Wylie (Canada)
- Antonio Chessa (Netherlands)
- Thomas Hjorth Jacobsen (Denmark)
- Michael Holt (Australia)
- Tanya Flower (UK)
- Donal Lynch, Alan Bentley (New Zealand)
- Ken van Loon (Belgium)
- Michael Smedes (UN)

Task Team on Scanner Data

- Aim: Increase the effective use of scanner data in official statistics…

1. ..through lowering the barriers of entry for countries by providing a library of methods, guidance and training
2. ..via the sharing of experience, practice and learning between countries on the use of scanner data
3. ..and through supporting Public-Private collobaration in the acquisition and use of scanner data

Task Team on Scanner Data

- Deliverables:
  1. Delivery of a tool hosted on the UN Global Platform for analysis, monitoring and index estimation using historic scanner data from Nielsen
  2. Accompanying training and instructional material on the use of the tool
  3. Accompanying methodological guidance material summarising and referencing to literature, recommendations and cataloging good practice

Base period, e.g. January

Compare price change of a fixed basket of goods over time

Current period, e.g. October

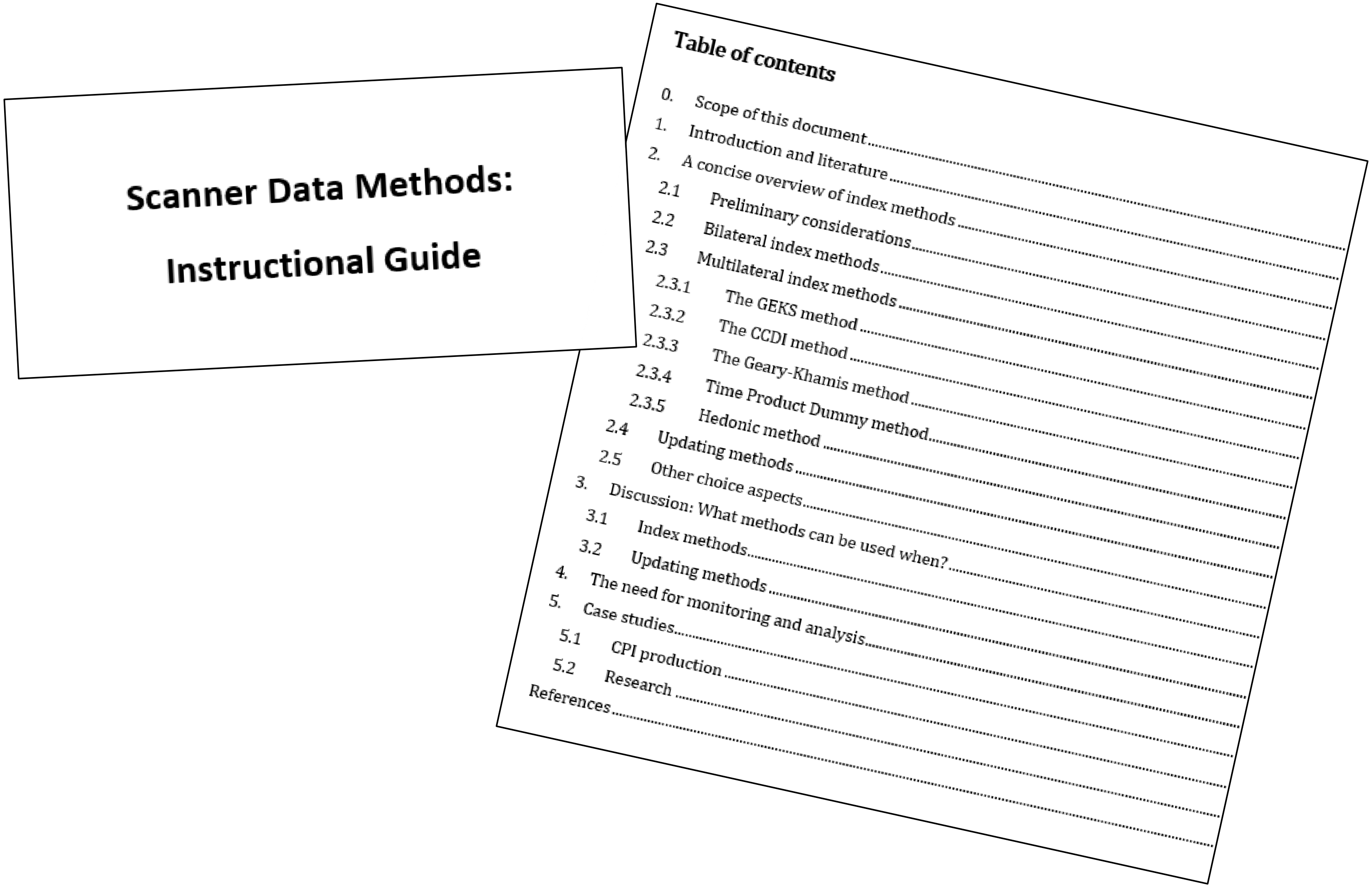
New data = new methods?

