

Ghana's CPI Automation (RAP) Experience, Benefits and Challenges

25th, July 2025



GHANA
STATISTICAL SERVICE

Outline:

- WHAT IS CPI AUTOMATION
- ROADMAP TO IMPROVE CPI PRODUCTION IN GHANA
- AREA OF CONCENTRATION AND THE DATA FLOW
- DEVELOPMENT OF RAP FOR CPI AND IMPLEMENTATION PROCESS
- USAGE OF TOOL OVER TIME IN GHANA CPI PRODUCTION
- KEY FEATURES OF RAP
- BENEFITS AND IMPACT
- TRAINING AND CAPACITY BUILDING
- LESSONS LEARNED
- **FUTURE DIRECTIONS**
- **CONCLUSION**
- **Q &A SESSIONS**

What is CPI Automation RAP? :

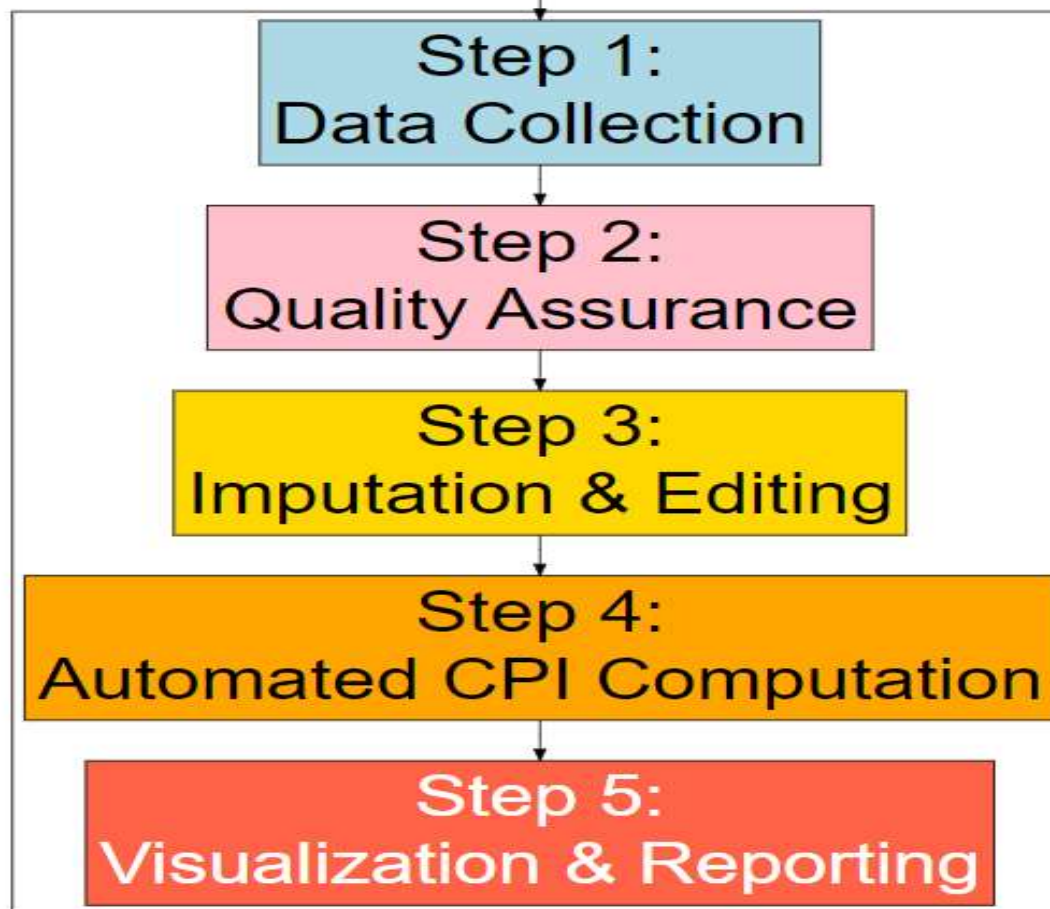
CPI Automation is the process of using scripts and tools to automatically clean, analyze, and report Consumer Price Index (CPI) data with minimal manual effort.

