

Data Journalism

METHODS AND CASE STUDIES FROM MONGOLIA

About Robert Ritz



Director of LETU
Mongolia



Data Scientist at
Mongol.ai



Creator of Mongolian
Data Stories



Lived in Mongolia
since 2013



Mongolian Data Stories

Using data to tell Mongolia's story

[MACHINE LEARNING](#)

[DATA VISUALIZATION](#)

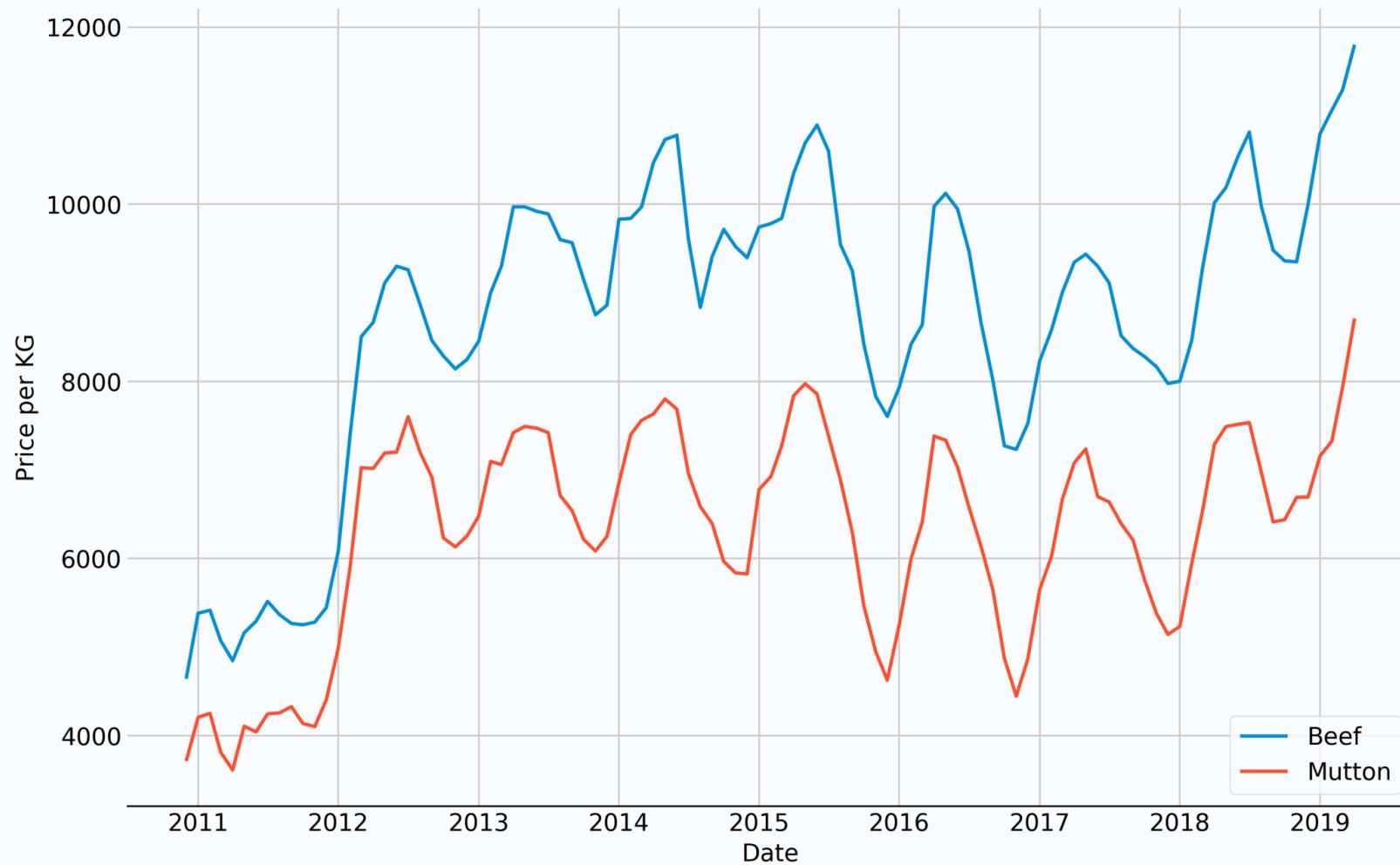
[ARCHIVE](#)

[МОНГОЛ ХЭЛ](#)

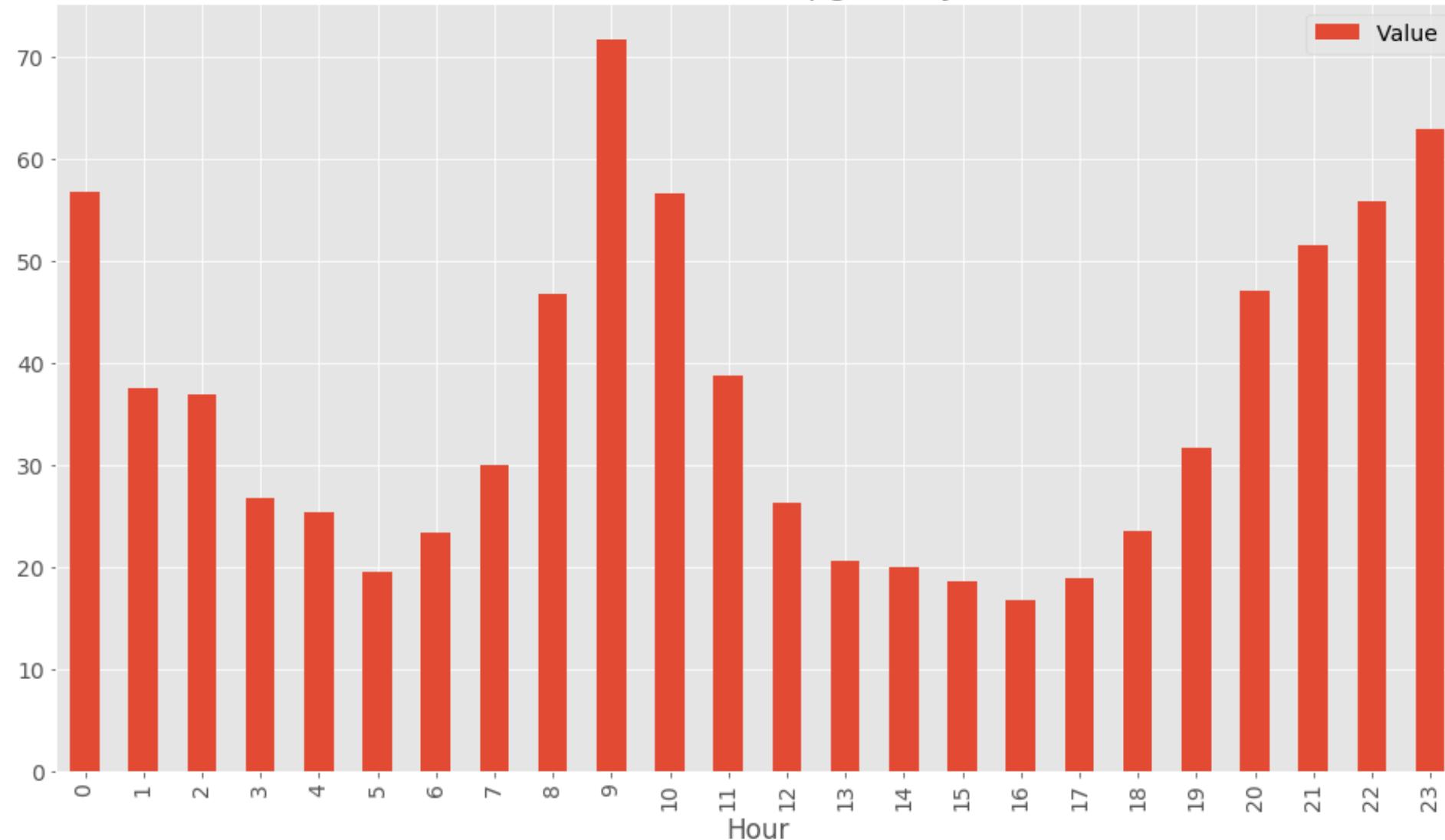
[ABOUT MDS](#)