- These new data sources allow for different index methods to be used
- E.g, there are index methods that allow for new products to enter the market during the year
- Scanner data also gives us an opportunity to change the expenditure weights over time

But how do we choose?

- Inflation statistics are often one of the most high-profile releases that an NSI produces
- Changing the methodology and data source requires a lot of research and analysis before an NSI can decide on a final plan of implementation

Instructional Guide



Scanner Data Methods:

Instructional Guide

Table of contents

Case studies

- Many NSIs are starting to research the feasibility of using these data in a production environment
- The instructional guide is a useful summary of current literature and includes case studies of NSIs who have implemented the data in production

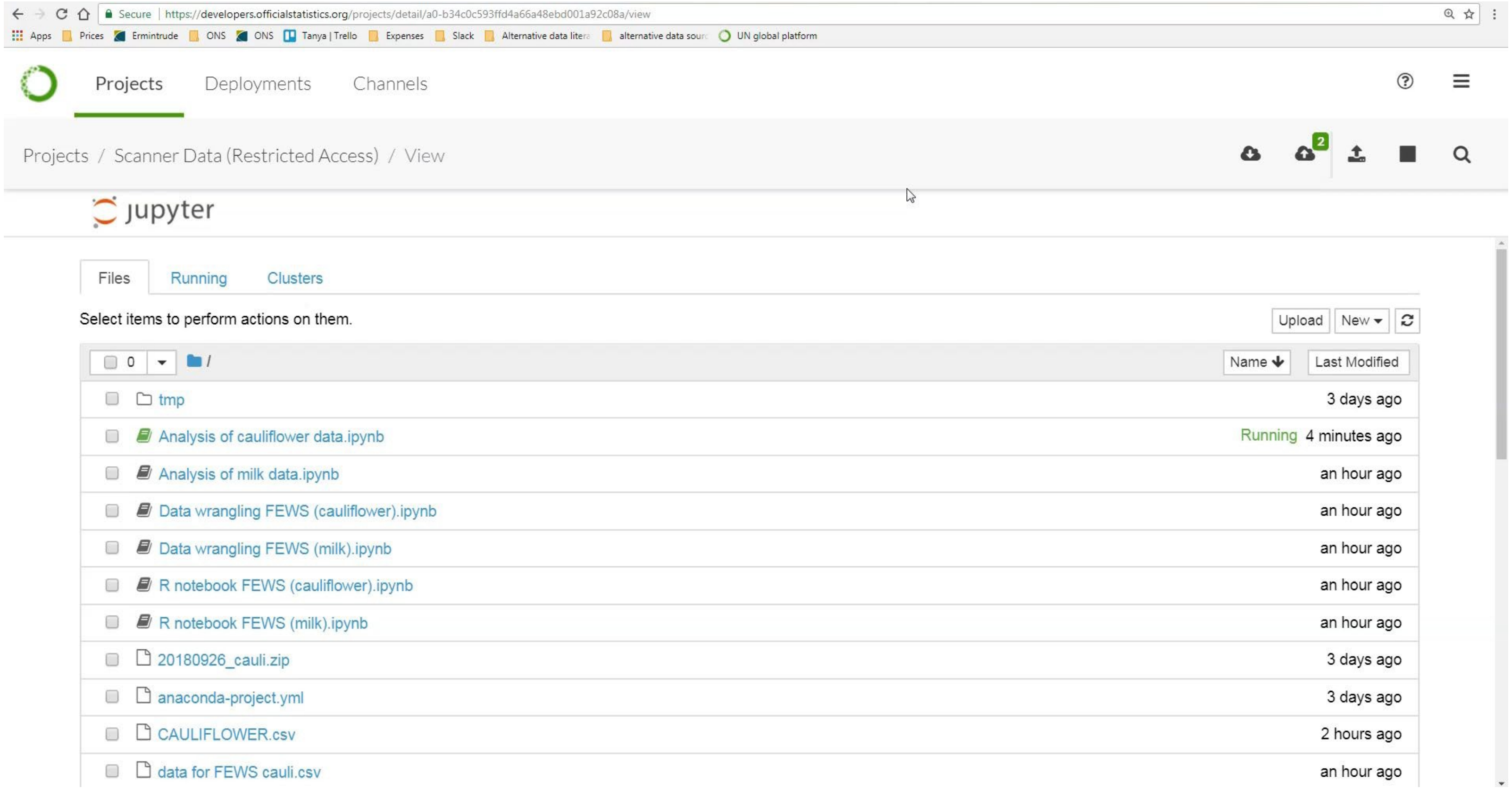
UN Global Platform

- The aim of this tool is to allow NSIs access to tested index method code, and to practise using the different methodologies on some training data