- Accuracy – Reduced human error through automated checks
- Consistency – Standardized methods across all regions
- Timeliness – On-time release of inflation reports

RoadMap to Improve CPI Production in Ghana



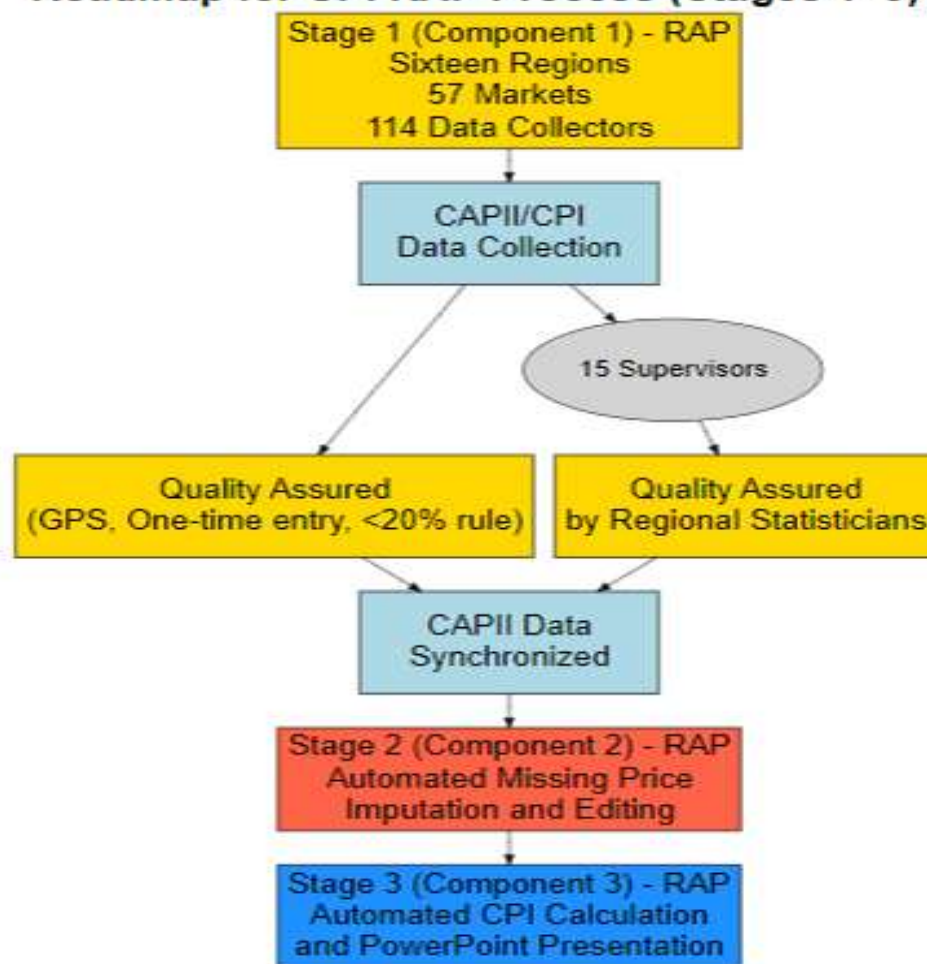
AREA OF CONCENTRATION MAPPING



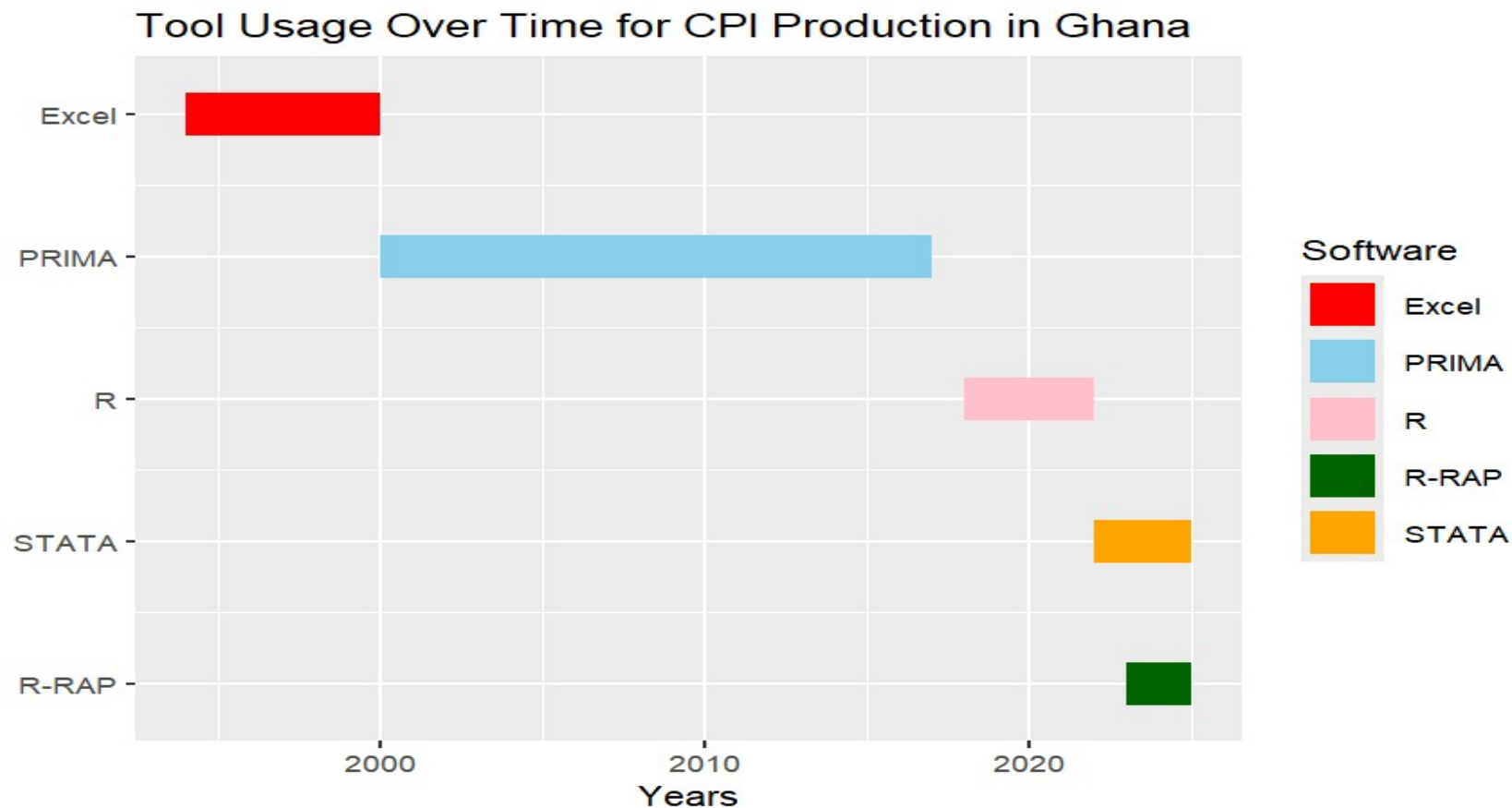
Automation leads to:

- ✓ Consistency
- ✓ Quality
- ✓ Timely Dissemination

Roadmap for CFI RAP Process (Stages 1-3)



Tool Usage Over Time in CPI Production, Gh:

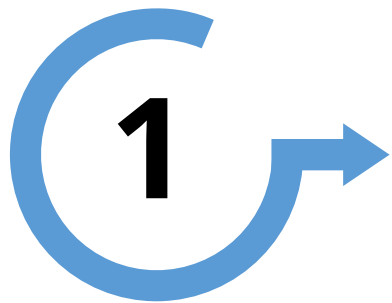


Development of RAP:

- Initial steps and planning phase.
- Collaborations with the Office for National Statistics (ONS) and other partners.
- Key Objectives and goals for RAP
- Implementation



Implementation Process:



- Formation of the project team: roles and responsibilities



- Steps taken to develop and implement RAP



- Tools and technologies used (e.g., R programming language).