Roller Coaster of Meat Prices

Dec 2011 to Apr 2019



Mean PM2.5 Level in $\mu\text{g}/\text{m}^3$ by Hour



Goals



Understand the data analysis process



Understand ways to create reproducible reporting

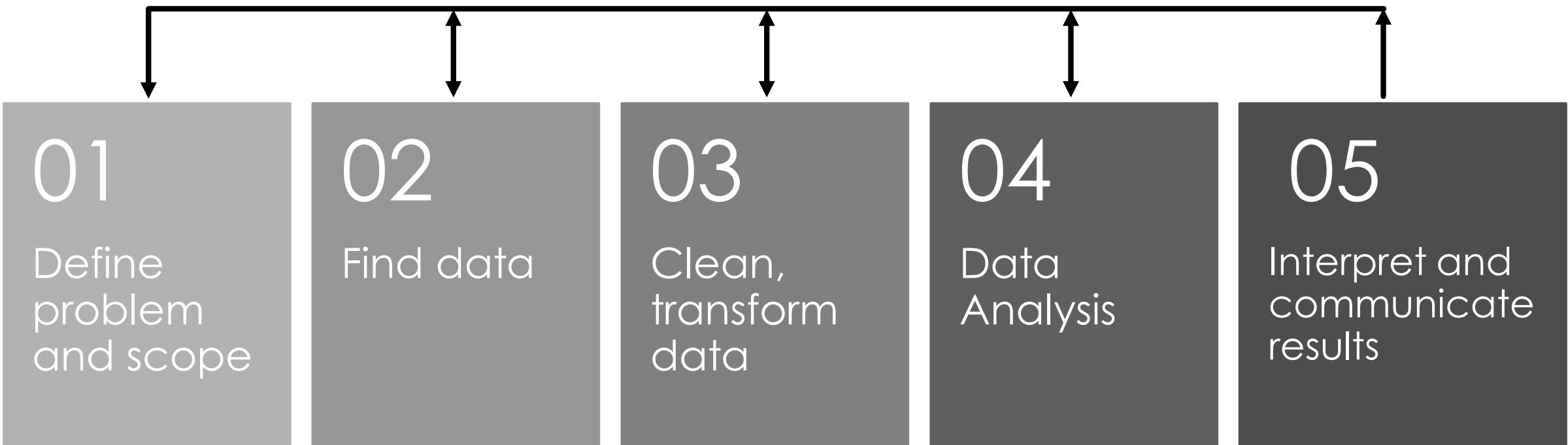


See how this works through case studies

Kahoot!

Data Journalism Quiz!

Data Analysis Process



Case Studies

DATA ANALYSIS PROCESS
REPRODUCIBILITY

Problem:
Perception of
Chronic Youth
Unemployment

Redefined
problem:

How is unemployment
distributed through the
population?

Age group	Sex	2009	2010	2011	2012	2013
Total	Total	11.6	9.9	7.7	8.2	7.9
	Male	11.6	10.5	8.1	8.4	7.6
	Female	11.6	9.2	7.4	8.1	8.3
15-19	Total	22.8	18	14	8	13.6
	Male	23.1	17.5	14.6	6.9	11.1
	Female	22.4	18.7	13	9.3	17.6
Total		21.7	20	16.1	10.1	11.6

Data Collection

1212.MN (NATIONAL STATISTICAL OFFICE)

UNEMPLOYMENT RATE, BY SEX, AGE GROUP

Clean, Transform Data



Is this data ready to be analyzed?



Often statistical data is in “short” form.



Most data visualization software needs “long” form data.

AutoSave: On | Off

Book1 - Excel

Robert [] powered by  Screencastify

File Home Insert Page Layout Formulas Data Review View Add-ins Help Team Tell me what you want to do

From Text/CSV From Web Get Data - From Table/Range Recent Sources Existing Connections Refresh All Get & Transform Data Queries & Connections Properties Edit Links Sort Filter Advanced Text to Columns Flash Fill Consolidate Remove Duplicates Relationships What-If Analysis Forecast Sheet Group Ungroup Subtotal Data Validation Manage Data Model Forecast Outline Solver Analyze

A1 B C D E F G H I J K L M N O P Q R S T U V W

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29

Sheet1 Stop sharing Hide

Screencastify - Screen Video Recorder is sharing your screen and audio.

Ready

9:45 PM 10/2/2018

Analyze Data

No additional analysis needed

May want context to understand the data

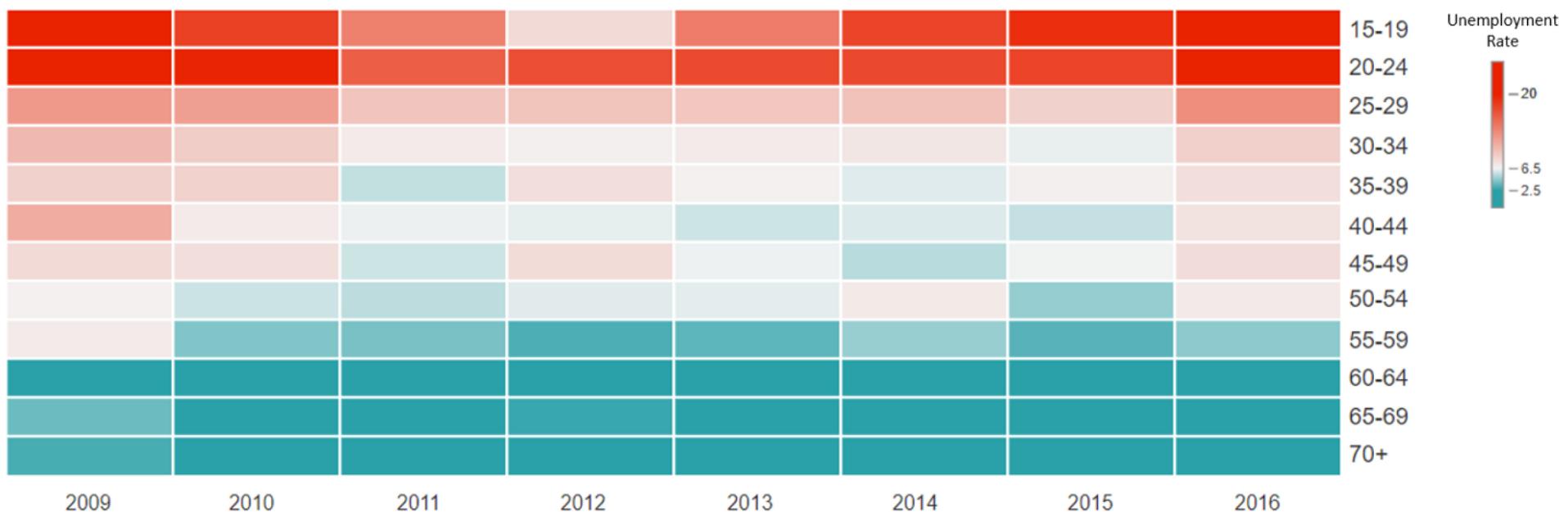
- How is unemployment rate calculated?

