Using the Internet of Things to Understand Climate Exposure for Ambient Commodities (Temperature Monitoring)

USAID GLOBAL HEALTH SUPPLY CHAIN PROGRAM

Procurement and Supply Management

USAID FROM THE AMERICAN PEOPLE

PEPFAR

What do we know about ambient health commodities?

- Temperature/humidity limits

- Absence of monitoring systems creates minimal visibility

- Massive number of products

- Many storage locations

- Often transported with no climate control

- Focus on central warehousing

- Guidance exists: WHO, USP, and others
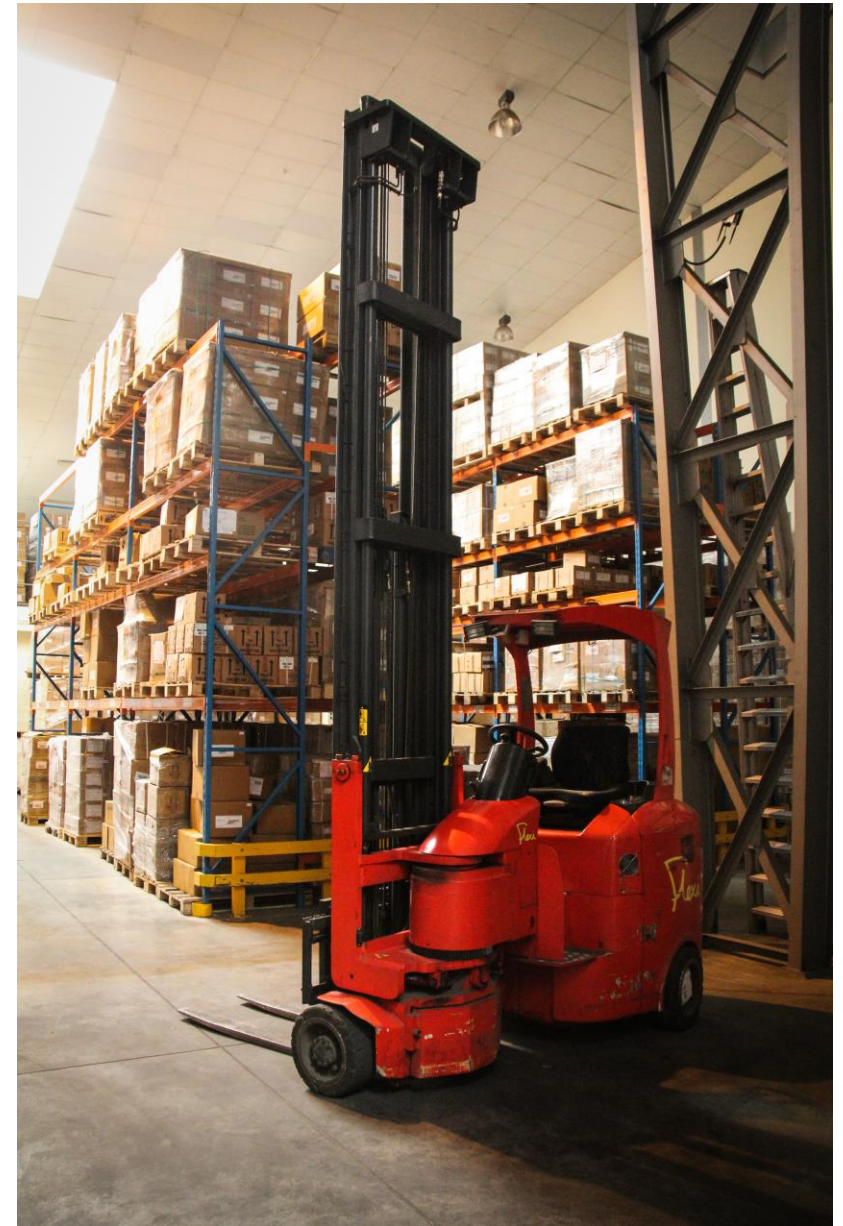
Is it hot in here or is it just me?
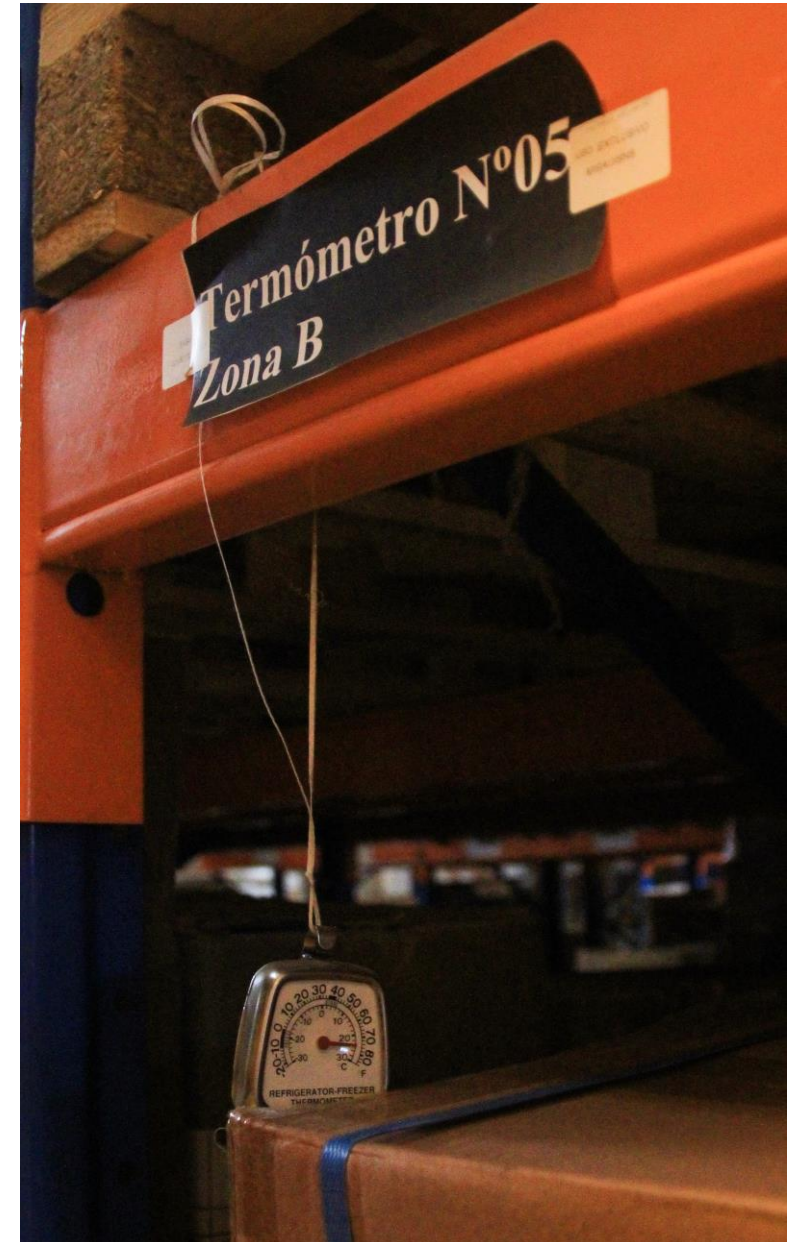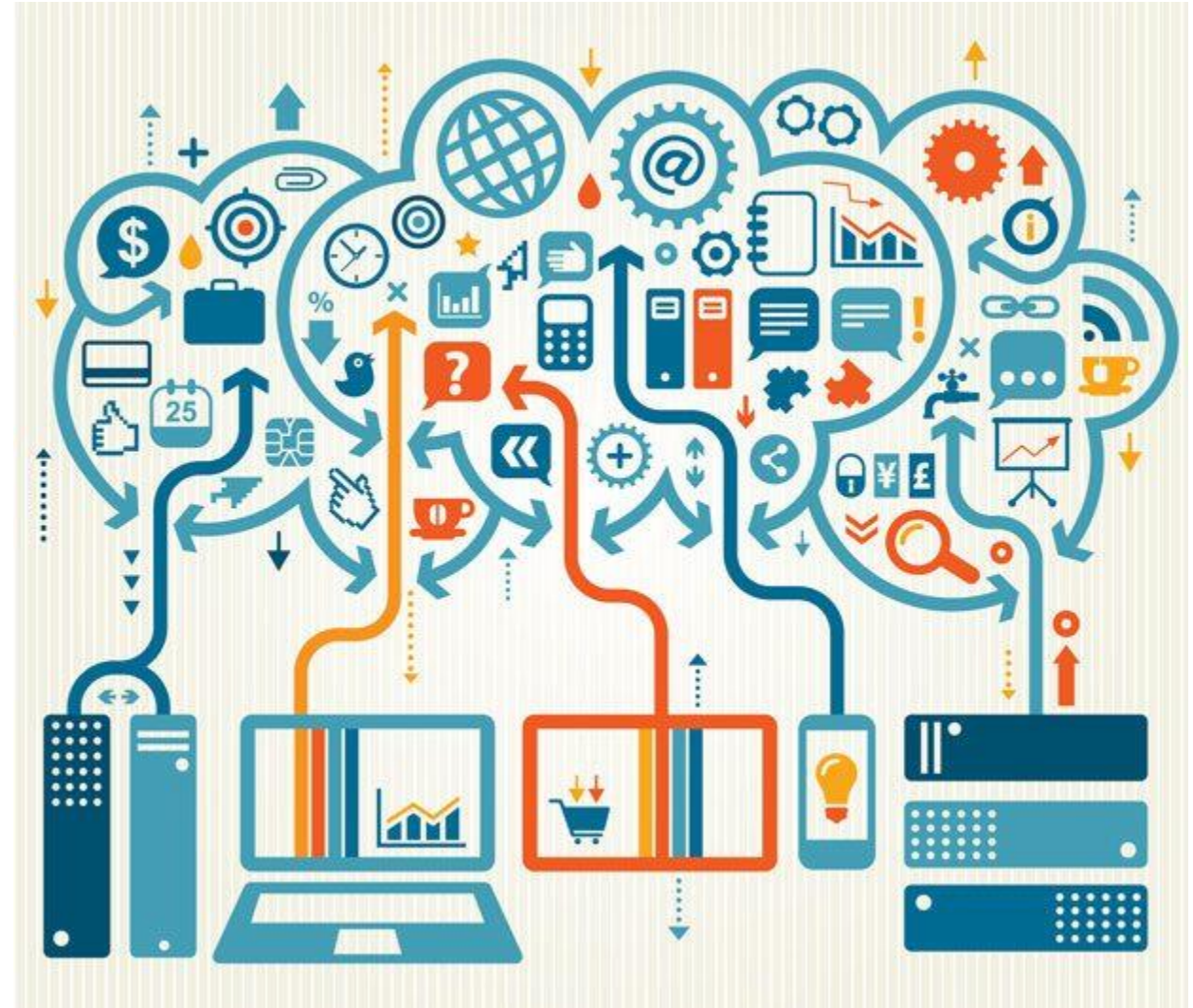
Extent?