Nielsen data

- 2 data sets for milk and cauliflower
- Canada, June 2015 to June 2018
- Key variables: unique ID, product name, salesunits (quantity), salestonnage or saleslitres (quantity), salesCAD (expenditure)
- Derive a unit price for each product

Demo of using the UN Global Platform – initial analysis



https://developers.officialstatistics.org/projects/detail/a0-b34c0c593ffd4a66a48ebd001a92c08a/view

Projects / Scanner Data (Restricted Access) / View

Select items to perform actions on them.

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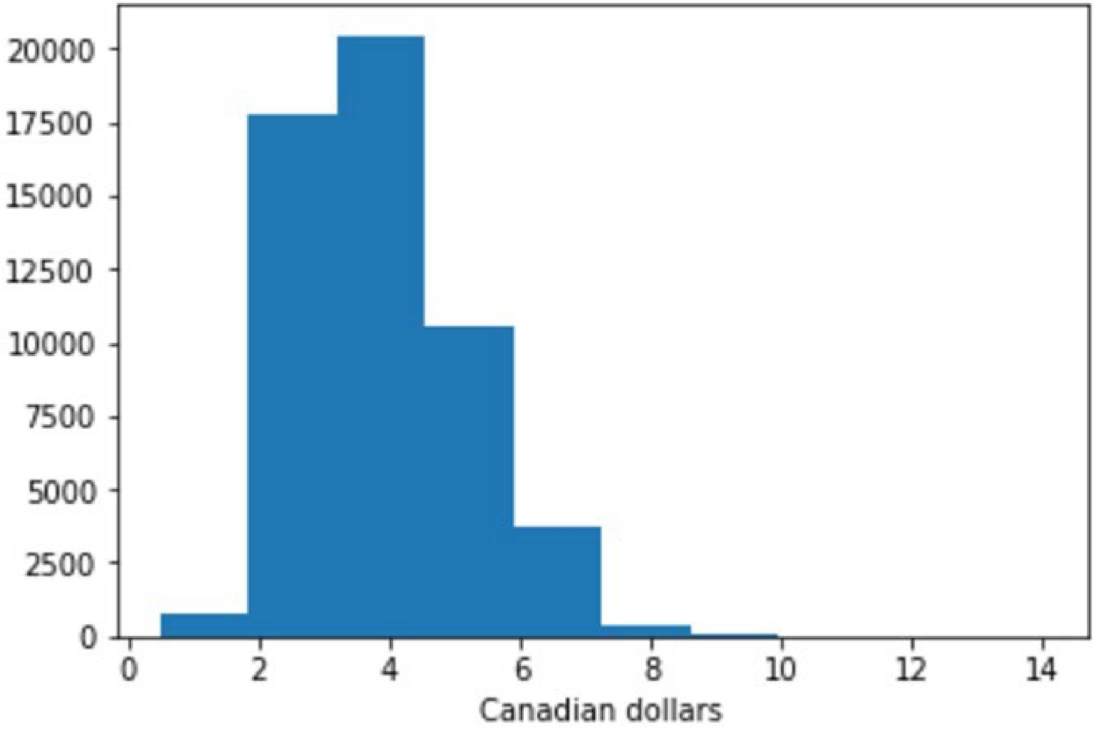
tmp		3 days ago
Analysis of cauliflower data.ipynb	Running	4 minutes ago
Analysis of milk data.ipynb		an hour ago
Data wrangling FEWS (cauliflower).ipynb		an hour ago
Data wrangling FEWS (milk).ipynb		an hour ago
R notebook FEWS (cauliflower).ipynb		an hour ago
R notebook FEWS (milk).ipynb		an hour ago
20180926_cauli.zip		3 days ago
anaconda-project.yml		3 days ago
CAULIFLOWER.csv		2 hours ago
data for FEWS cauli.csv		an hour ago