Unemployment in Mongolia

By Age Group

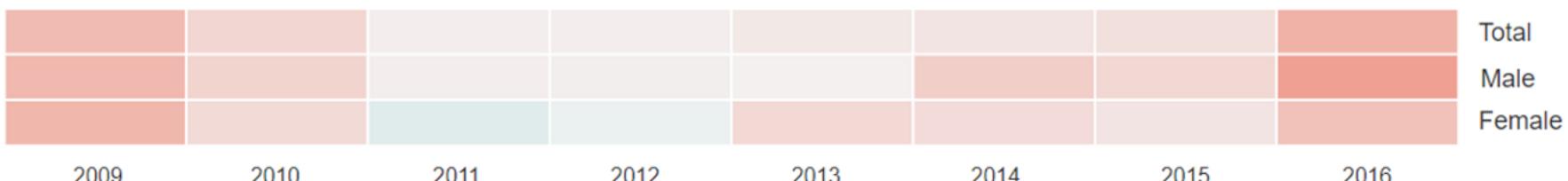
Aside from a low in 2012, youth unemployment remains very high.

How much of the state budget is allocated to old vs young?



By Gender

While males have a slightly higher unemployment rate, the disparity is much higher by age group.



Tools used:

- ▶ Excel – data cleaning and analysis
- ▶ Data Illustrator – data communication

A wide-angle photograph of a mountainous landscape. In the foreground, there's a mix of dark, rocky areas and patches of green grass. The middle ground shows rolling hills and valleys covered in green vegetation. In the background, a range of mountains is visible under a sky filled with large, white, billowing clouds.

Mongolia is a
peaceful country

Redefined
problem:

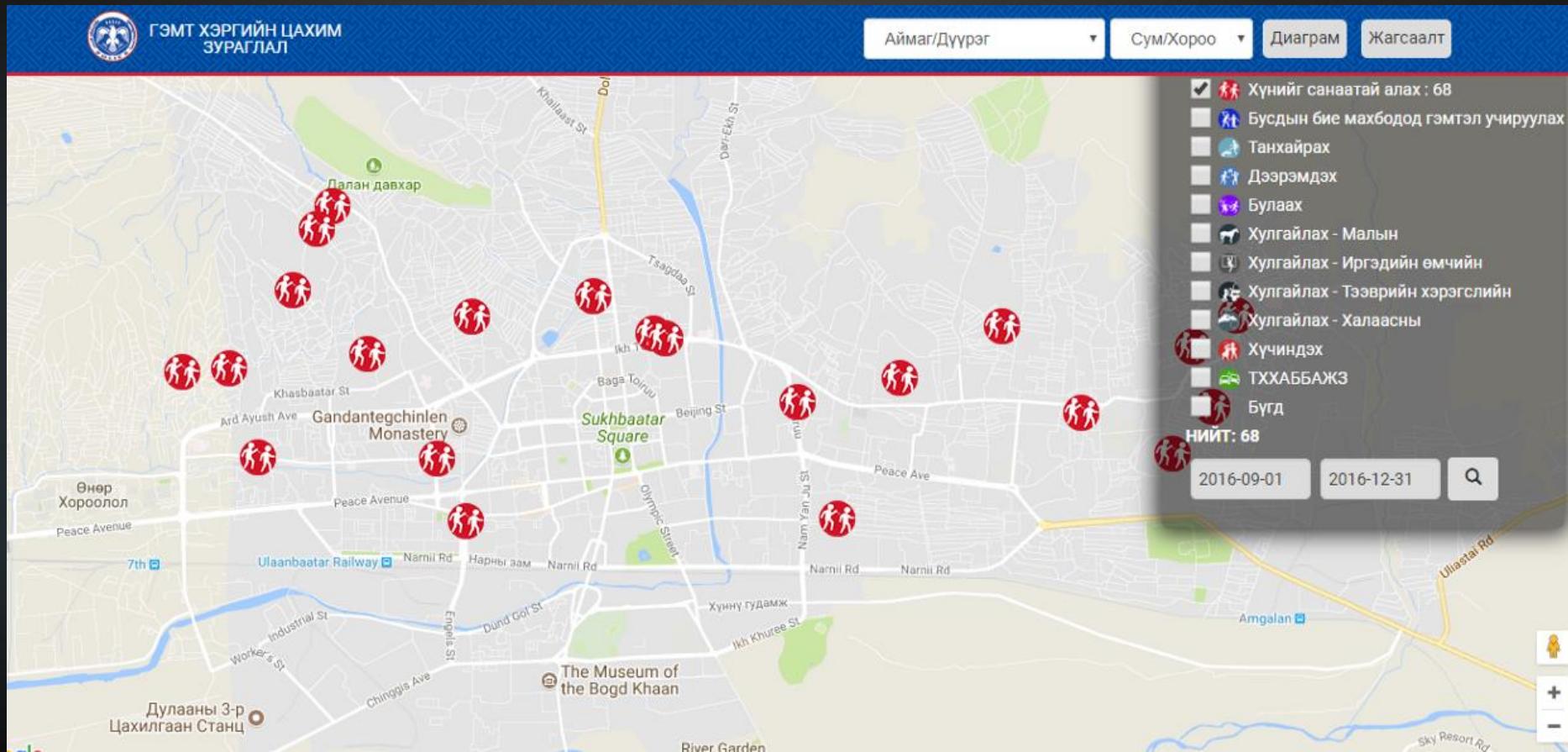
IS THE MURDER RATE
HIGHER OR LOWER
THAN THE USA?

Poll:

In 2016 was the Mongolian murder
rate higher than the United States
murder rate?

Data:

- ▶ Official crime statistics are released the year after
 - ▶ Alternative source: <http://crimemap.police.gov.mn>



Cleaning and Analysis



Data is from every aimag (province) of Mongolia



Dataset is over 56,000 rows, messy



Shows every crime report in 2015, 2016



How do we show data of this type?

