



# Genetic Improvement: A Fundamental Pillar for the Canadian Sheep Industry

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# Canadian Sheep Industry

## Livestock production in Canada (2015-2019)

Selected livestock ('000 heads)	2015	2016	2017	2018	2019	CAGR* % 2015-2019
Chickens	167,587.0	169,869.0	170,120.0	170,759.0	171,398.0	0.6
Pigs <sup>1</sup>	13,180.0	13,630.0	13,935.0	14,170.0	14,399.3	2.2
Cattle <sup>1</sup>	11,640.0	11,610.0	11,535.0	11,565.0	11,500.0	-0.3
Turkeys	5,701.0	5,699.0	5,687.0	5,693.0	5,699.0	0.0
Ducks	1,452.0	1,483.0	1,499.0	1,514.0	1,528.0	1.3
Sheep <sup>1</sup>	824.3	815.1	813.9	829.4	827.8	0.1
Horses	400.1	398.7	397.9	398.3	398.7	-0.1
Goats	30.0	30.1	30.1	30.1	30.1	0.1
Mules	4.0	4.0	4.0	4.0	4.0	0.0

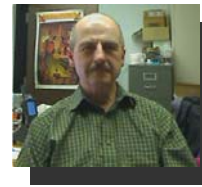
Agriculture Canada. 2021. Customized report service – Market Overview – Canadian lamb and sheep meat and related product trends.

Source: FAOSTAT Agricultural Production, 2020

\* CAGR: Compound Annual Growth Rate

<sup>1</sup> Official data - pigs, cattle, sheep

# GenOvis



- Genetic evaluation program
- 3 modules:
  - Growth and Carcass
  - Reproduction
  - Milk production
- A user-friendly program available on the web 24/7
- Weekly genetic evaluation updates
- Mating planner for effective breeding choices

## **Membership:**

Province	QC	ON	MB	SK	AB	NB	NS	PE	Total
Members	108	50	5	6	11	4	2	3	199

# The traits

## Growth

- Lamb survival (direct) (%)
- Birth weight (direct) (kg)
- 50 days weight (direct) (kg)
- Gain 50-100 days (kg)

## Carcass

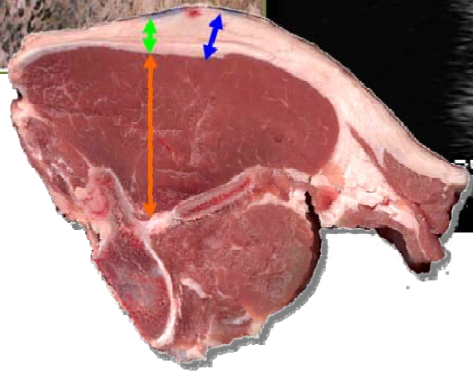
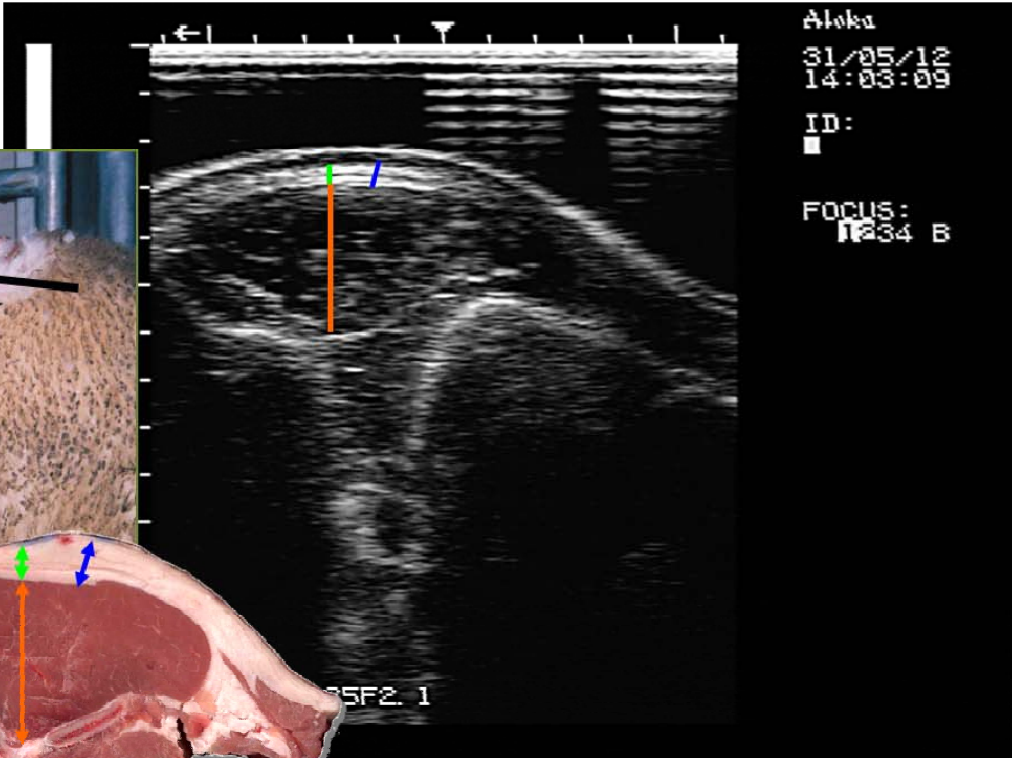
- Fat depth - ultrasound (mm)
- Loin depth - ultrasound (mm)