Nielsen data

- Churn (cauliflower) -
  - 40 unique products at the beginning of the period
  - 46 unique products at the end
  - 35 products remained in the sample over the 3 years

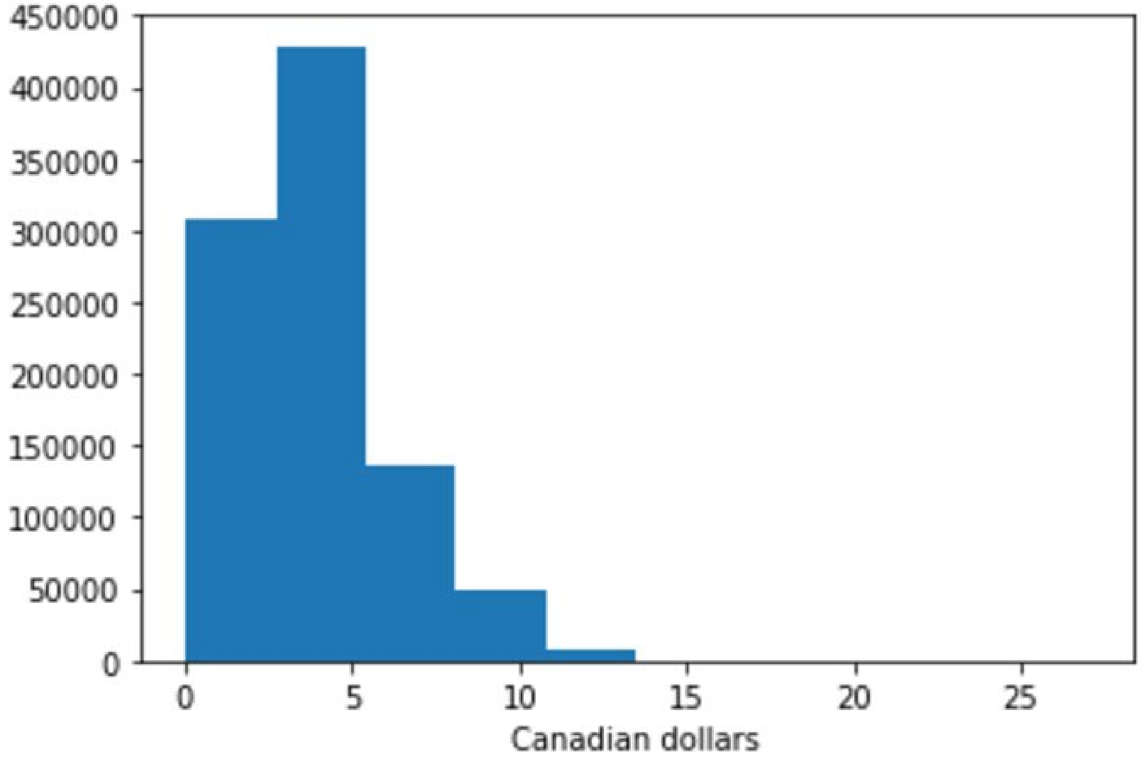
Monitoring the data

- Histogram of unit values (cauliflower)