6.48

2015 Intentional Homicide

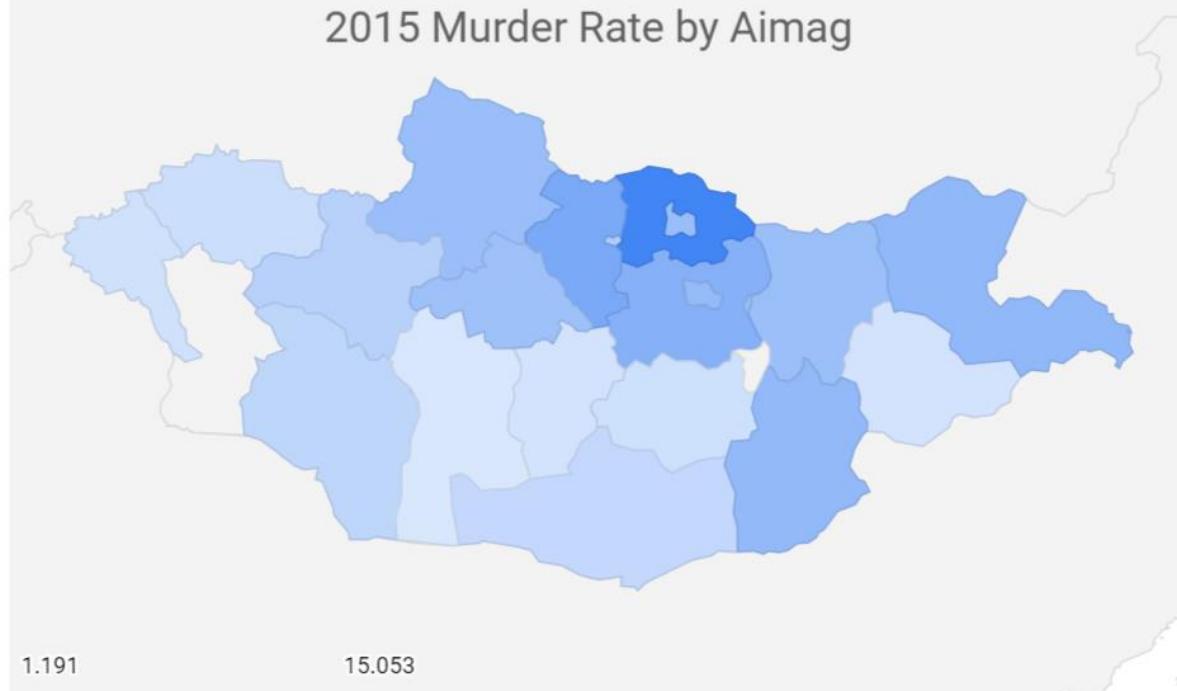
Murder Rate by Aimag

Murders per 100,000 inhabitants

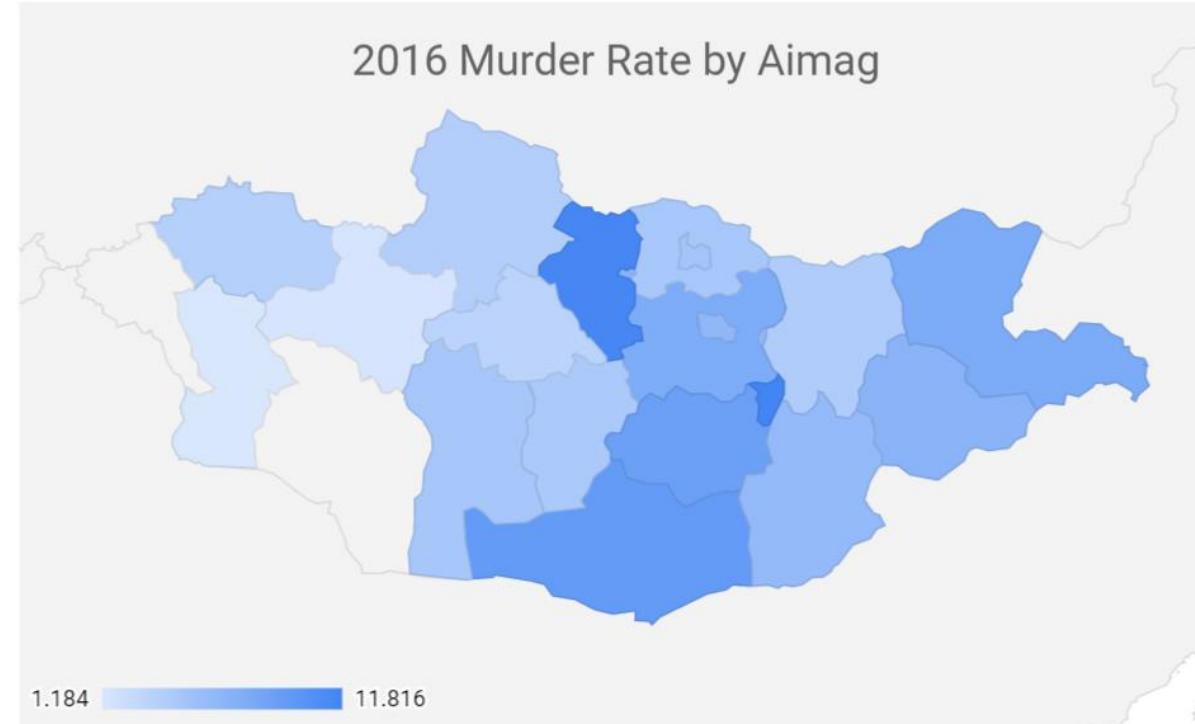
5.72

2016 Intentional Homicide

2015 Murder Rate by Aimag



2016 Murder Rate by Aimag



	Хэргийн дугаар	Хэргийн огноо	Хот/Аймаг	Дүүрэг	Хороо/Сум
1.	2015260001491	Mar 3, 2015	Улаанбаатар	Сонгинохайрхан д...	20-р хороо
2.	2015260001228	Feb 25, 2015	Улаанбаатар	Хан-Уул	10-р хороо
3.	2015260001002	Feb 13, 2015	Улаанбаатар	Сонгинохайрхан д...	22-р хороо
4.	2015260000440	Jan 19, 2015	Улаанбаатар	Сонгинохайрхан д...	19-р хороо

1 - 10 / 193 < >

	Хэргийн дугаар	Хэргийн огноо	Хот/Аймаг	Дүүрэг	Хороо/Сум
1.	201726010003	Dec 31, 2016	Улаанбаатар	Сонгинохайрхан д...	19-р хороо
2.	201726010002	Dec 29, 2016	Улаанбаатар	Сонгинохайрхан д...	3-р хороо
3.	201722000119	Oct 30, 2016	Хөвсгөл	null	Бүрэнтогтох сум
4.	201706000001	Dec 30, 2016	Булган	null	Хангал сум

1 - 10 / 173 < >

Result:

- ▶ 2016 Mongolia murder rate*: 5.72 (5.66 according to UN-CTS)
- ▶ 2016 US murder rate: 5.35
 - ▶ UN-CTS reported 171 murders in 2016. Crimemap reported 173.
- ▶ 2016 data became available in 2018.
- ▶ Limited in what we can analyze from this data.
 - ▶ Lack of detailed information about crime.
 - ▶ Who was the victim? Theft has four categories, assault has one.
 - ▶ Was it closed or not? Did it lead to a prosecution?
- ▶ Website no longer works

Tools used:

- ▶ Excel – data cleaning and analysis
- ▶ Google Data Studio



Is debt
becoming
unsustainable
in Mongolia?