## Reproduction

- Lamb survival (maternal) (%)
- Birth weight (maternal) (kg)
- Age 1<sup>st</sup> lambing (days)
- Lambing interval (days)
- 50 days weight (maternal) (kg)
- # Born (1<sup>st</sup> and later lambings)
- TWW (1<sup>st</sup> and later lambings)

# Ultrasound measures

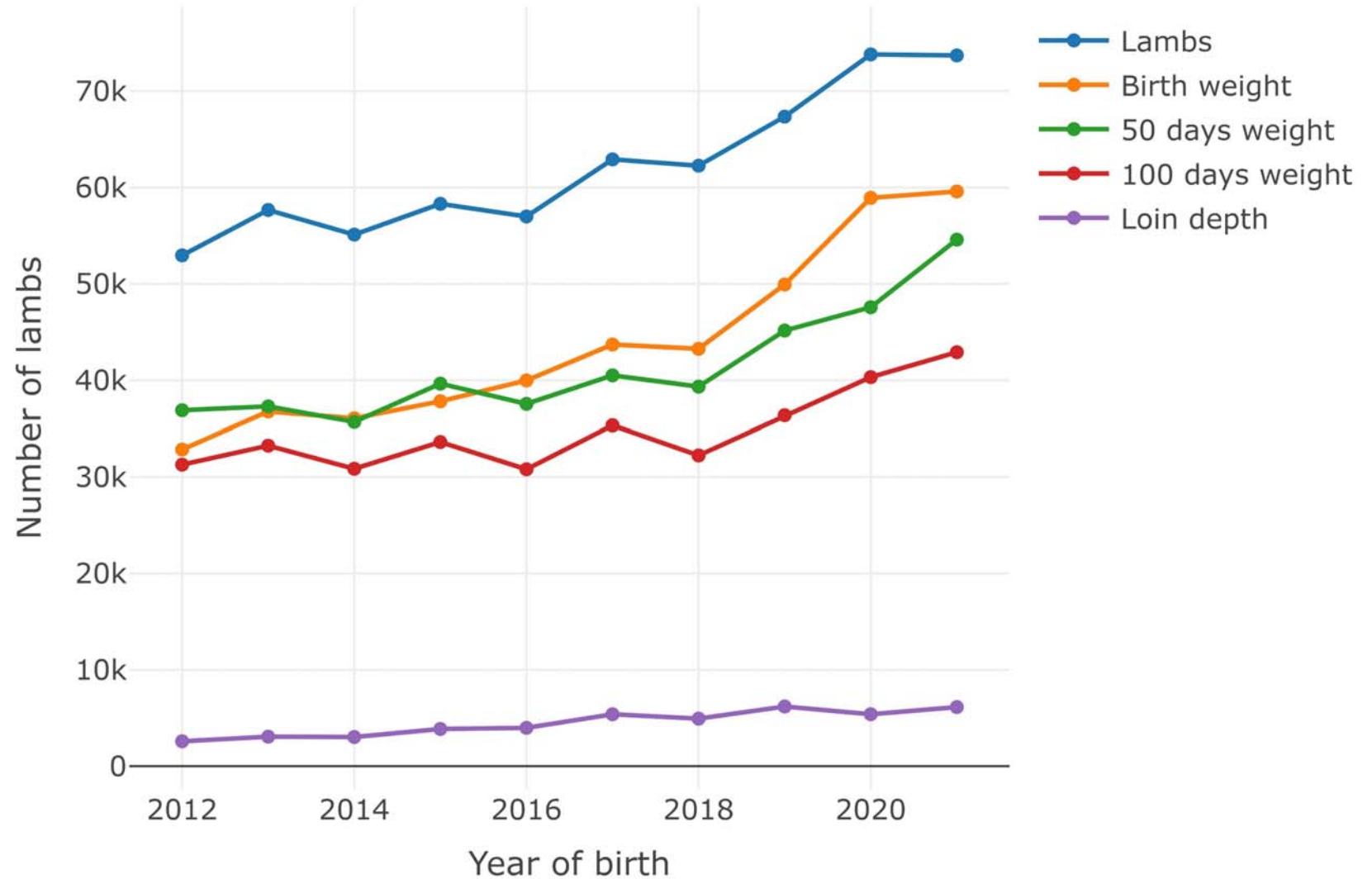
Between the third and fourth lumbar vertebrae



