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# **A preliminary study on the carcass classification in commercial and municipal abattoirs in the Eastern Cape Province, South Africa**

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# Introduction

- The carcass classification system was established in the early to middle 1900's
- Common language to describe carcasses within a country thus improving marketing efficiency and transparency (Fisher 2007)
- The classification system describes the quality and meat yield of carcasses that benefits traders and consumers (Strydom 2011)



# Problem statement

- ▶ The criteria used in the classification systems gave limited descriptions of the quality related characteristics of the carcasses ([Strydom, 2011](#))
- ▶ Breed has significant effects on carcass traits, meat quality traits and sensory traits ([Francis \*et al.\*, 2009](#))

- ▶ Warm Carcass Mass



# Justification

- Quality assurance schemes are intended at providing good quality meat
- Beneficial to livestock farmers, abattoirs, and consumers in the formal and informal sector
- Improve safe harvesting of meat and meat quality in abattoirs



# Objective

- The objective of this study was to characterise small scale/municipal and large scale abattoirs, to determine associations between the carcass classes and animal or carcass traits within cattle, sheep and pigs that were slaughtered at these abattoirs

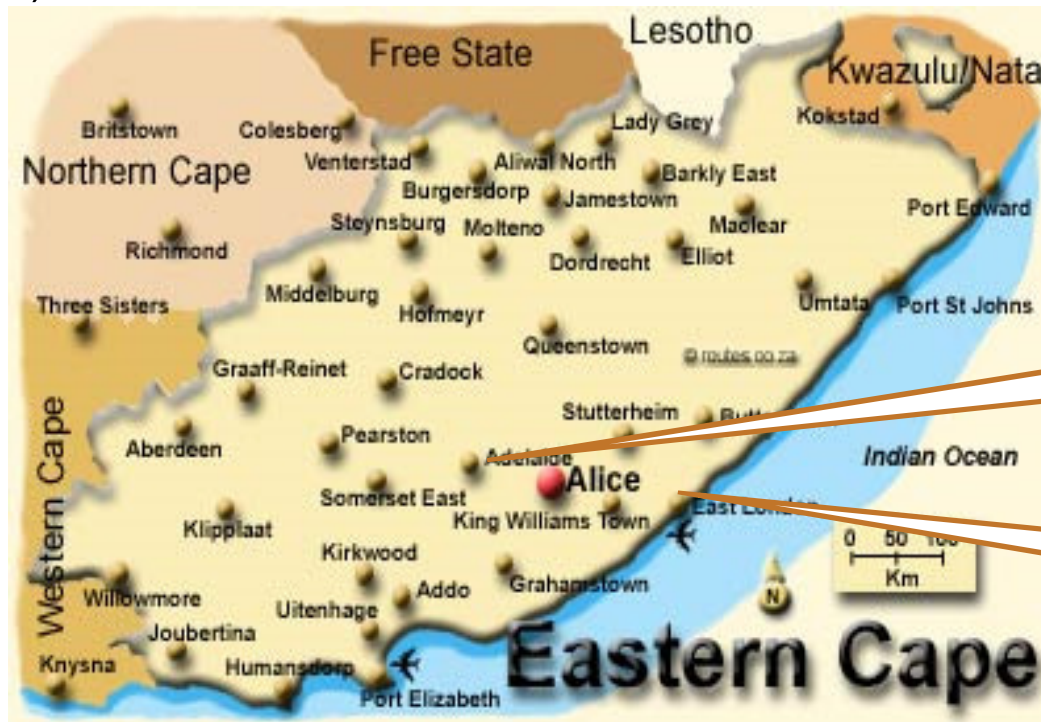
## Specific objectives

- ❖ To determine the associations between breed and carcass classes
- ❖ To determine associations between warm carcass mass (WCM) and carcass classes
- ❖ Characterise small scale and large scale abattoirs



# Materials and Methods

- ▶ The study was conducted at East London (32.9° S and 27.87° E) and Adelaide in the Eastern Cape Province of South Africa (33° S and 26, 7° E)



Abattoir B

Abattoir A






## Ethical clearance

- ❖ Ethical Clearance Committee of the University of Fort Hare

## Data collection

- Animals used (300 large scale and 90 small scale)
- The animals were observed during offloading at the abattoir and the farm of origin recorded
- Animals were then followed through the slaughter floor where breed and sex were recorded before slaughter



