GLOBAL
HEALTH
SUPPLY CHAIN SUMMIT

Improved temperature and humidity monitoring for ambient health supply chains health supply chains health supply chains

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Is it hot in here or is it just me?

Extent?

Frequency?

Location?

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

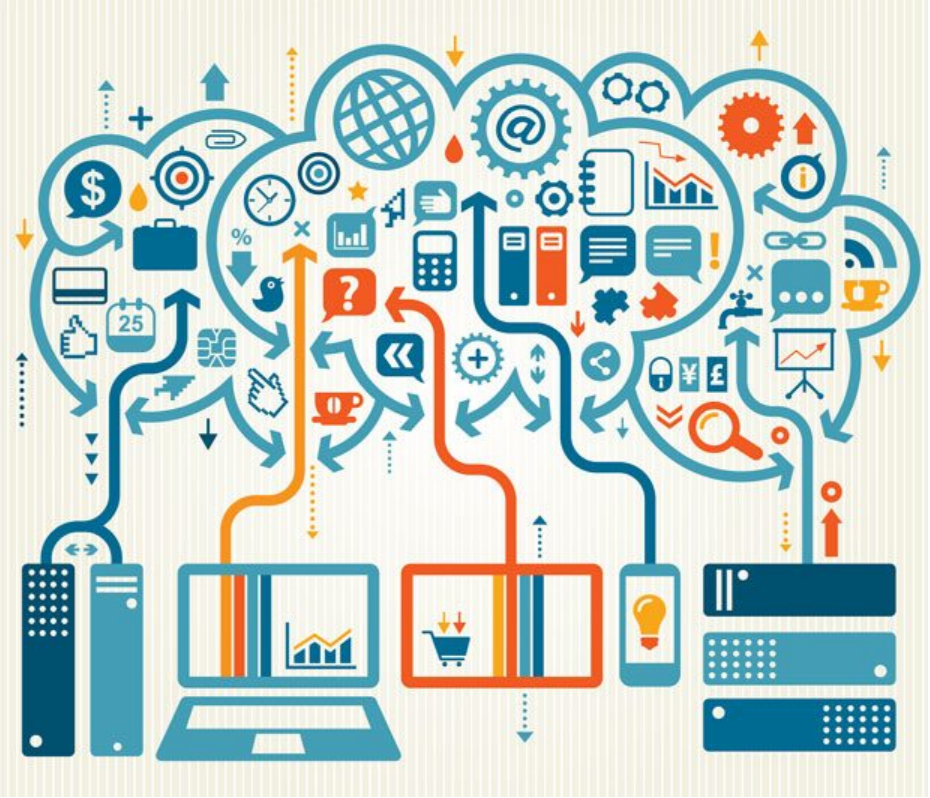
Challenge

- **Lack of temperature/humidity data limits visibility and increases likelihood of product degradation and prevents opportunities for corrective action**
  - Proven for cold-chain products, temperature excursions can increase the likelihood of product degradation and waste
  - Manufactures set thresholds as they know excursions may have an adverse impact
  - Currently, there is little to no visibility in the ambient supply chain, especially sub-nationally and at the last mile

Solution

Utilize “internet of things” technology to monitor temperature and humidity

- Sensors
- Network
- Platform



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Ambient supply chain research

- Sensor selection and considerations
- Determine commodity environment
- Determine external to internal correlation
- Develop recommendations