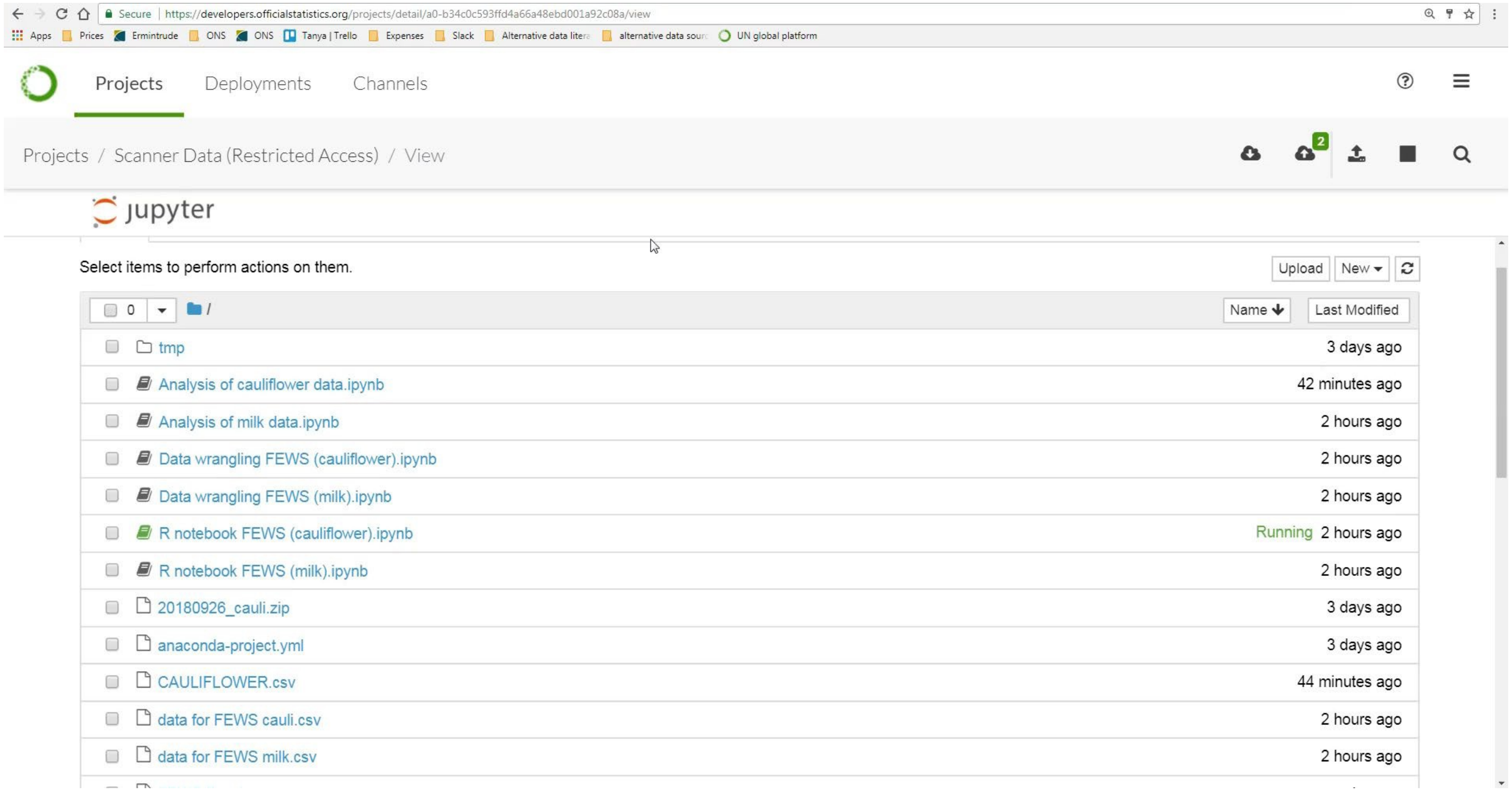


Monitoring the data

- Histogram of unit values (milk)