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- Age was recorded using the dentition method
  - Carcasses were further followed up to the point of classification
  - Warm carcass mass (WCM) and carcass classes were recorded respectively for each breed





# Statistical Analysis

- Data was analysed using the Statistical Analysis Systems (SAS) package of 2009
- Frequency procedure done using the PROC FREQ of SAS (2009)
- Chi-square tests were used to examine the relationships between the animal traits, carcass class and carcass traits
- Statistical significance was tested at  $P < 0.05$  level with all findings with P value  $< 0.05$  considered to be statistically significant



# Results and discussion

- ▶ Both abattoirs were designed for the slaughter of all the three livestock species i.e. cattle, sheep and pigs
- ▶ **Conditions differed from the two abattoirs**
- ▶ In Abattoir A, different species were slaughtered simultaneously on the same day ( $\pm 1000$  livestock units were slaughtered)
- ▶ In Abattoir B, due to labour and space limitations, simultaneous slaughter of different species was not possible
- ▶ A maximum of 30 livestock units were be slaughtered

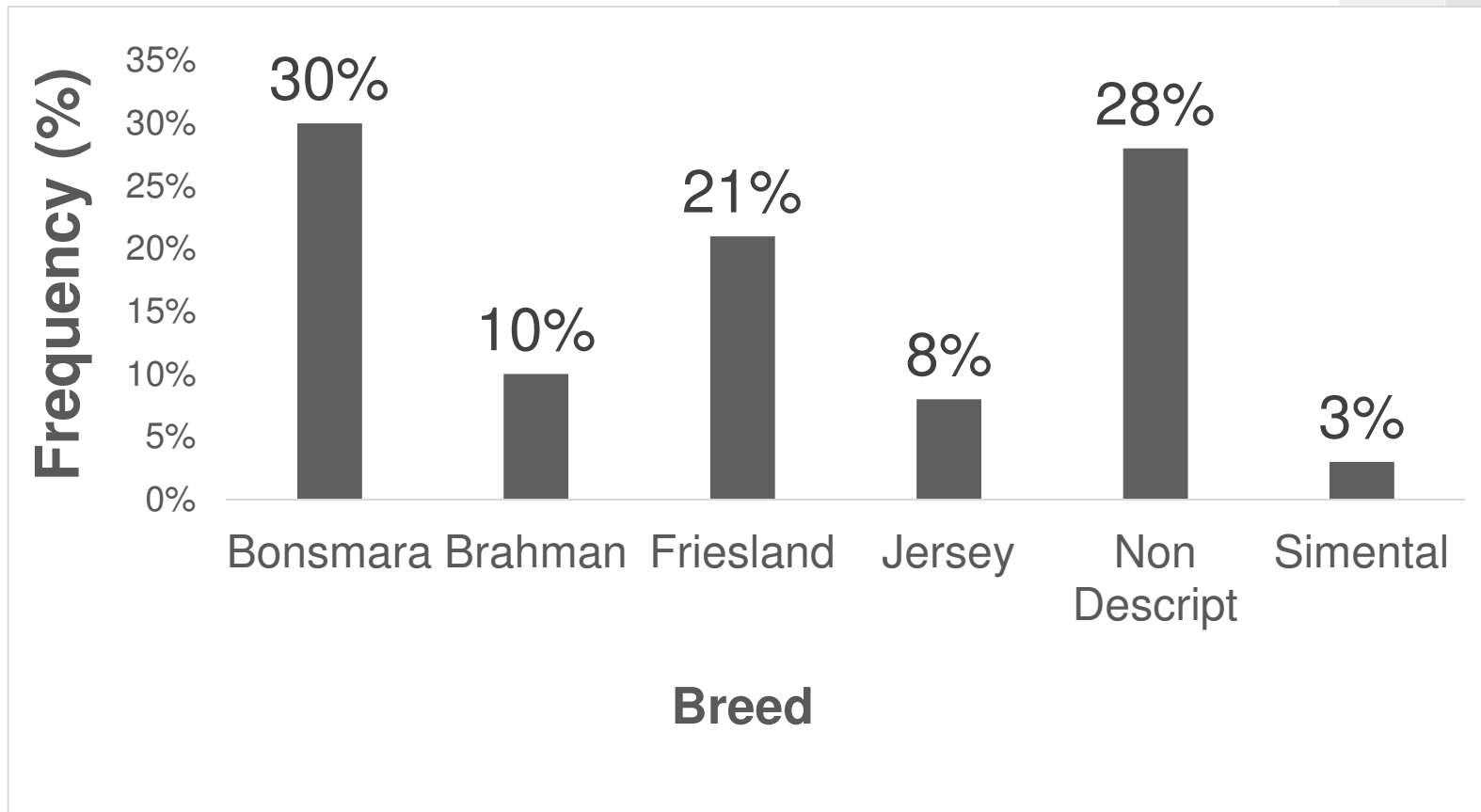


# Table 1: Associations between breed and class in cattle, sheep and pig carcasses

Species	Chi value	P value	Association
Cattle	131.1424	<.0001	*
Sheep	118.6410	<.0001	*
Pig	88.9925	<.0001	*

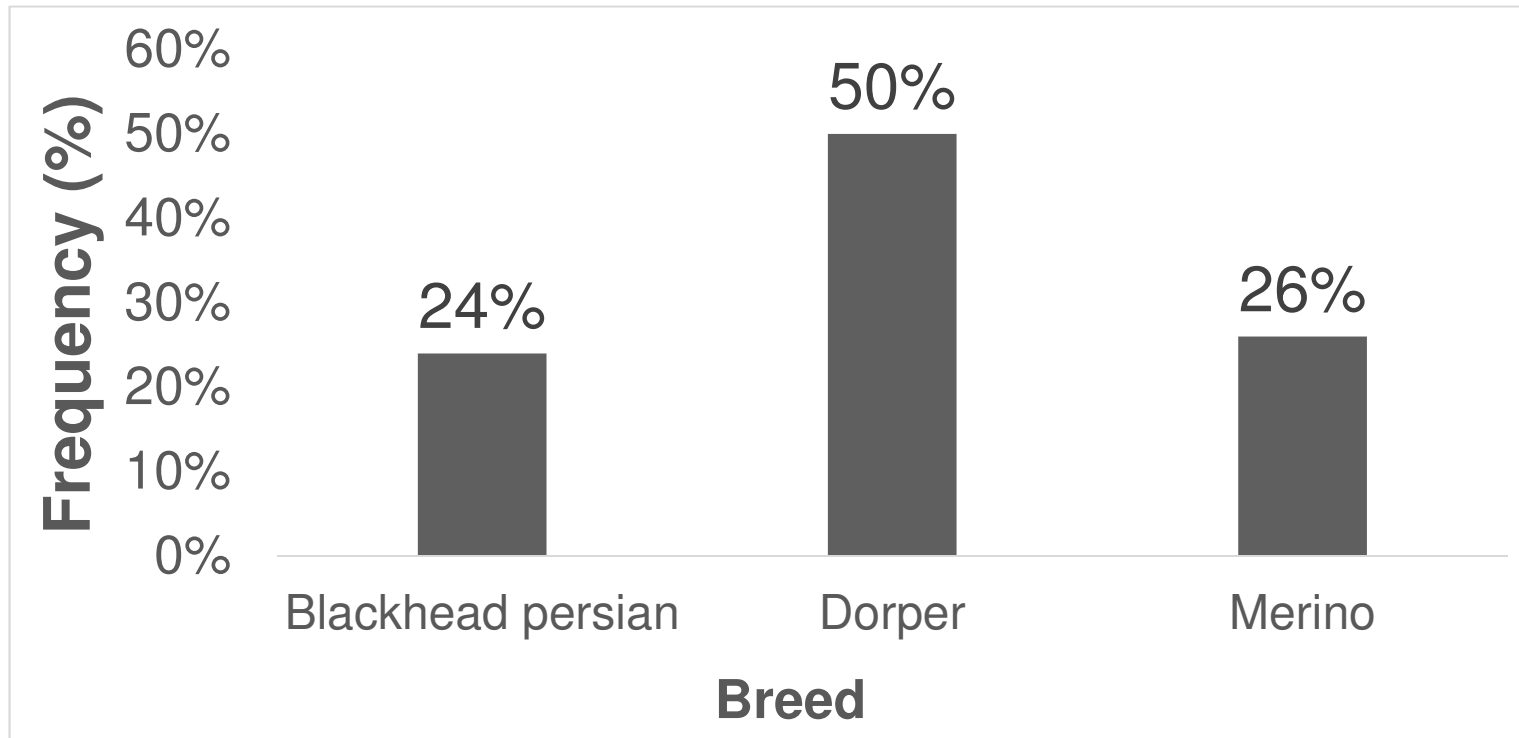
\* Significant association (P<0.001)