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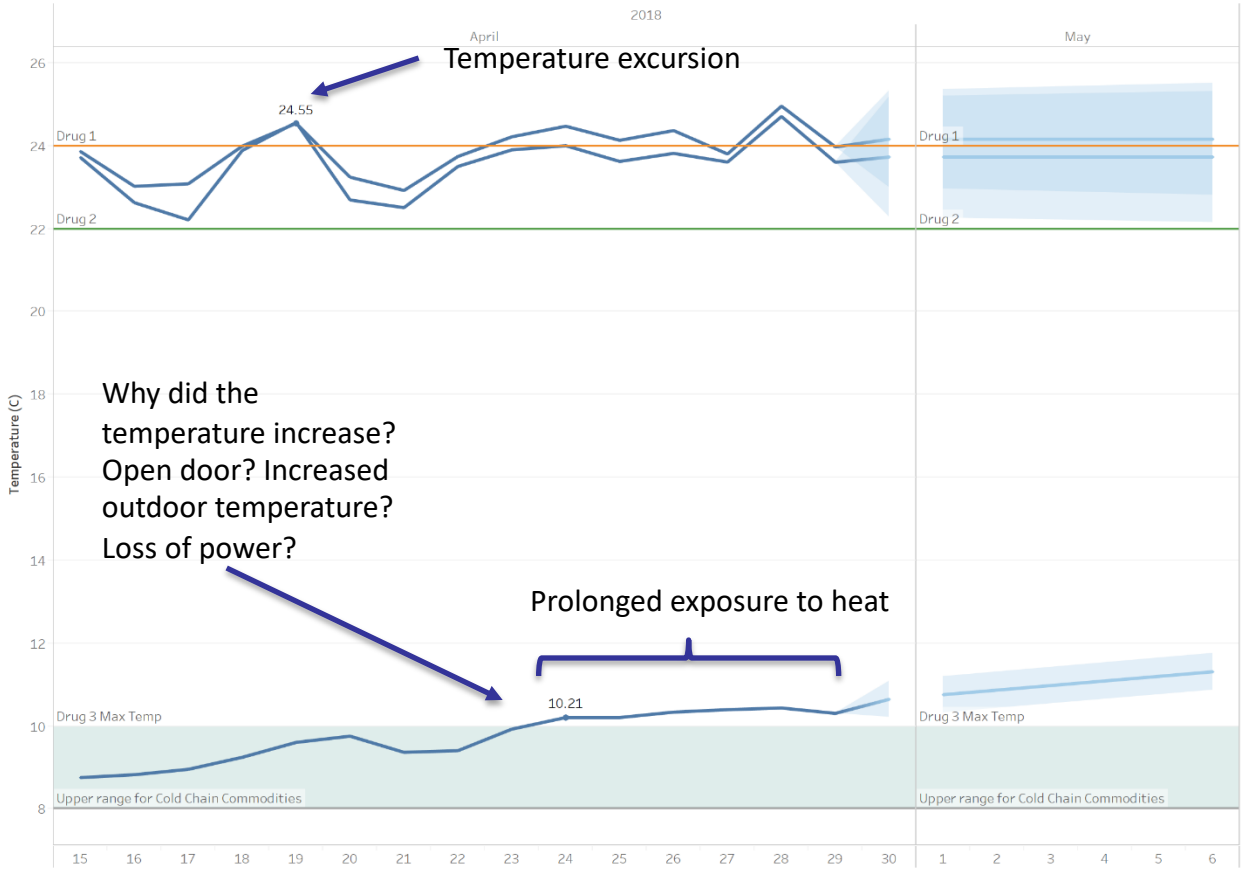
Mozambique ambient supply chain research