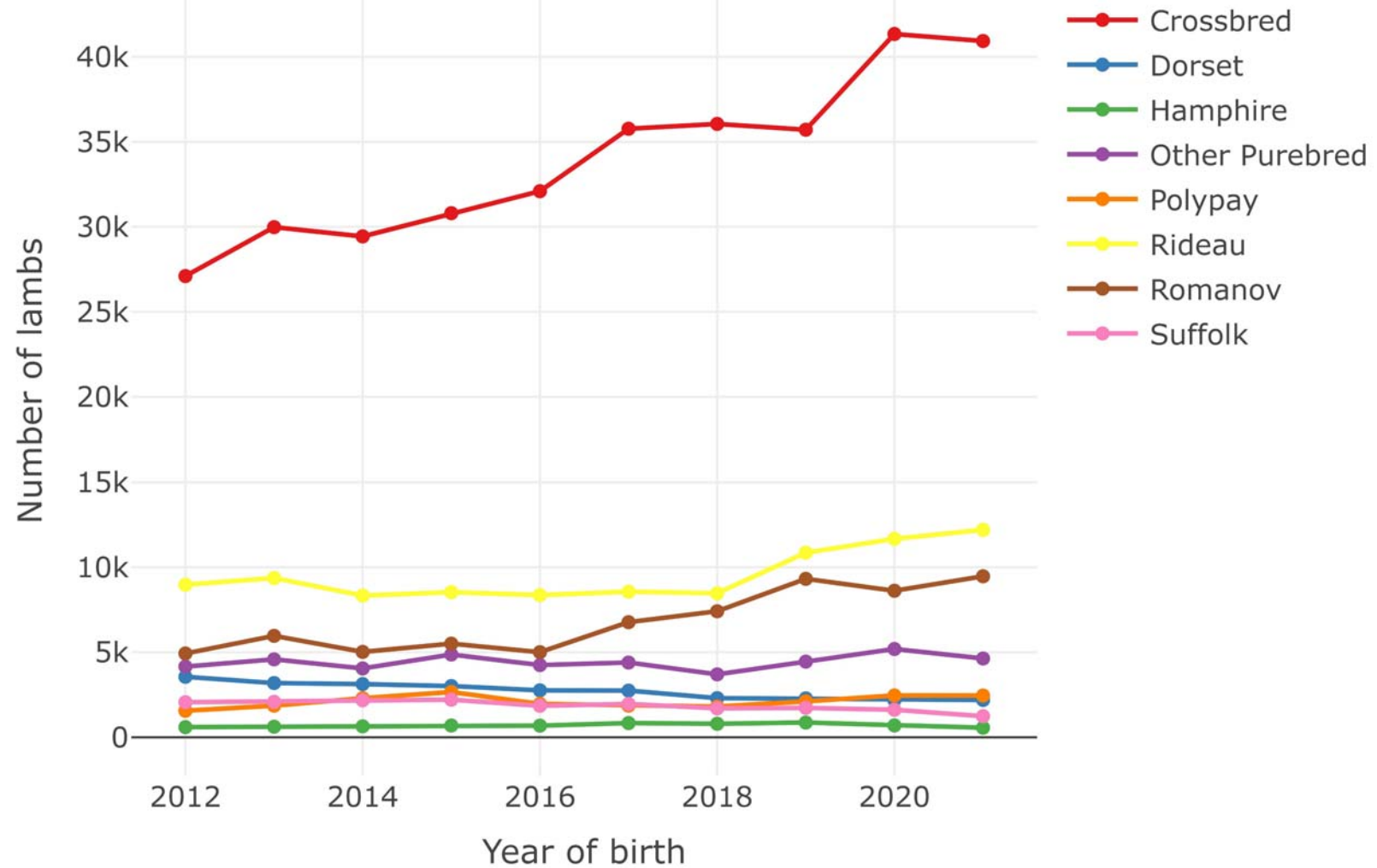
# GenOvis standards

Traits	Criteria
Birth weight	0.5 – 9.9 kg
50 days weight period	28 – 72 days
50 days weight	4.0 – 51.0 kg
100 days weight & ultrasound measures period	73 – 135 days
100 days weight	10.0 – 80.0 kg
Minimum interval between 50 & 100 days weights	28 days
Loin depth	10 – 44 mm
Fat thickness	0.2 – 14.9 mm