Frequency?

Location?

Challenge

Lack of temperature/humidity data limits visibility and increases likelihood of product degradation and prevents opportunities for corrective action

Solution

Utilize "internet of things" technology to monitor temperature and humidity

- Sensors

- Network

- Platform

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Mozambique ambient supply chain research

- Sensor selection and considerations

- Determine commodity environment

- Determine external to internal correlation

- Develop recommendations

Phase 1: February 2018 (10 days)

- Test the technology

- Speak with transporters and implementers

- Test installation

- Place sensors in 3 warehouses

- Place sensors in 3 trucks

Phase 2: April 2018 (30 days)

- Install in central, provincial, and district warehouses (12 warehouses)

- Install in hospitals and health facility store rooms (12 clinics 3 hospitals)

- Install in implementer vehicles

- 3 community health workers

- Began international shipments
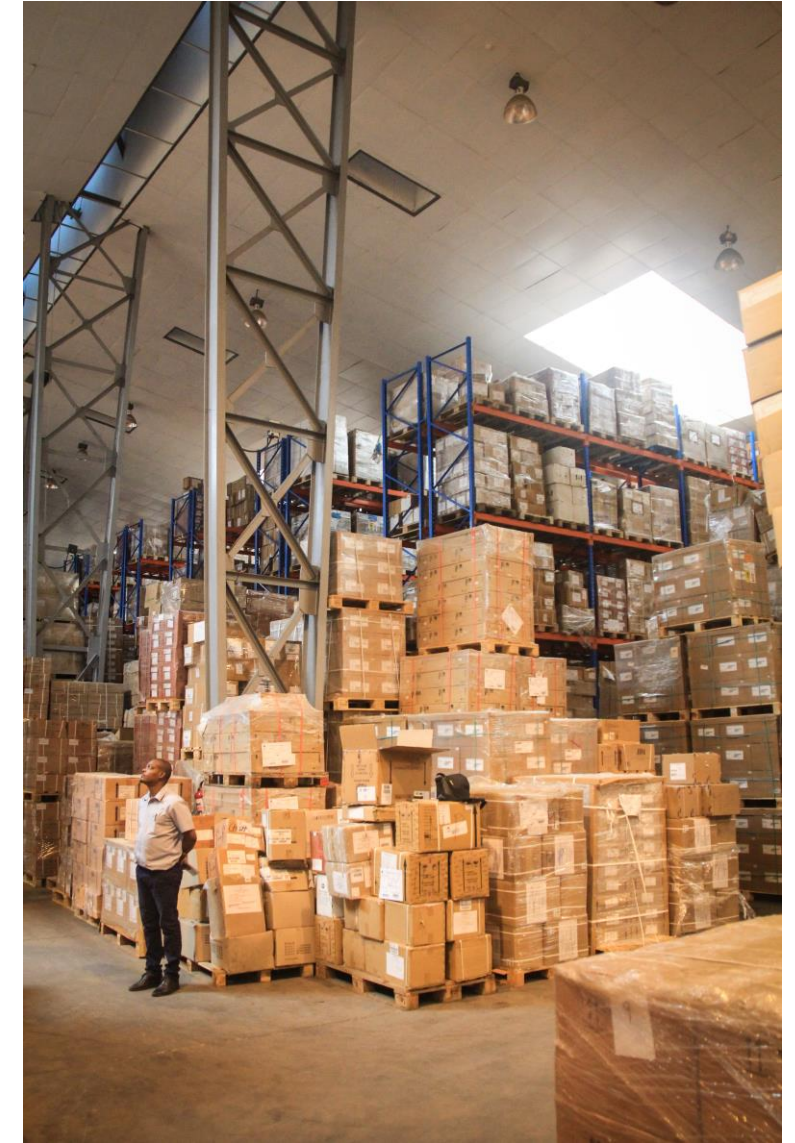
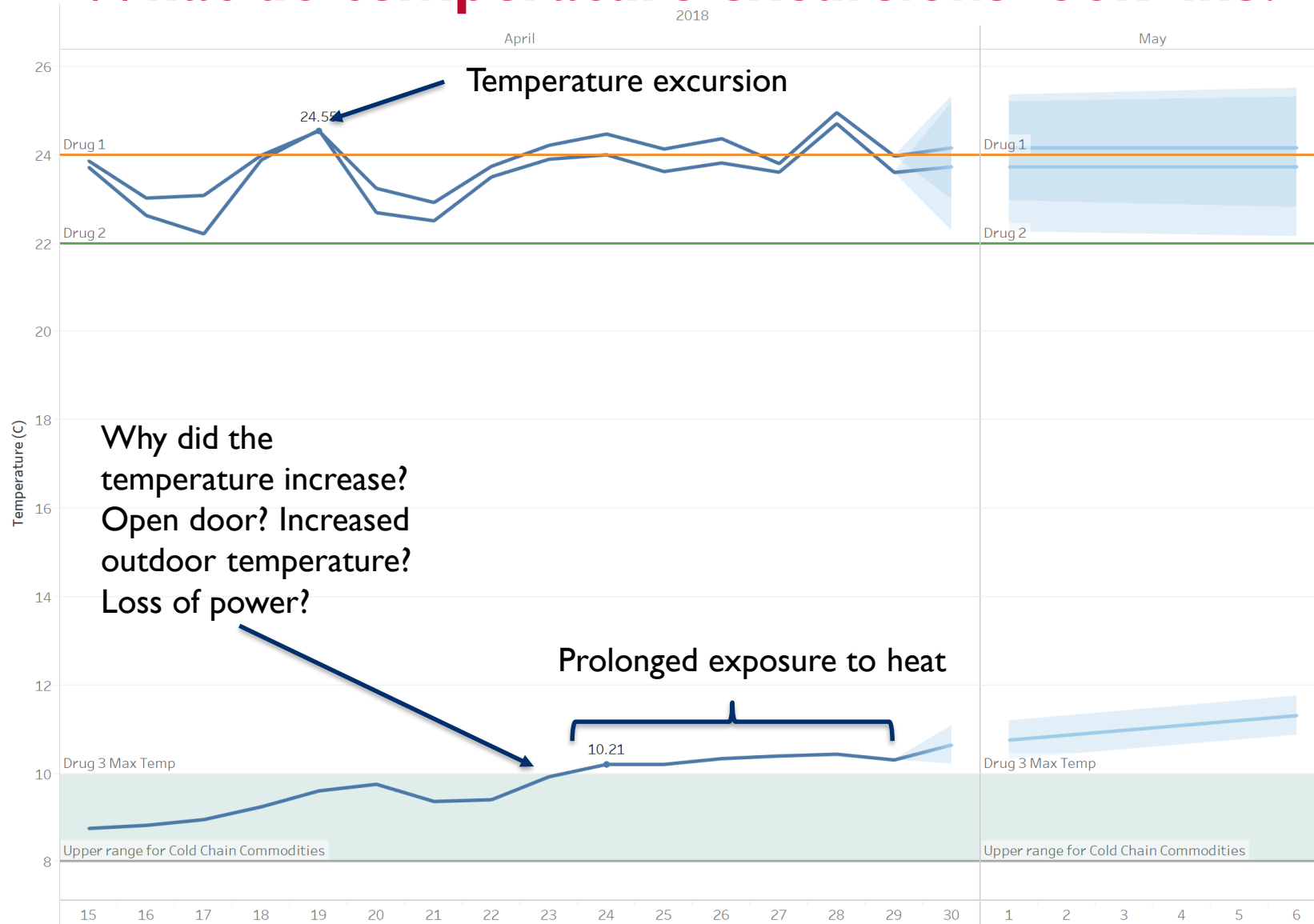# Lessons learned and good practices