Data

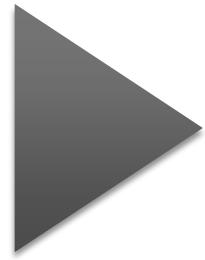


Outstanding loans and
outstanding deposits



1212.mn (National Statistical
Office)

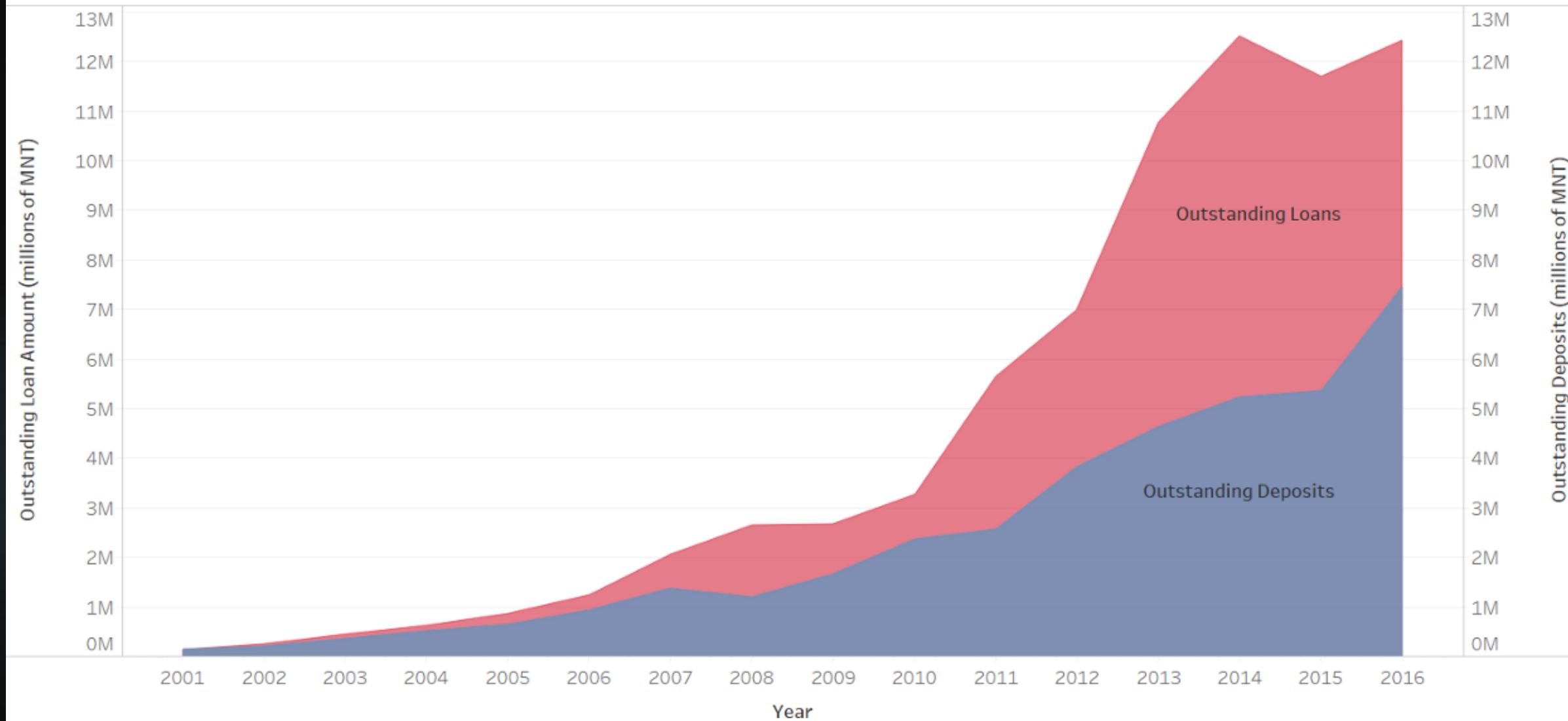
Data was
clean, just
needed to
reformat



Interpretation
is important

Cleaning and Analysis

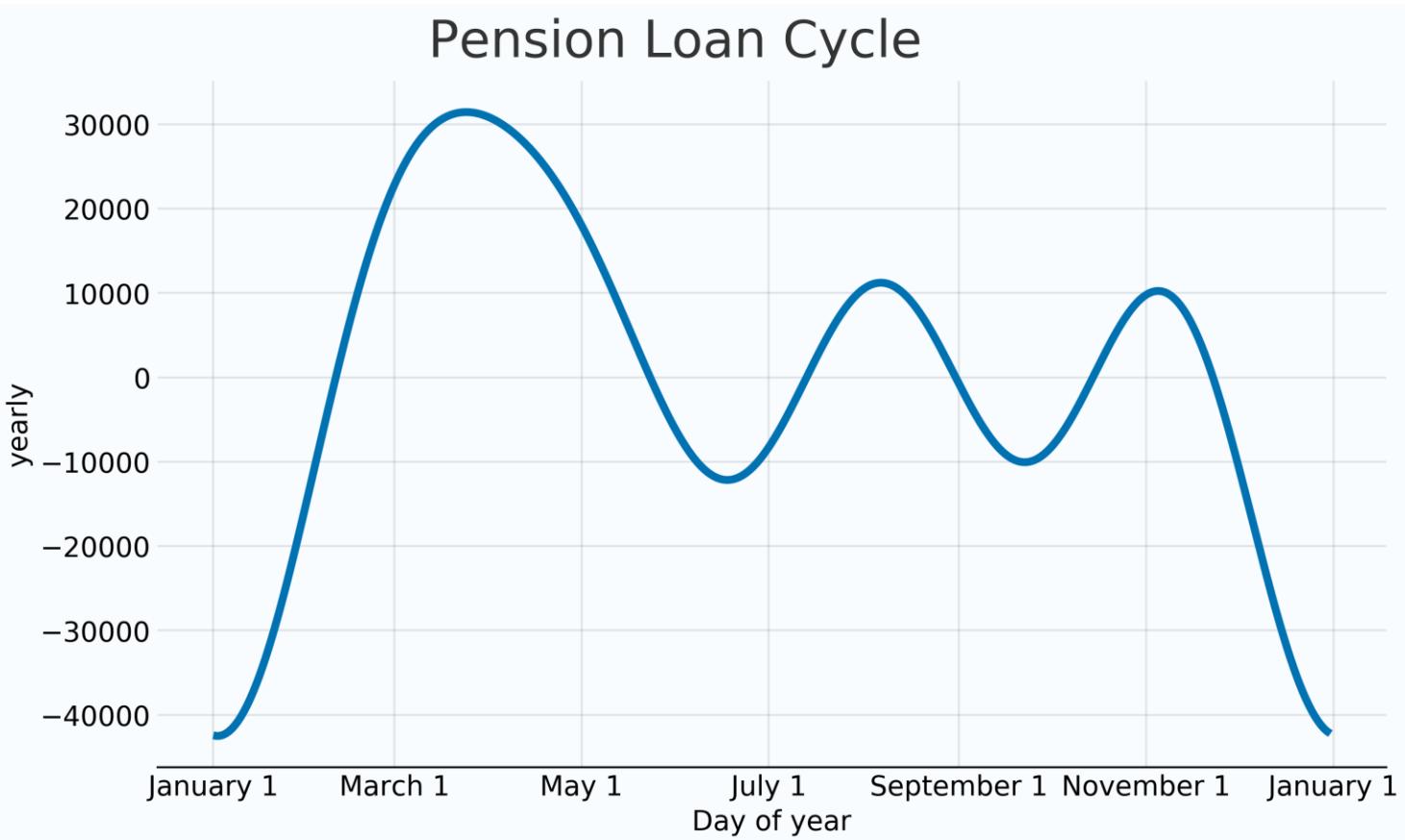
Outstanding loan and deposit amount 2001-2016 (millions of MNT)