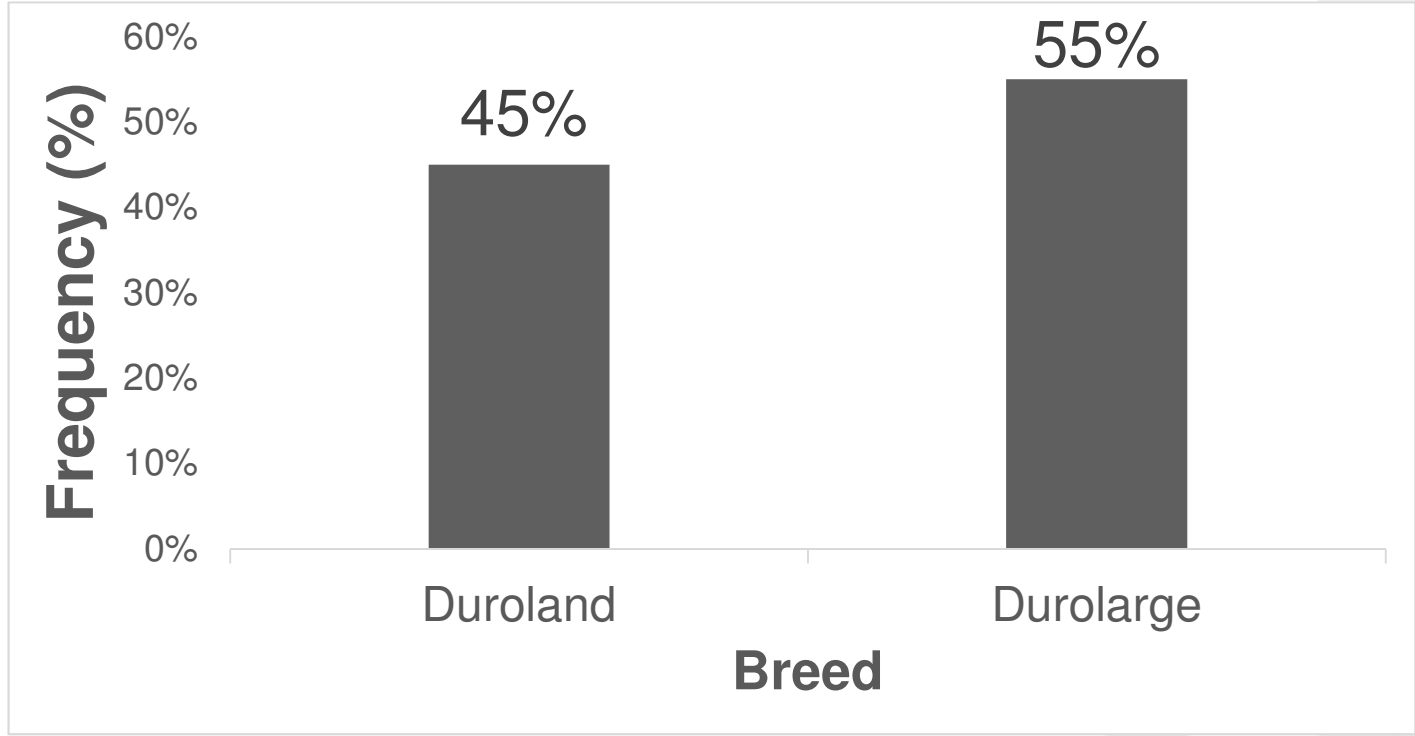
**Figure 1: Cattle breeds slaughtered in abattoir A**