Demo of using the UN Global Platform – FEWS index



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□	anaconda-project.yml	3 days ago
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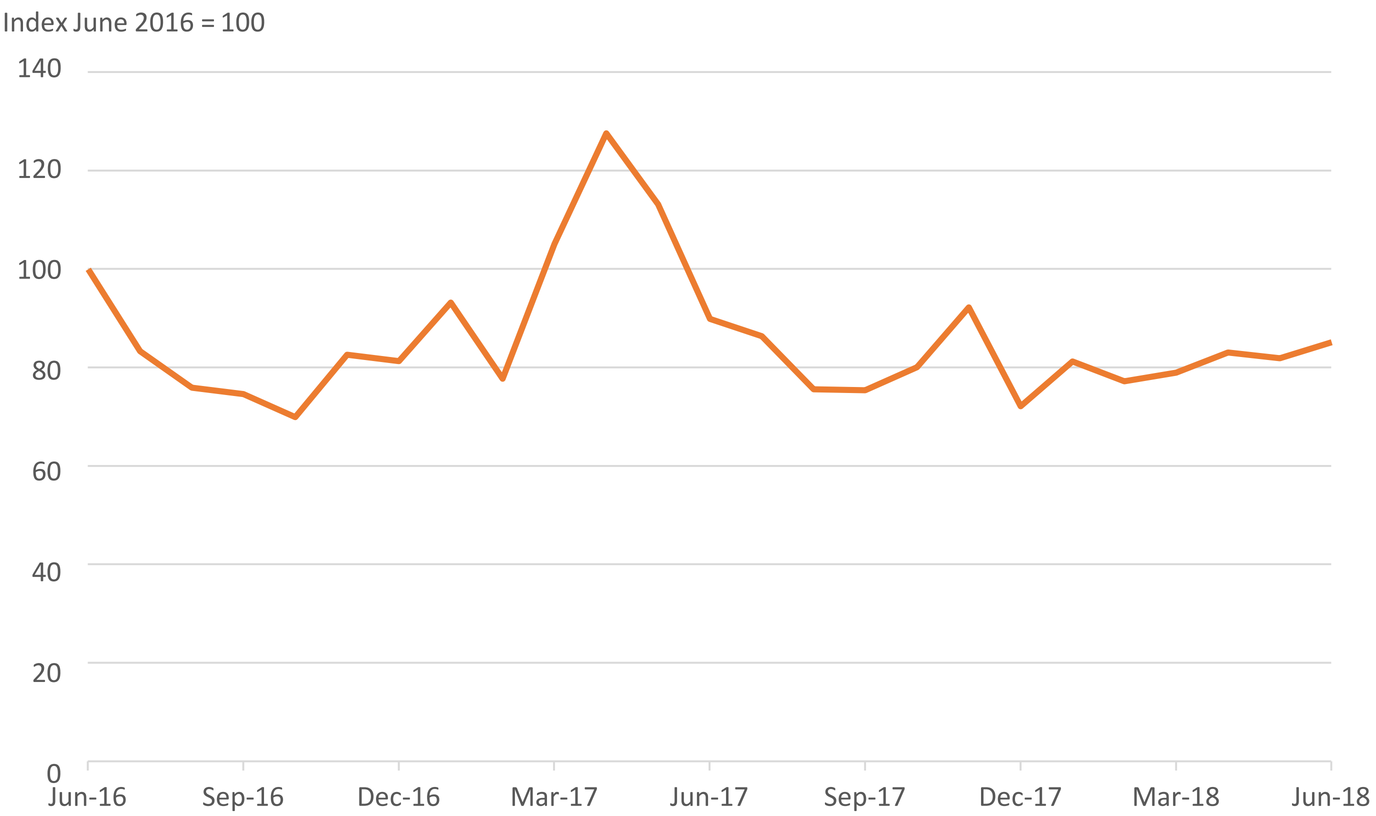
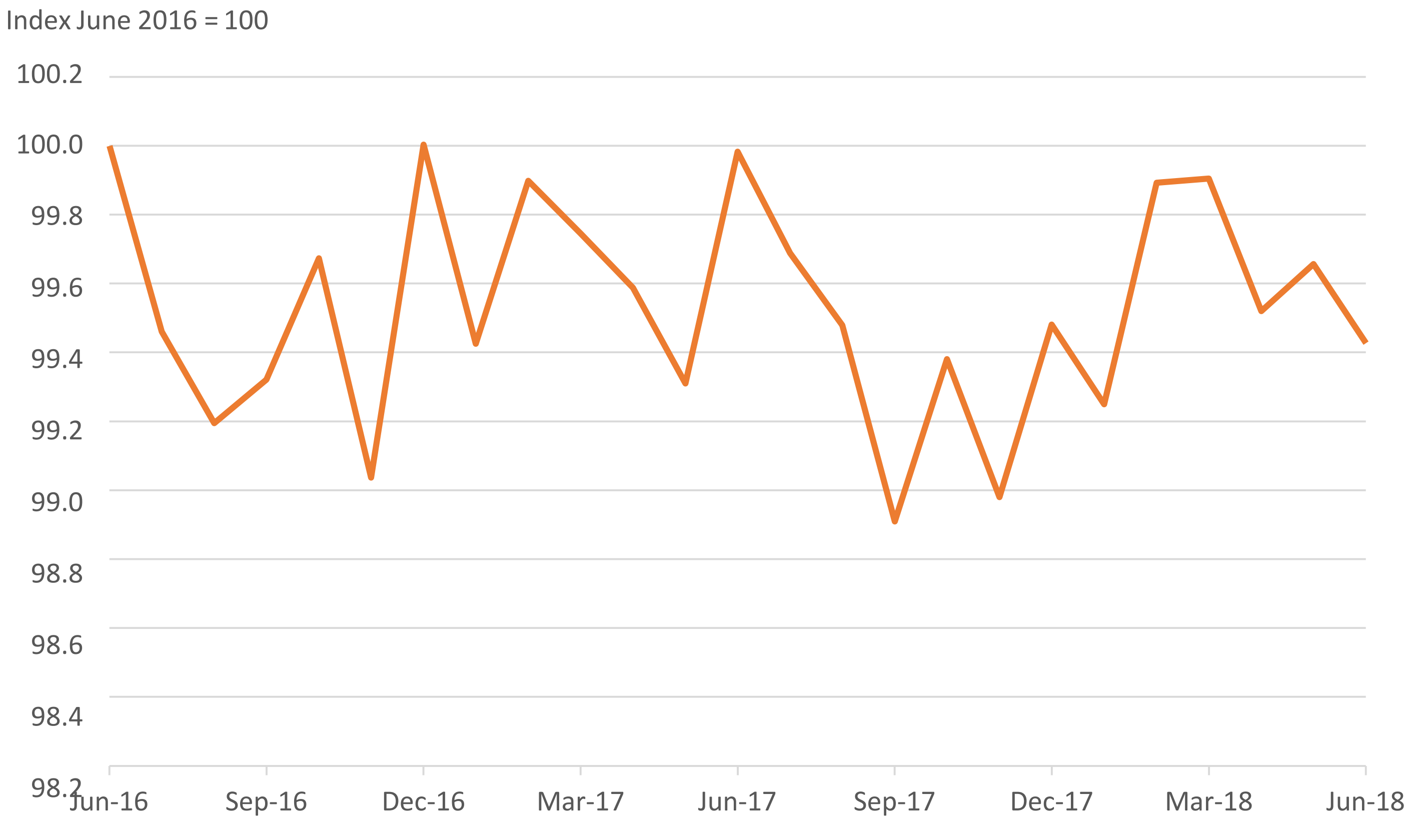
□	data for FEWS milk.csv	2 hours ago