Tools used:

- ▶ Excel – data cleaning and analysis
- ▶ Tableau

Follow-
up -
Tsagaan
Sar



Meat Prices

2019 оны 1 сарын 4

**Б.БАДАМГАРАВ**

iKon.mn сэтгүүлч



Махны үнэ тэнгэрт хадаж, хомсдол үүсжээ!





Max экспортлогч ААН-үүд их хэмжээний мах нөөцөлсөн байгааг шалгалтаар илрүүлжэ...

...

Max экспортлогч ААН-үүд их хэмжээний мах нөөцөлсөн байгааг шалгалтаар илрүүлжээ. #МонголынМэдээ #ЦагийнХурд



Like

Comment

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619 · 292 Comments

Data



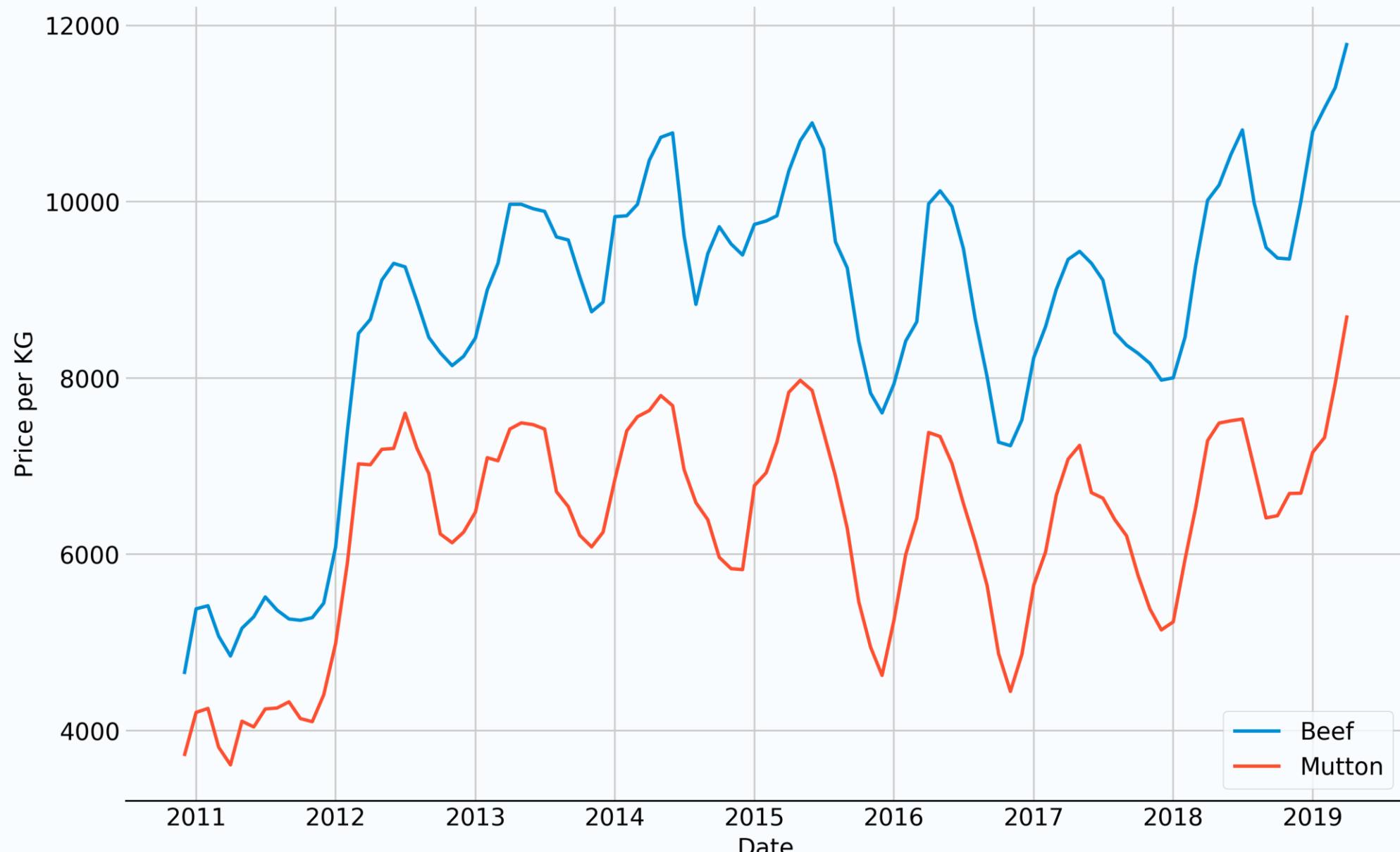
Luckily, the National Statistical Office tracks monthly meat price averages



Issue: so many kinds of meat!