# Records in GenOvis



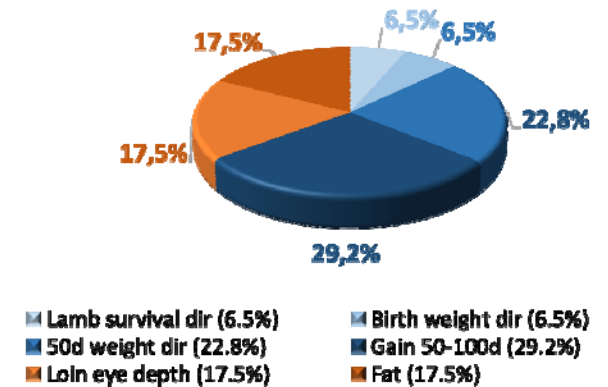
# Lambs born per breed



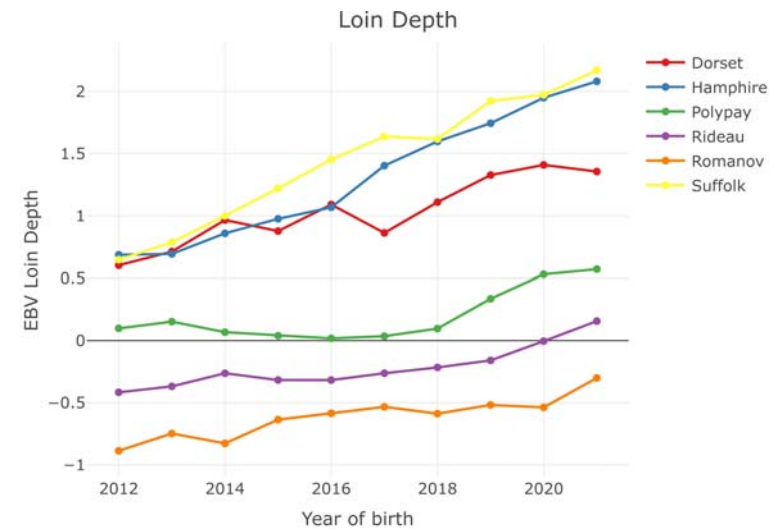