**Figure 2: Sheep breeds slaughtered in abattoir A**





**Figure 3: pig breeds slaughtered in abattoir A**



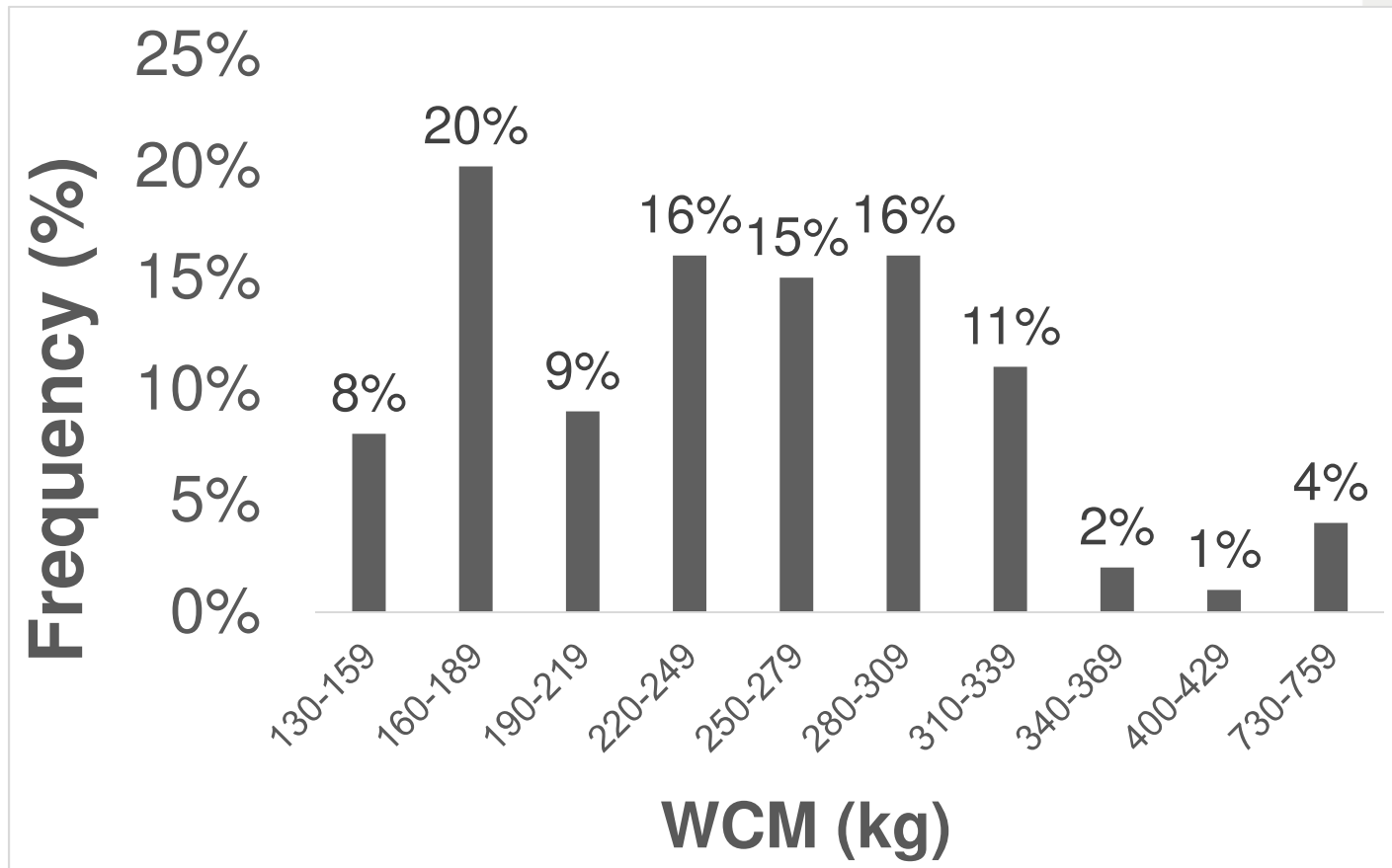
## Table 2: Associations between warm carcass mass and class in cattle, sheep and pig carcasses

Species	Chi value	P value	Association
<b>Cattle</b>	1330.4127	0.0458	*
<b>Sheep</b>	627.5292	<.0001	**
<b>Pig</b>	141.2724	0.3609	NS

\*\*Significant association (P<0.001)\*P<0.05; NS=No significant association (P>0.05)