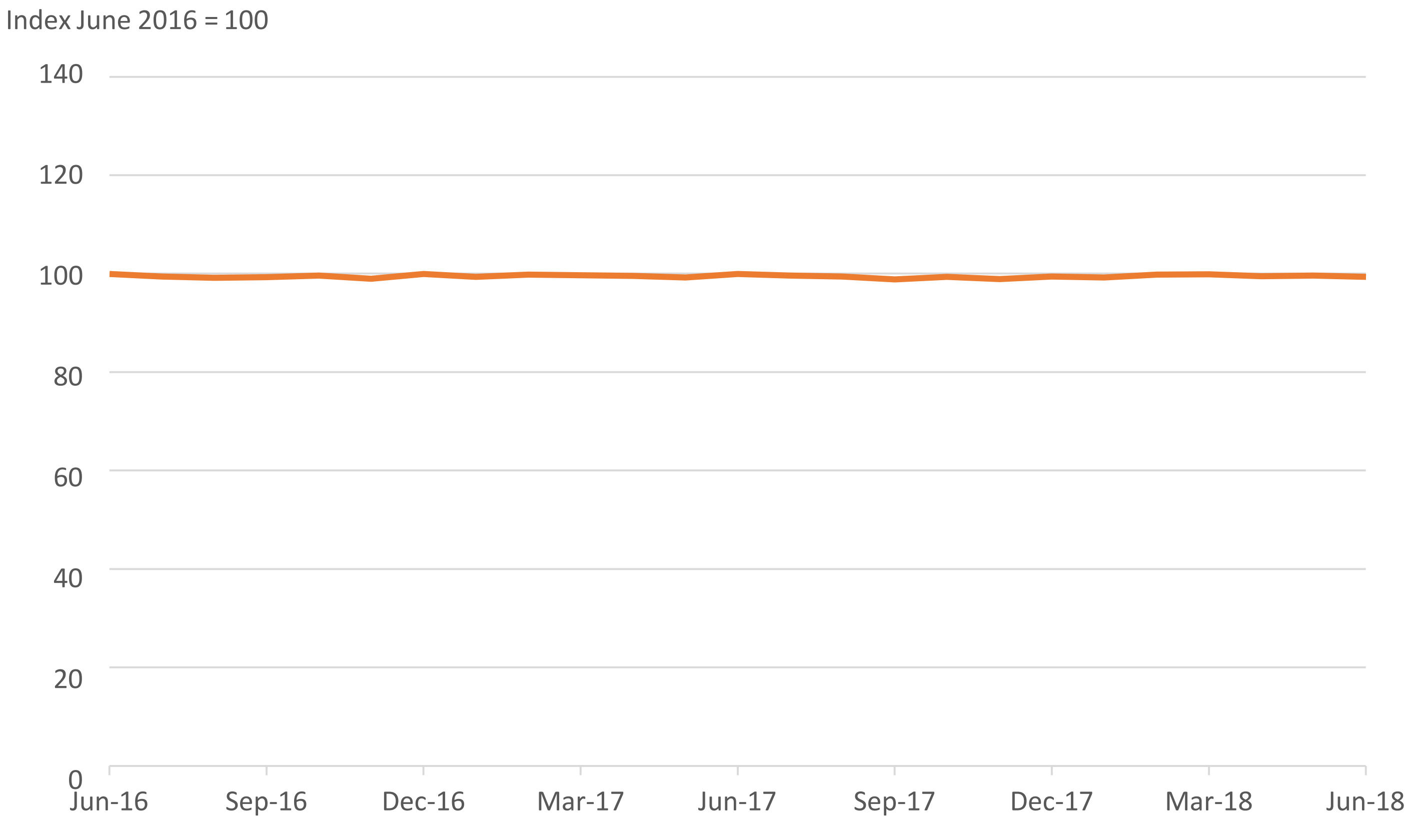
Price indices - cauliflower



Price indices - milk



Price indices - milk



Lessons learnt so far - Platform

- Technology platform provides easy to use interface
- Availability of a range of trusted index methodology expedites learning
- The set-up of the platform requires a learning curve for the task team participants.

Lessons learnt so far – Nielsen

- Comprehensive clean data
- Value in establishing a partnership to establish best practices
- Adding a data dictionary would facilitate data understanding

Next steps

- Finalised Phase 1:
  - Instructional manual loaded to the platform
  - Expanded test data stored on UN Global Platform
  - Code up additional index methods to allow for testing

Next steps

- Commence Phase 2:
  - Using Scanner Data to calculate CPI expenditure weights
  - Data cleaning and sorting to provide analysis ready dataset
  - Capacity Building – providing training material and courses
  - Expanding membership to include new organisations: US Federal Reserve; Eurostat; Nielsen; ECB