- 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

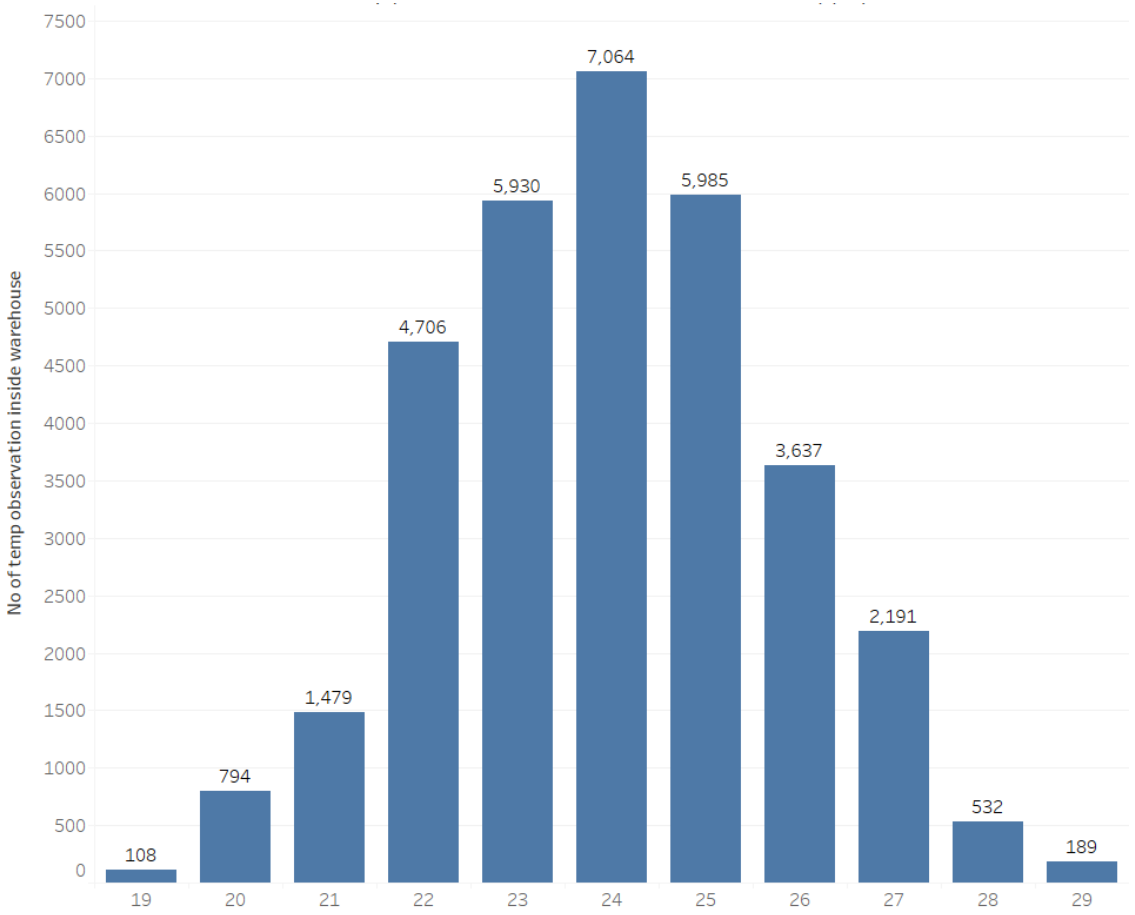
What do temperature excursions look like?



