

Movements of commercial poultry traders and their impact on Avian Influenza Virus transmission in Bangladesh

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Background

- Previous research identified low avian influenza virus (AIV) prevalence on poultry farms and higher prevalence on live bird markets (LBMs)
- Movements of poultry traders will likely impact the spread of AIV from poultry farms to LBMs in Bangladesh

Objectives

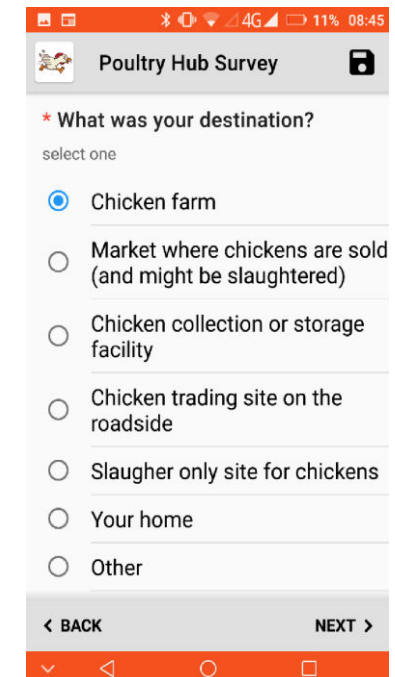
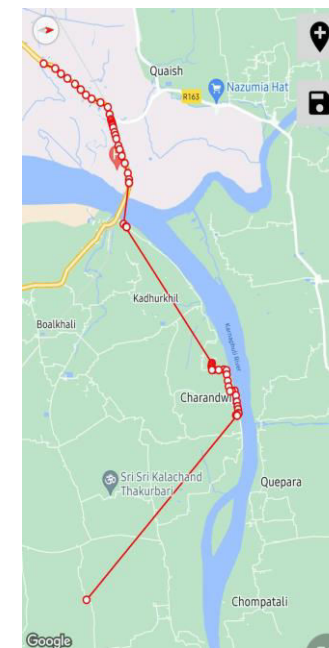
- What are the movement patterns of chicken traders in Bangladesh?
- What is the prevalence of AIV in chickens at the start and at the end of a poultry trading trip?

Methods

- Purposive selection of 16 middlemen from Chattogram, Bangladesh
- Recording of movements and survey data in an App for 87 individual trading trips
- Collection of survey data on infection control for transport trucks and farms
- Oro-pharyngeal swabs collection from chickens at farms and transport endpoints and tested for AIV using PCR