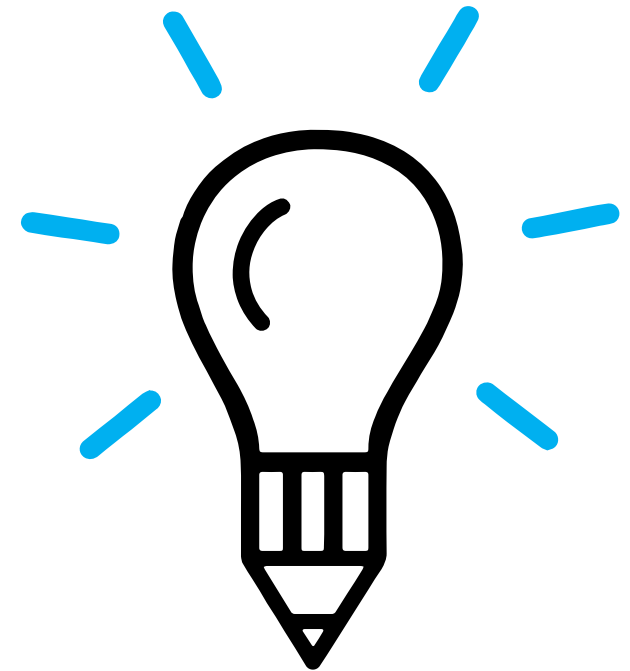
- Overcoming technical and operational challenges

Key Features of RAP:

- Description of the main components of the RAP system.
- How RAP enhances data accuracy and reliability.
- Integration of RAP with existing data systems.
- Innovations introduced in CPI computation.

Benefits and Impact:

- 01** Efficiency gains and time savings.
- 02** Improved accuracy and consistency of CPI data.
- 03** Enhanced capability for data analysis and reporting.
- 04** Feedback from stakeholders and end-users.

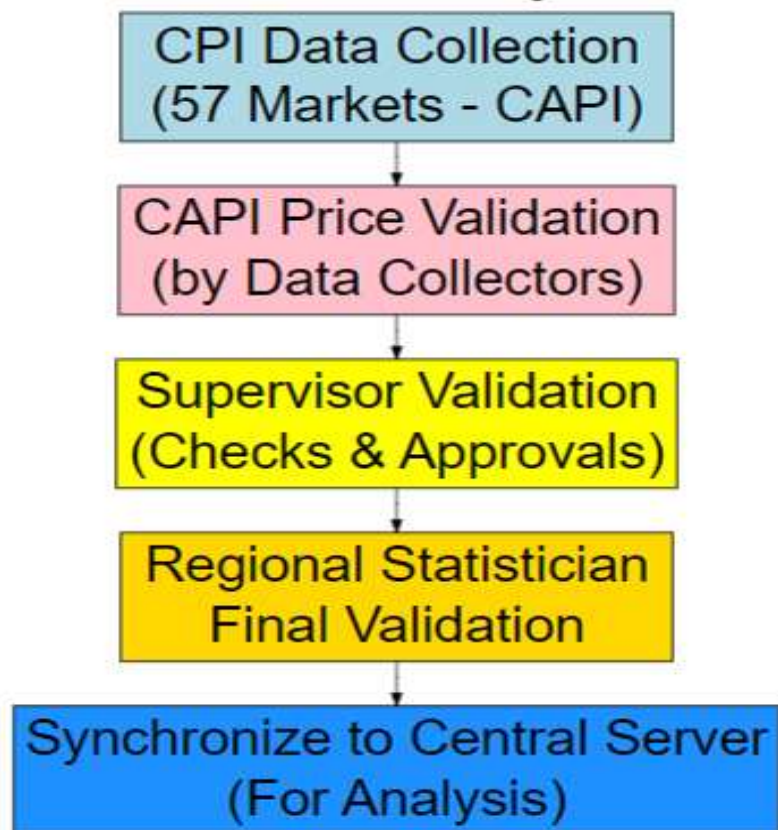


Case Study and Examples:

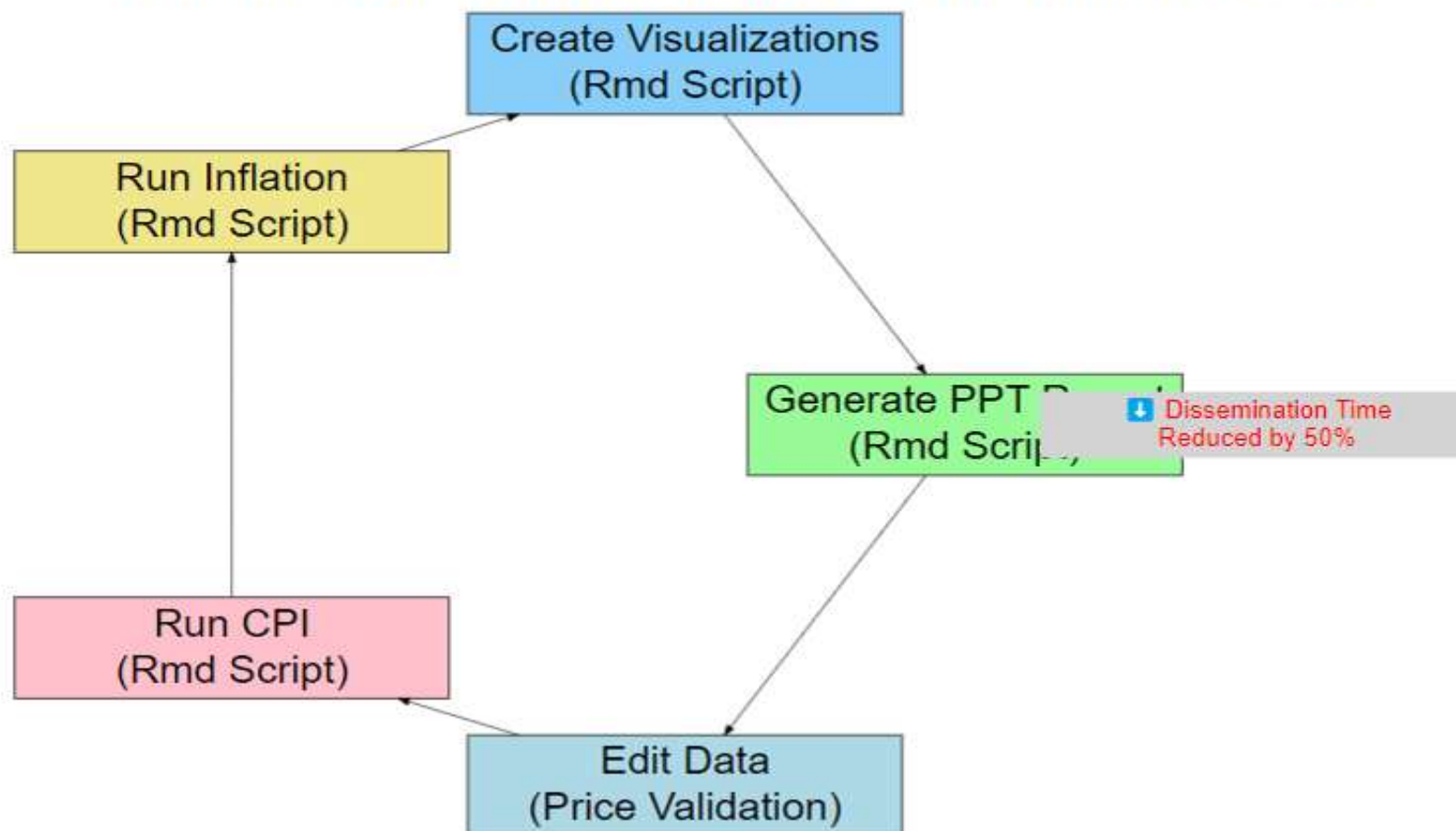
- Specific instances is where RAP significantly improved CPI production.
- Comparative analysis of pre- and post-RAP implementation results.