Predictive modeling: Can we give a better understanding of temperature exposures commodities will face in the future?

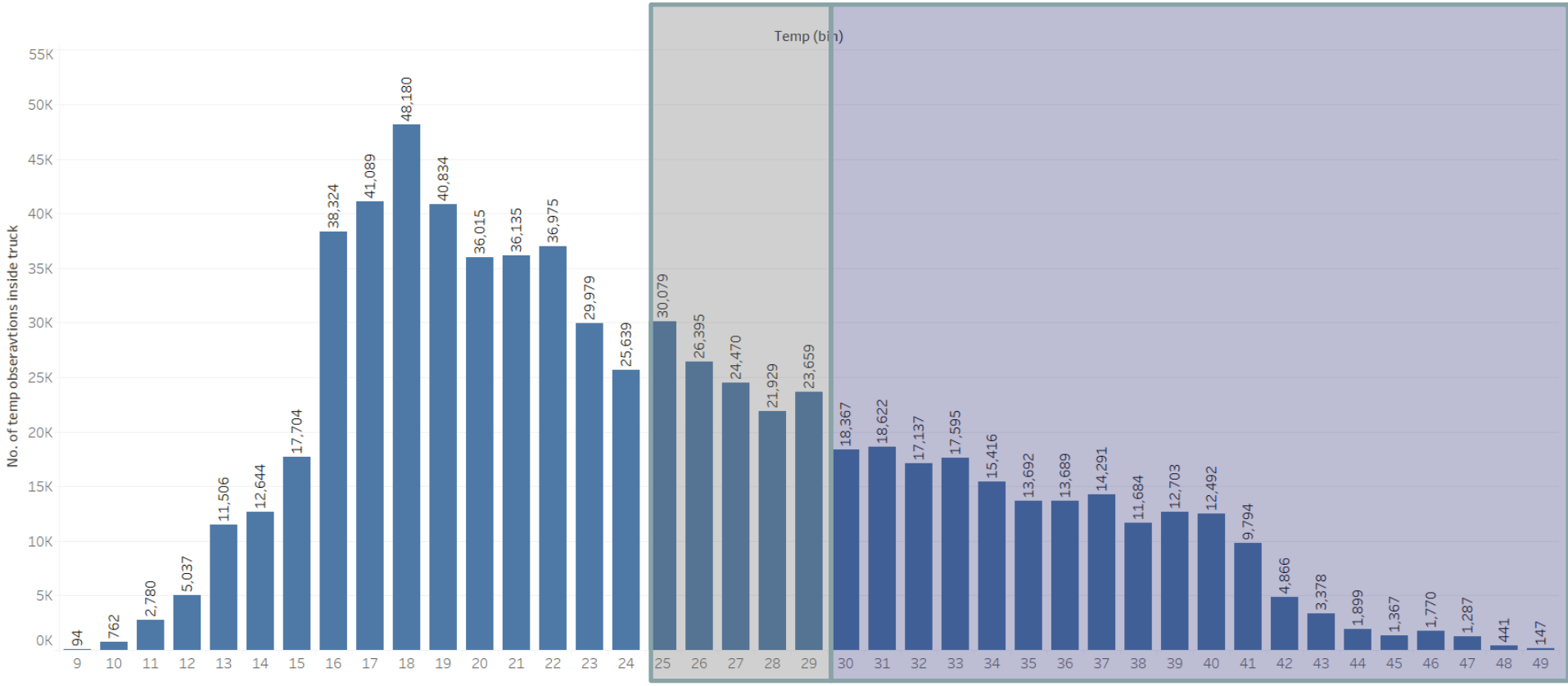
Data Discussion

Data below is from several warehouses across multiple countries over a 4-month period.



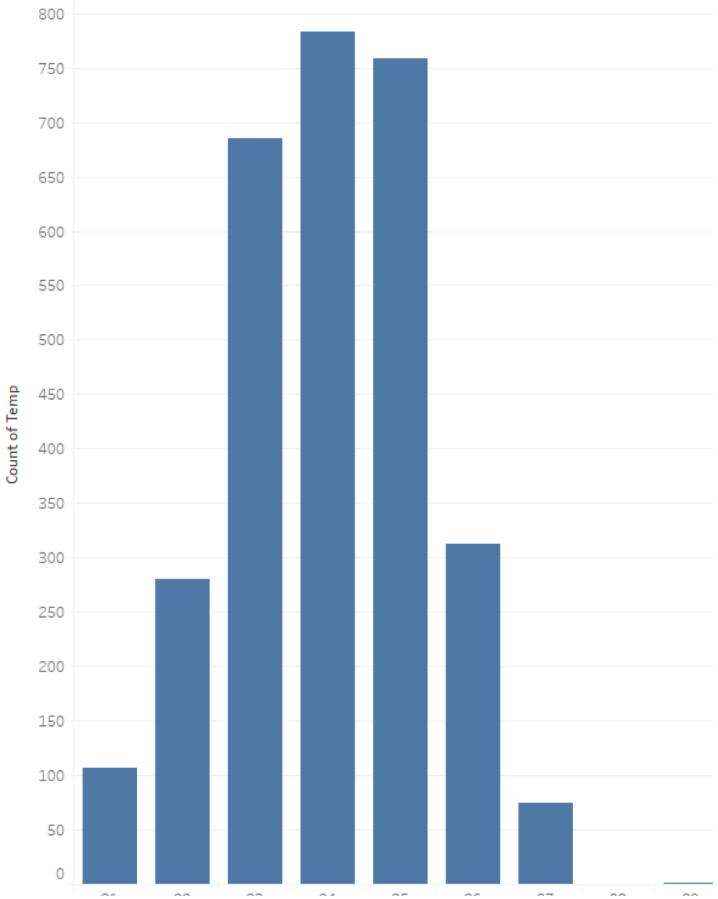
Data Discussion Cont.

Data below is from several trucks across multiple countries over a 4-month period.