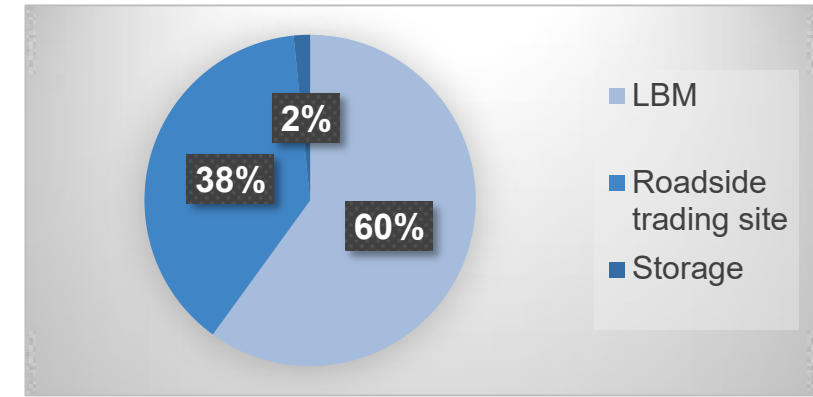


Recording of chicken trucks' movement and survey data in the app



Results

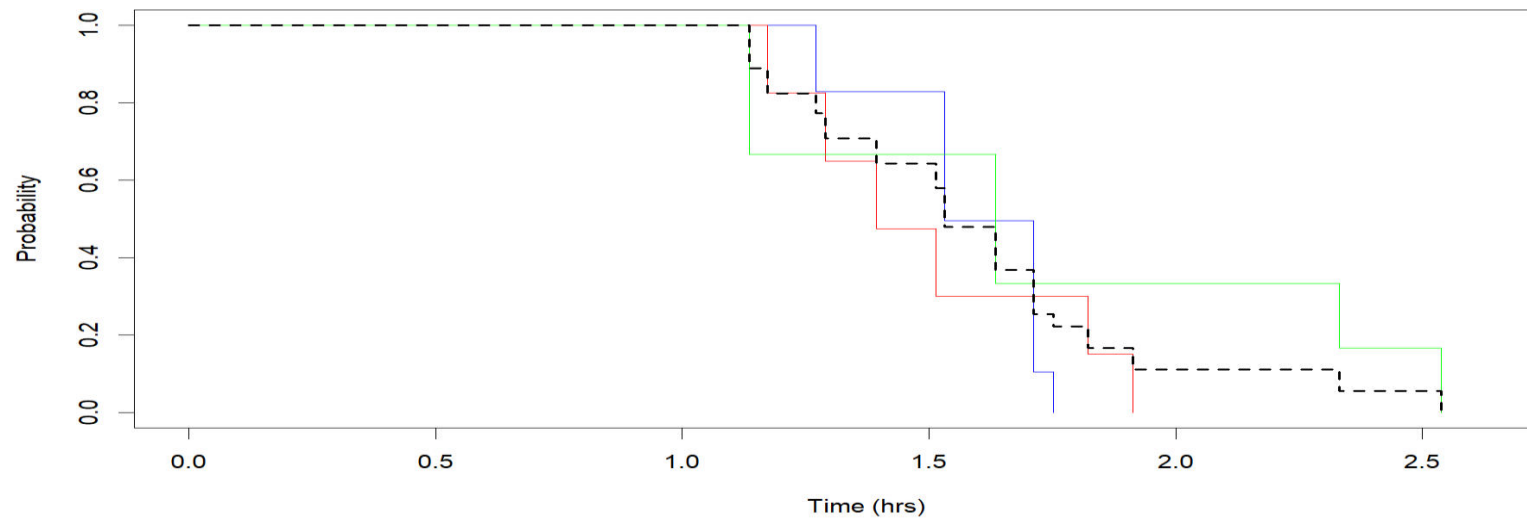
- Avg duration of a trip: Avg 4 h 47 min (range: 1 h 22 min to 19 h 13 min)
- Avg distance of trip: 68.6 km (range: 6.8 to 198.3 km)
- A trading trip includes on average 9 stops (range: 2-16), comprising of roadside trading sites, chicken storage facilities, LBMs
- Avg duration of stoppage: 51 mins (range: 20 min to 3h 32min)
- Avg distance between stoppages: 9.3 km (range: 1.7-39.1 km)



Percentage of stoppage types



Map showing four individual daily trading trips



Kaplan Meier survival curves of probability of proportion of birds sold over time for four individual trading trips (median survival time shown as dotted line)

Results

- 88% of trips with single farm visits (max: 3 farms), 86% farms with >1000 chickens, purchase of 160-2160 chickens per farm
- Mean number of chickens per truck load: 784
- At roadside trading sites, supply of 1-2 vendors with a median of 44 (9-387) chickens per vendor
- At LBM, supply of 1-8 vendors, with a median of 100 (20-1300) chickens per vendor
- Traders kept a median of 58 (15-870) chickens at storage facilities
- 82% of trucks were cleaned and had no visible poultry faeces

Conclusions

- AIV positive results for 11 trips, with 10 of these trips longer than the average distance
- Higher prevalence of AIV during Feb-Aug
- As AIV prevalence was lower on farms, AIV infection most likely occurred during the transport
- Enhanced biosafety during delivery of chickens at the frequent stopping points is recommended to reduce the likelihood of AIV infection.