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CPI Data Collection and Validation Process (57 Markets - CAPI to Synchronization)



Ghana RAP CPI Workflow - Circular Process



```

with_extreme_values x products_with_extreme_values %>% arr... x 2_calculate_inflation.Rmd x YML date_info >>
Source Visual Outline
1 ---
2 output: html_document
3 editor_options:
4   markdown:
5     wrap: 72
6 ---
7
8 ## Key user controlled parameter:
9
10 The following variable, `current_month`, is the main
11 parameter that
12 needs to be updated on a monthly basis - this should
13 be updated in the
14 `date_information.yaml` file stored in the `src`
15
16 1:1 # Title R Markdown

```

```

Console Terminal Background Jobs
R 4.5.1 ~ /ghana-consumer-price-index-pipeline/src/
Checking the CPI outputs for extreme values.
Validation failed: Some extreme CPI values below 20 or ab
ove 600 have been found. A viewer has been launched showi
ng the products and dates that have been flagged. These c
ould be indicating some issues with the pricing data. It
is advised to investigate these (especially if the same C
OICOP code and region code is appearing regularly).
Or, if legitimate, you may wish to adjust the threshold v
alues when you call this function.
> #| label: Combine current and past data

```

Environment History Connections Tutorial

Import Dataset 108 MiB

R Global Environment

List

regional_no...	880 obs. of 9 variables	
Regional_Ur...	1320 obs. of 4 variables	
relative_pr...	2631200 obs. of 11 variables	
sheet_Import...	1 obs. of 55 variables	
sheet_Local...	1 obs. of 55 variables	
sheet_Natio...	13 obs. of 57 variables	
sheet_Natio...	44 obs. of 56 variables	
sheet_Natio...	88 obs. of 56 variables	

Files Plots Packages Help Viewer Presentation

New Folder New File Delete Rename More

Home > ghana-consumer-price-index-pipeline > src

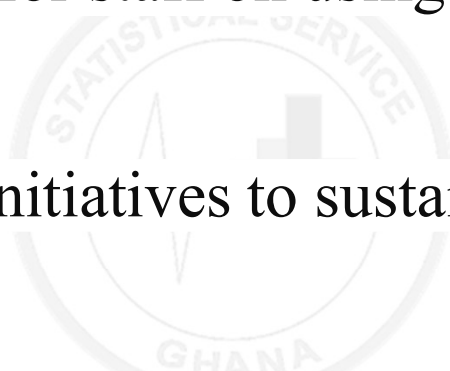
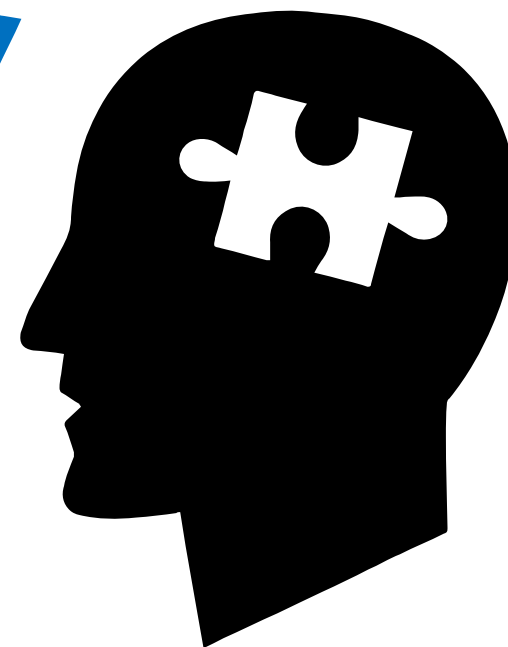
Name Size Modified

.Rhistory	15.6 KB	Feb 20, 2025, 1:21 PM
1_calculate_cpi.Rmd	20.7 KB	Oct 9, 2023, 12:23 PM
2_calculate_inflation.Rmd	3 KB	Jun 25, 2024, 5:28 AM
3_create_data_visualisations_files		
3_create_data_visualisations.Rmd	20 KB	Jun 25, 2024, 5:28 AM
4_generate_presentation_files		
4_generate_presentation.qmd	13.2 KB	Feb 24, 2025, 12:58 PM
common_utils		
consumer_price_indices		
CPI_presentation_0723.pptx.html	93.2 KB	Jan 7, 2024, 12:46 PM
data_visualisations		
date_information.yaml	298 B	Jul 23, 2025, 9:47 PM
inflation		
reporting		

Activate Windows
 Go to Settings to activate Windows.