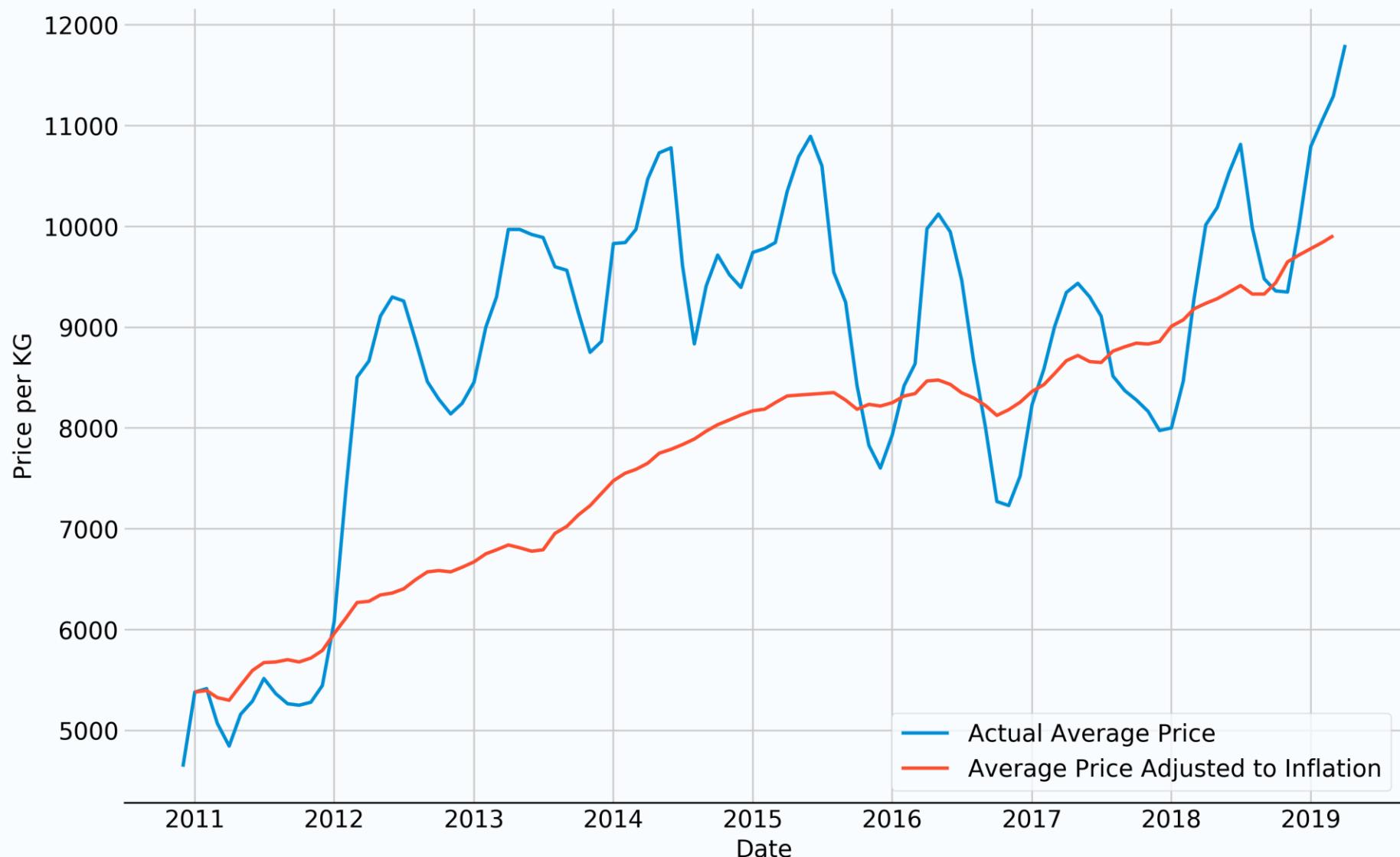
Roller Coaster of Meat Prices

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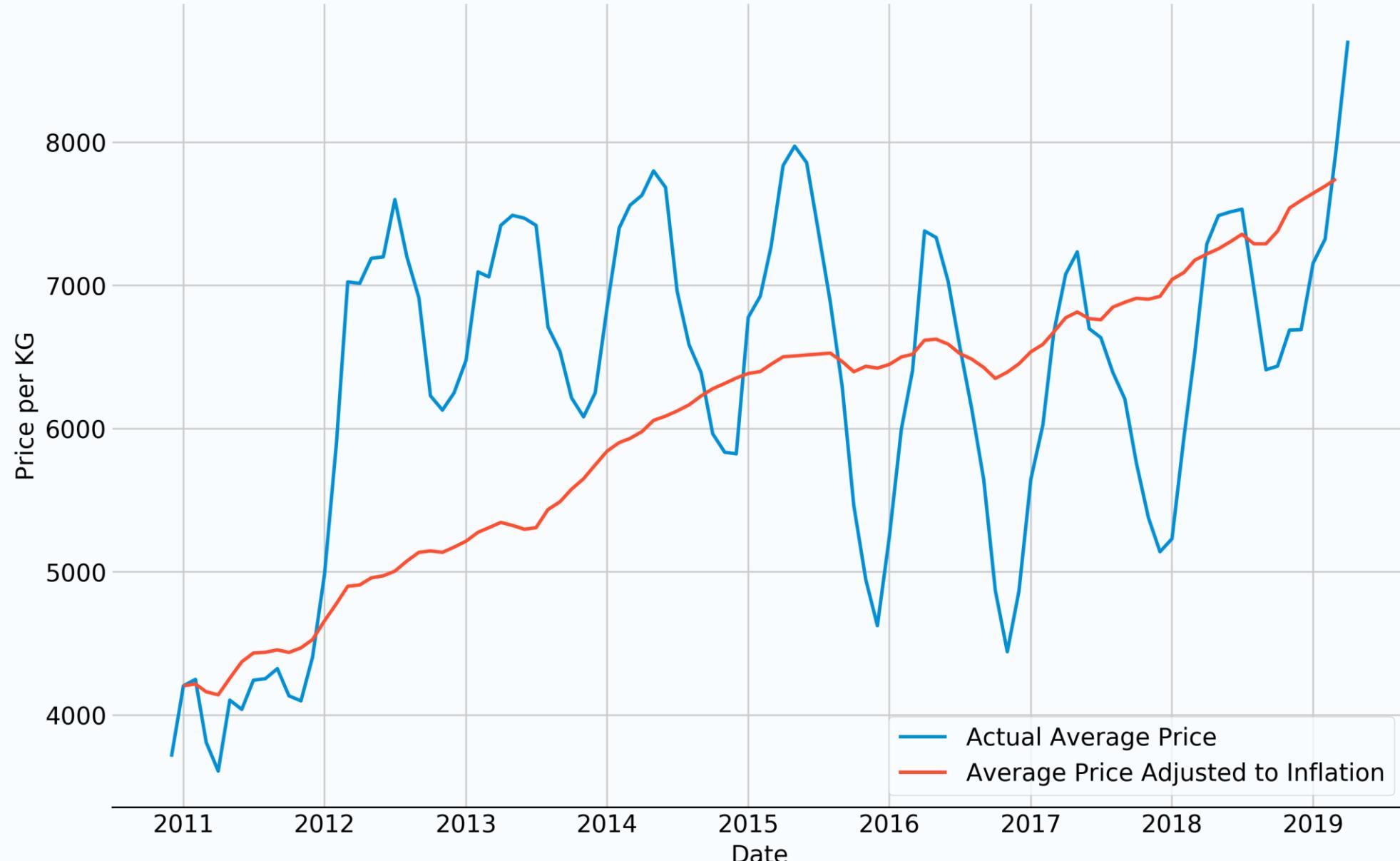
Beef appears to be priced at a premium

Only 2017 saw beef prices tracking inflation



Mutton prices rising above inflation trend

2016-2018 saw prices under inflation trend



Meat as a share of income in going down

Based on average UB salary. Assumes 250g of consumption per day for three people.



Meat as a share of income in going down

Based on average UB salary. Assumes 250g of consumption per day for three people.