Vision for data collection and analysis

Please note, data shown in the subsequent slides are mock data used to illustrate our goals for data analysis.

- *If large coffee retailers can have end to end visibility on their ambient temperature data to deliver quality coffee to you, why can't we build this visibility for life-saving commodities?*

- *Making decisions with no data or poor quality data will lead to poor decisions. How can we use Internet of things (IoT) devices to collect high quality data, and then take meaningful action?*
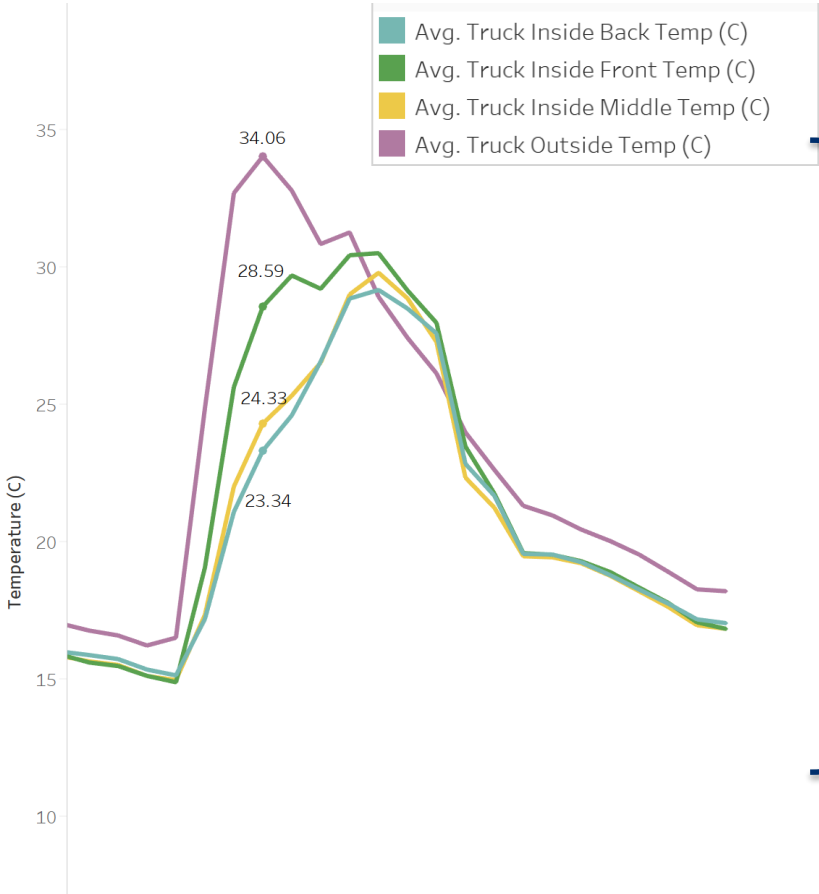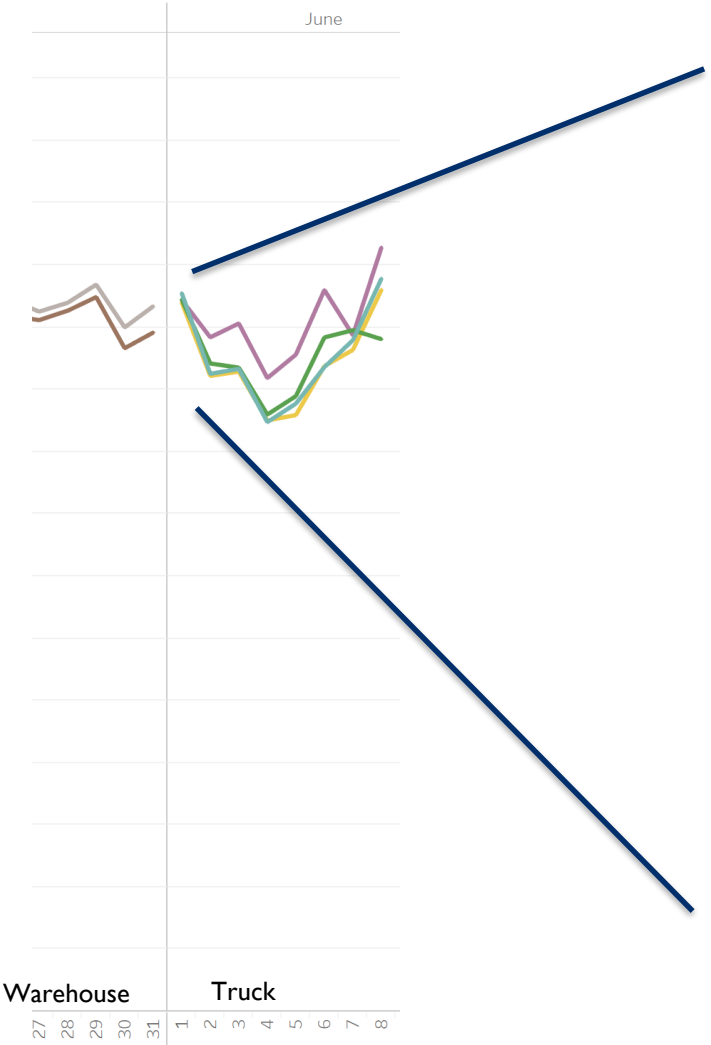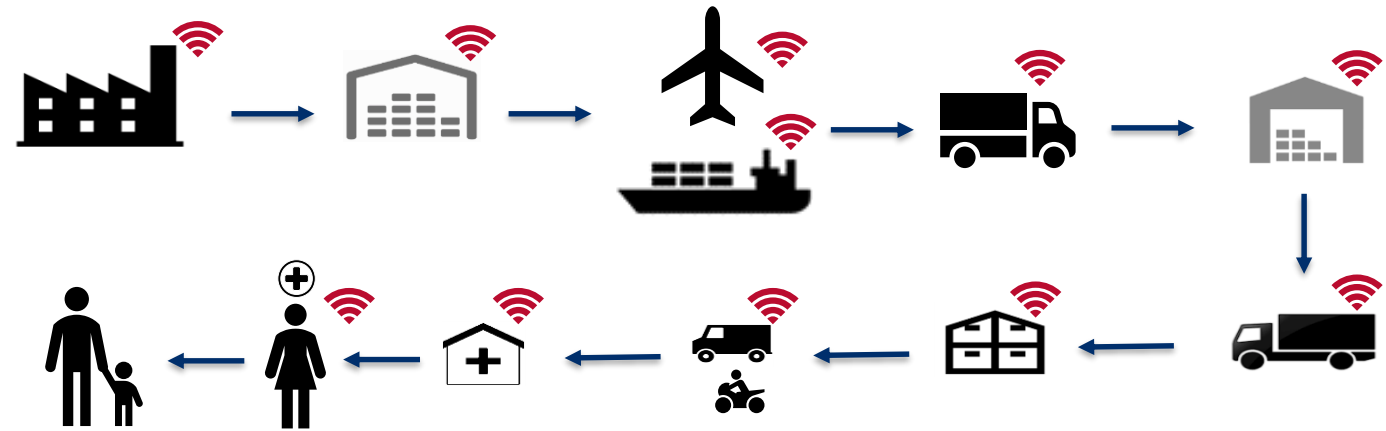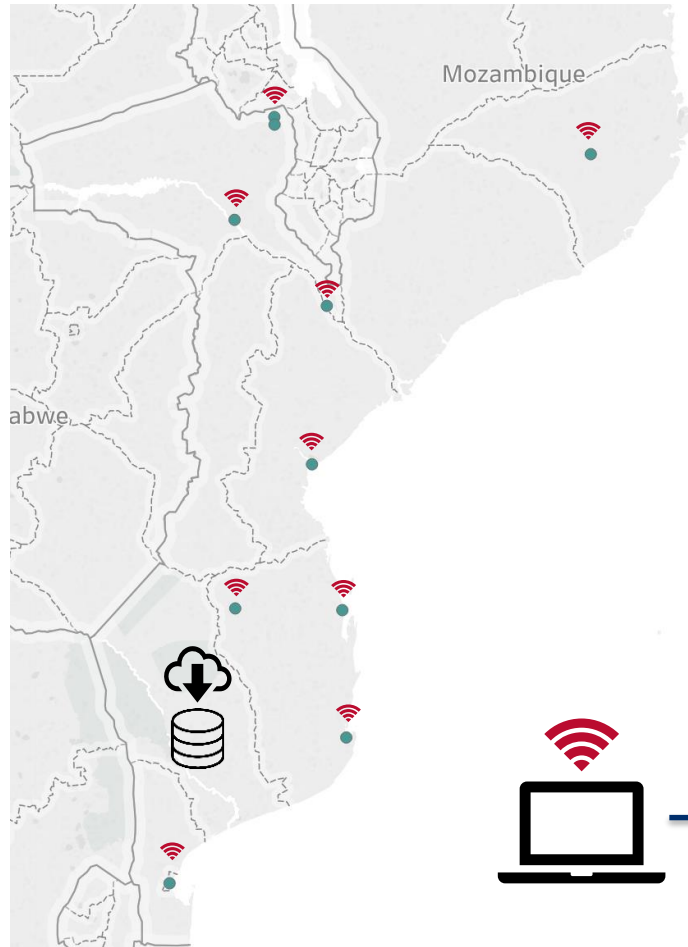
What do temperature excursions look like?