Training and Capacity Building:

- Training programs for staff on using RAP.
- Capacity building initiatives to sustain RAP usage.
- Collaboration with international partners for knowledge exchange.



Benefits of RAP in CPI

**Real-time CPI data
validation capability**

**Real-time CPI data
validation capability**

It is inexpensive.

**Shorten the processing
time for CPI and
inflation**

**It is very
sustainable**

**Benefits of
using RAP to
calculate CPI**

**Introducing servers and
GitHub has made CPI data
highly secure.**

**PAPI is virtually
eliminated**

**Reduce human
involvement**

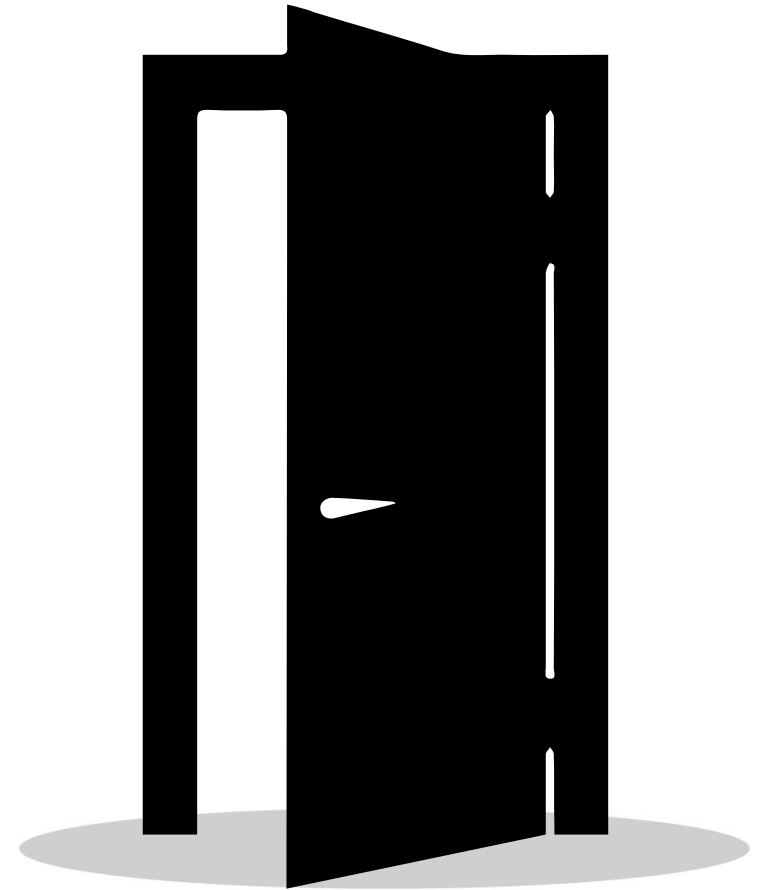
**Data cleaning is
greatly reduced**

Lesson Learned:

- Statistical Agencies across should not undermine in house capacity building
- Countries already using PAPI and wanted to switch to CAPI
- **Warning** do not take entire country at the same time
- **What to do:** migrate gradually region by region
- Key Insights and lessons from the RAP implementation journey
- Mistakes made and how they were addressed- **Now a lot of capacity in house (R and Python at intermediate)**
- Recommendations and other countries considering similar automation projects. Countries should follow the Automation for quality CPI data, for planning

Future Directions:

- 1 Plans for further enhancements and updates to RAP.
- 2 Potential expansions to other statistical processes.
- 3 Long-term vision for automation in Ghana Statistical Service.



Conclusion :

- Recap of the transformative impact of RAP on CPI computation.
- Encouragement for adoption of similar systems by other statistical agencies.
- Final thoughts and acknowledgments.



Thank you



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Q&A Session :

- Open floor for questions from the audience.
- Interactive discussion to address queries and provide deeper insights.