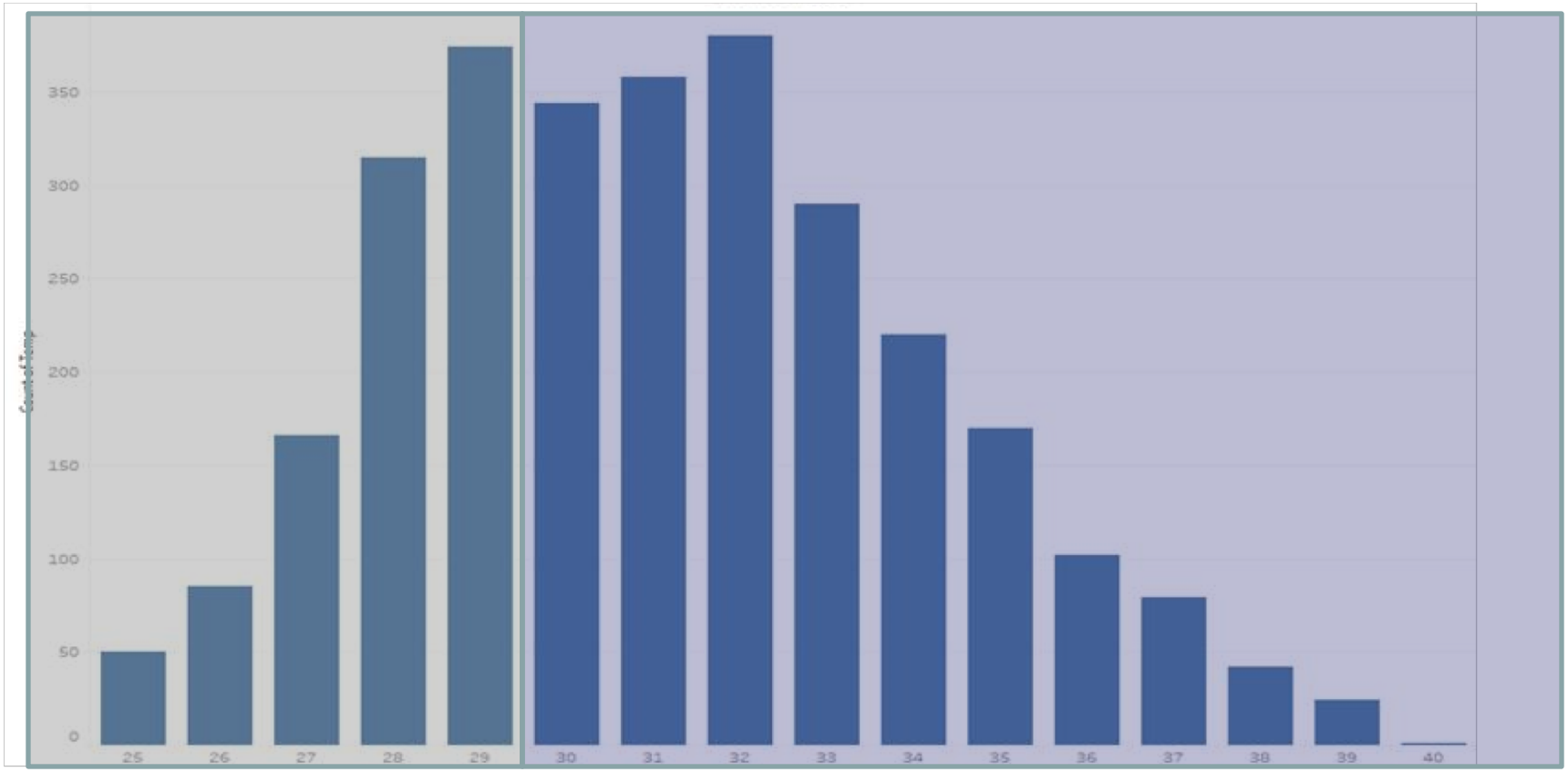
Data Discussion Cont.

Data below is from several facilities across multiple countries over a 2-month period.



Data Discussion Cont.