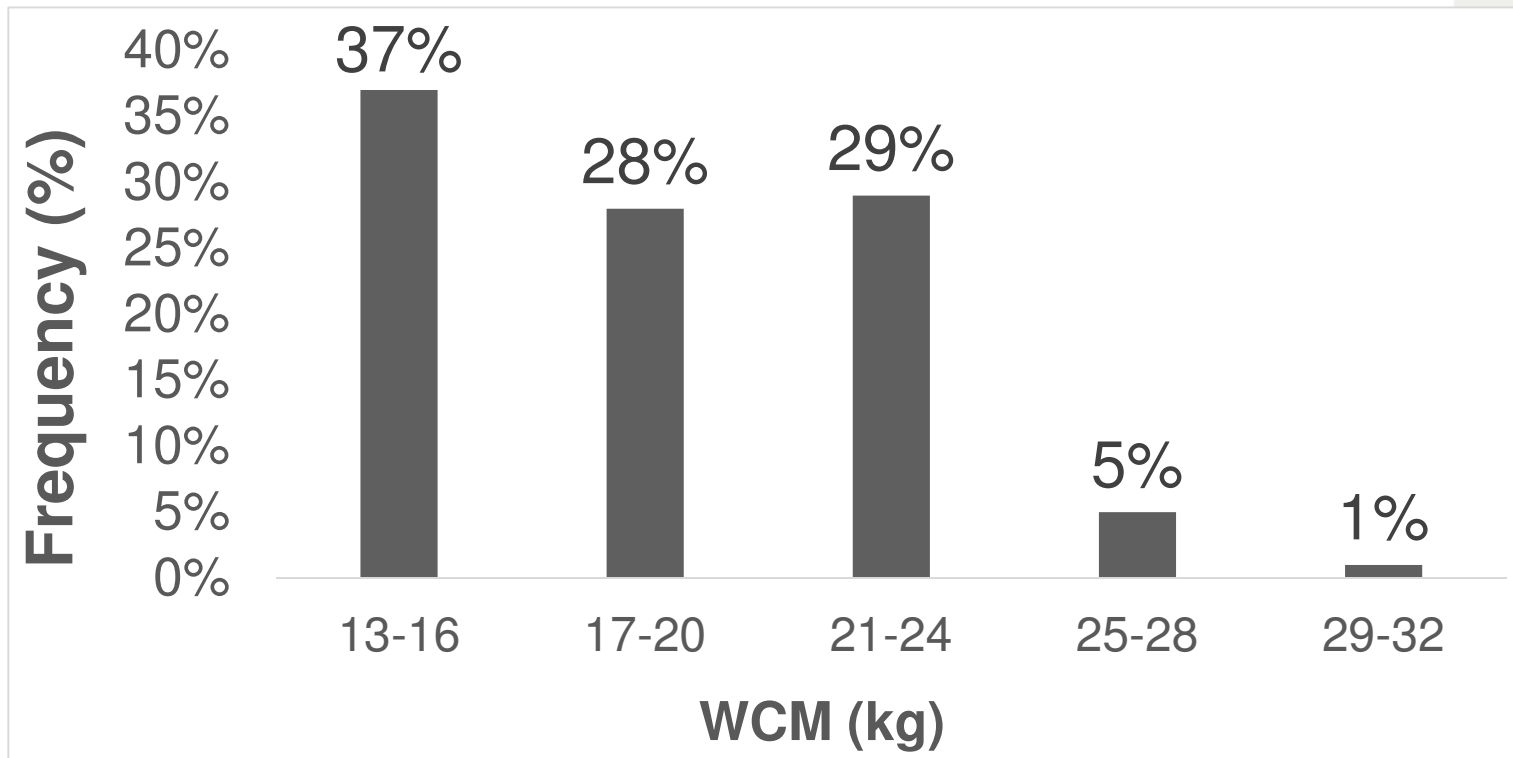






**Figure 4: Warm carcass mass (WCM) of cattle slaughtered in abattoir A**





**Figure 5: Warm carcass mass (WCM) of sheep slaughtered in abattoir A**



# Conclusion

- Associations were found between carcass classes and breeds of the cattle, sheep and pigs
- WCM had significant associations with classes of cattle and sheep



# Acknowledgments

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Thank you