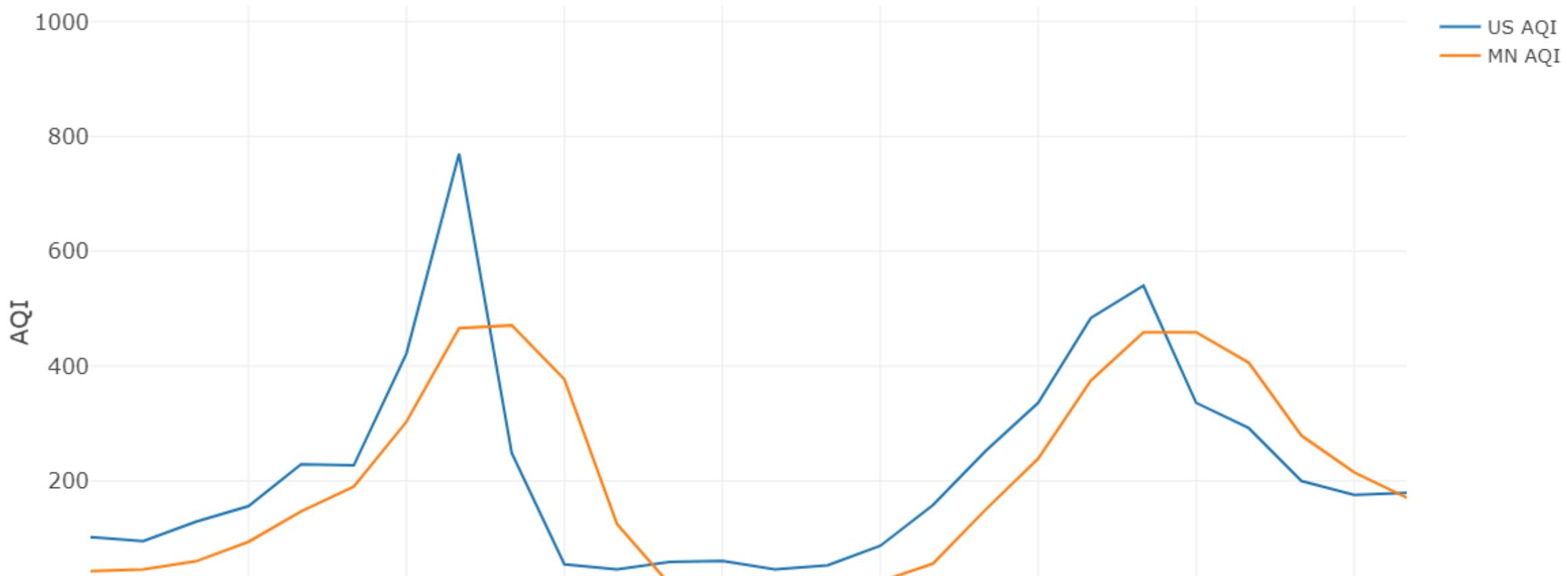


Tools used:

- ▶ Excel – data exploration
- ▶ Python – analysis and visualization

Current
Project – Air
Pollution

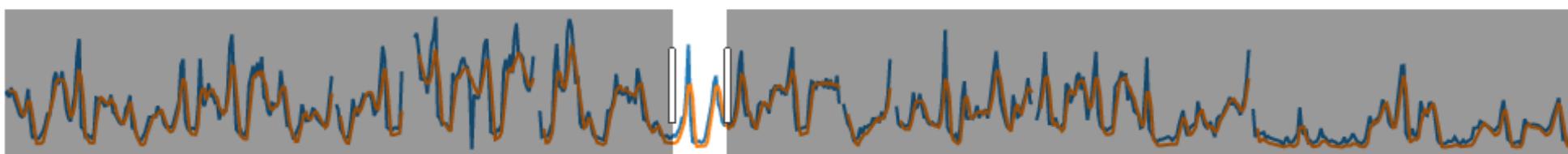
One Hour vs Three Hour Average - AQI



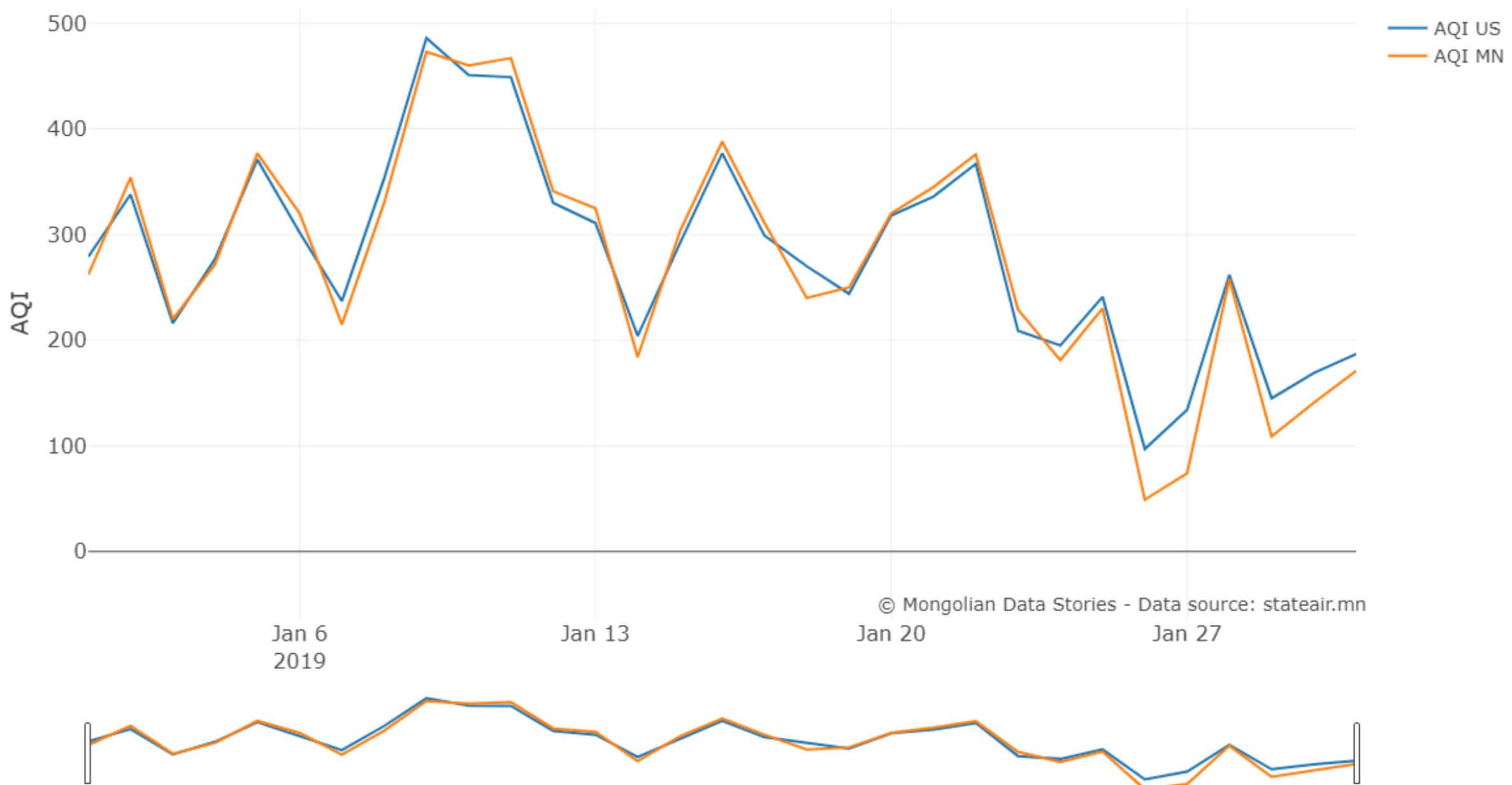
© Mongolian Data Stories - Data source: stateair.mn

03:00
Jan 14, 2019

03:00
Jan 15, 2019



AQI Daily Average



Data Analysis Process