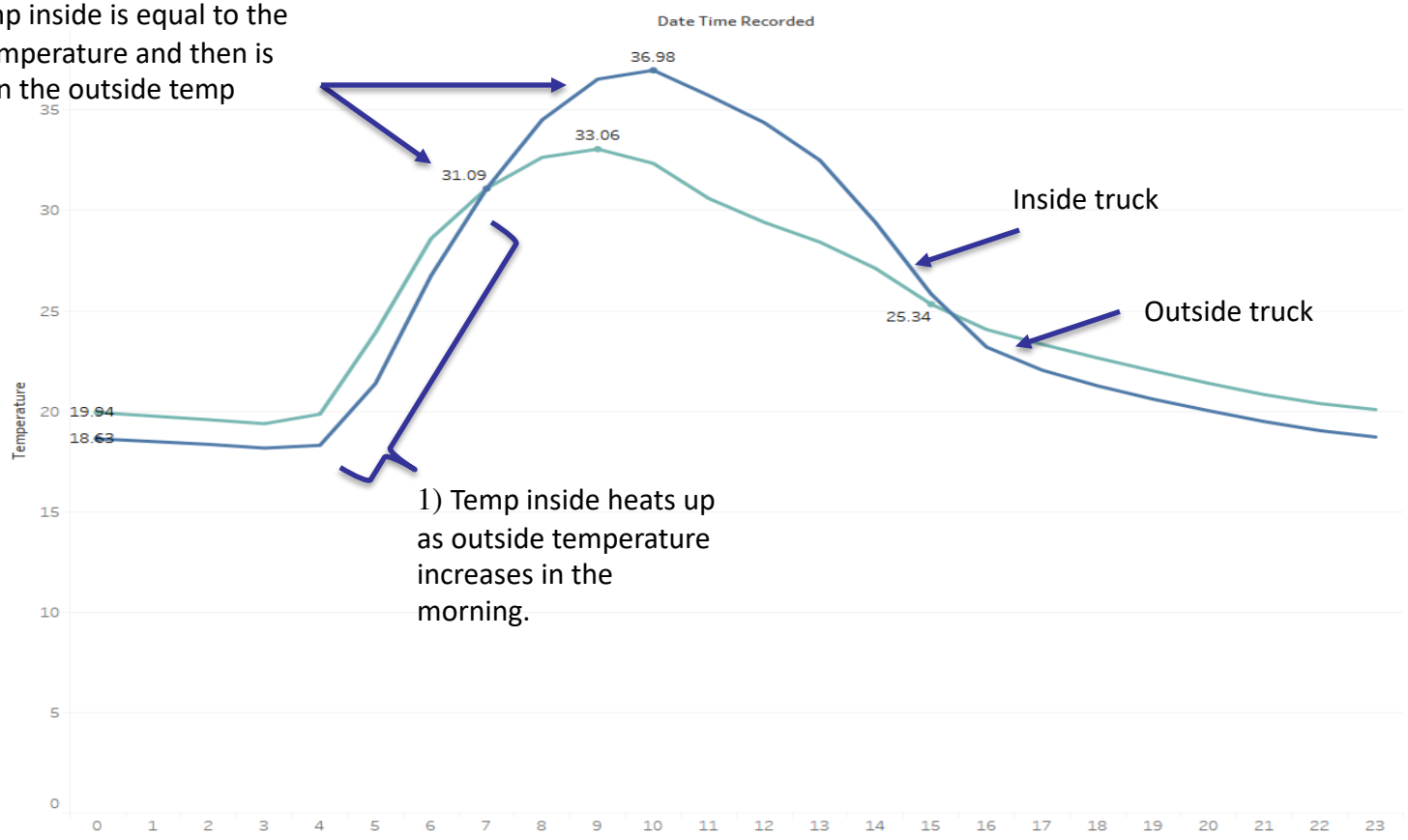
Data below is from several facilities across multiple countries over a 2-month period.



Data Discussion Cont.

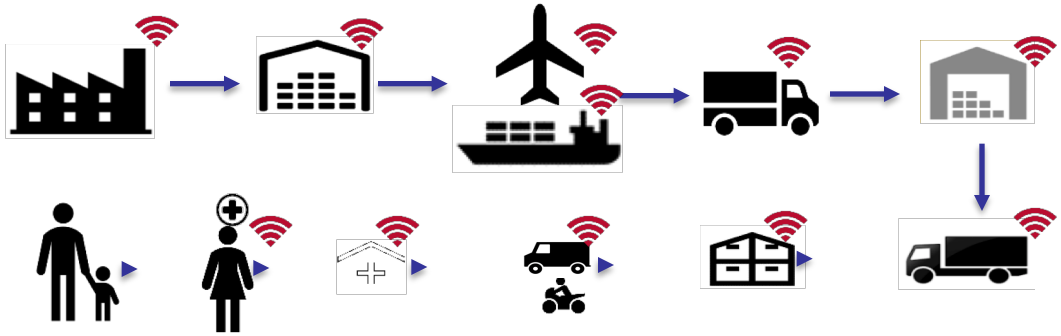
Data below is from several trucks across multiple countries over a 4-month period.

2) Avg temp inside is equal to the outside temperature and then is hotter than the outside temp >7hrs.



1) Temp inside heats up as outside temperature increases in the morning.

Visibility



Where do we go from here?

Country Installations

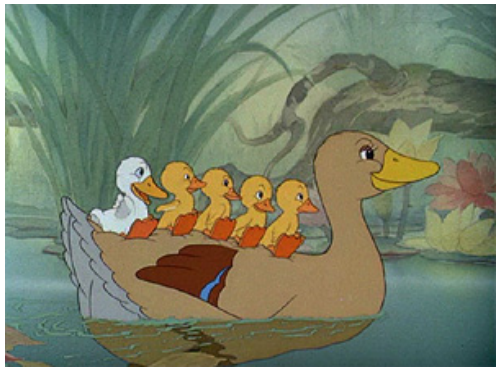
- Burkina Faso
- Angola
- Mauritania (GF)
- Ghana
- Uganda
- Sierra Leone
- Guinea
- Rwanda
- Burma
- Cambodia
- Mozambique

Thought Leadership

- Data Analytics
- Development of Recommendations
- Collaborate with Universities
- Publish Findings
- Additional Research

Funding

- USAID
- Bill & Melinda Gates Foundation
- Global Fund



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