Variance and correlations within data

Does placement of commodities within a truck increase or decrease temperature excursions? What correlations do we see?

One day on a truck
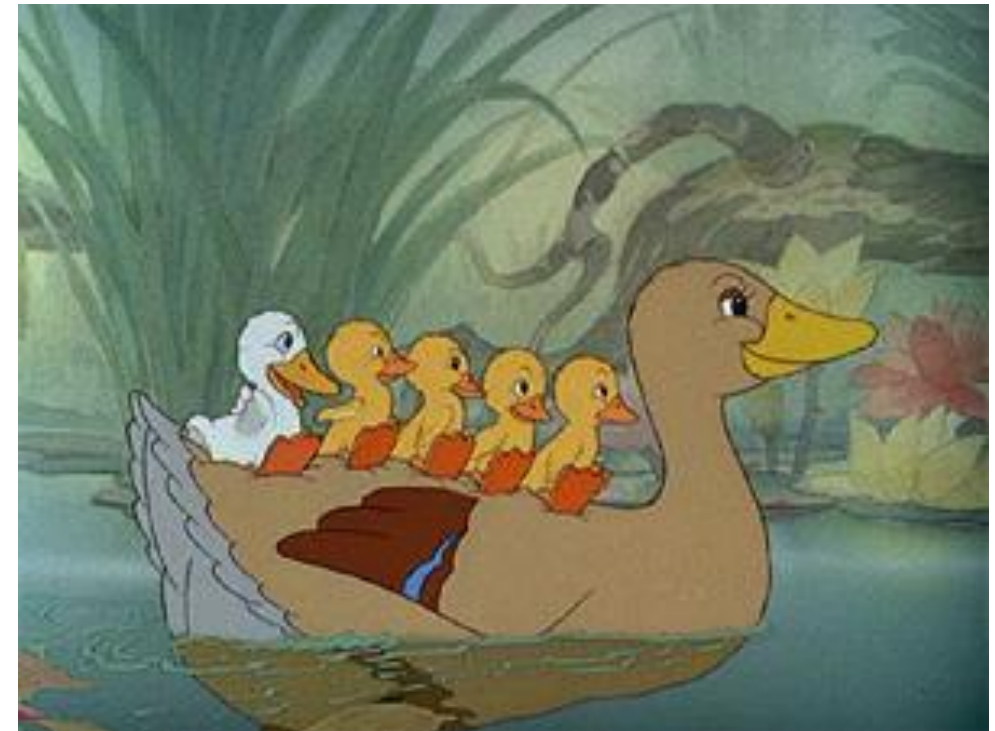
Where do we go from here?

Microsimulation models and dashboards → Empower a country to have data visibility and to take the right steps to mitigate temperature excursions

Current State

Future State

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The USAID Global Health Supply Chain-Procurement and Supply Management project provides commodity procurement and logistics services, strengthens supply chain systems, and promotes commodity security.
We support USAID programs and Presidential Initiatives in Africa, Asia, Latin America, and the Caribbean, focusing on HIV/AIDS, malaria, and population and reproductive health commodities.

USAID Global Health Supply Chain Program