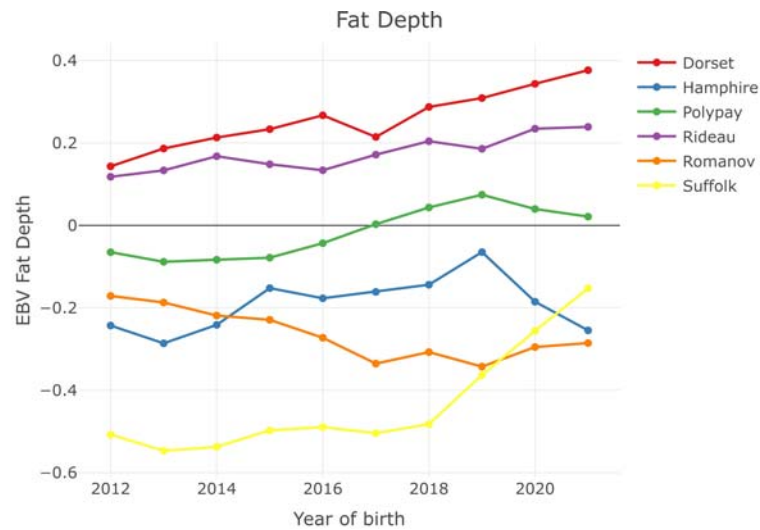
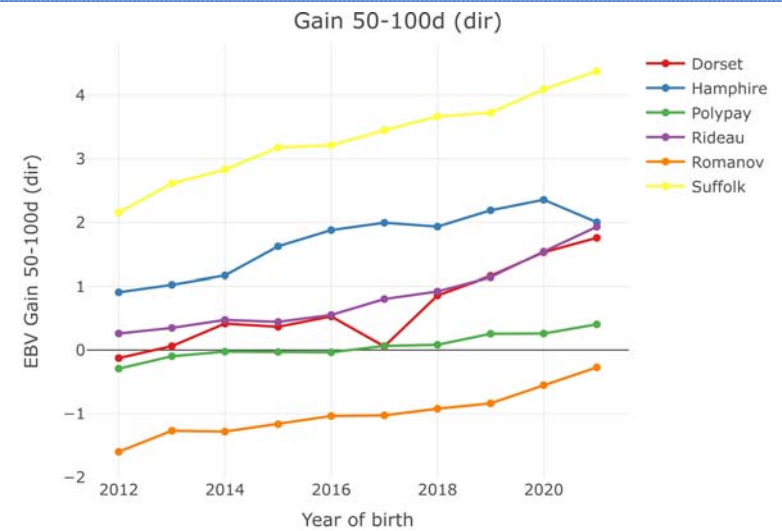
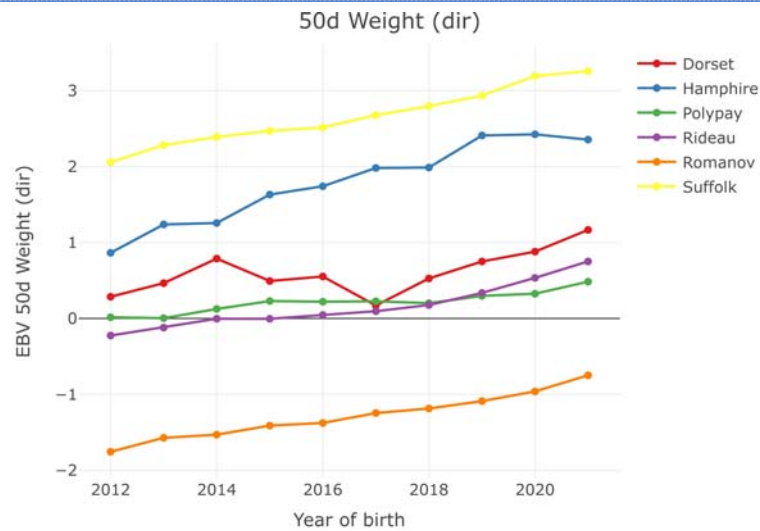


# Selection indexes

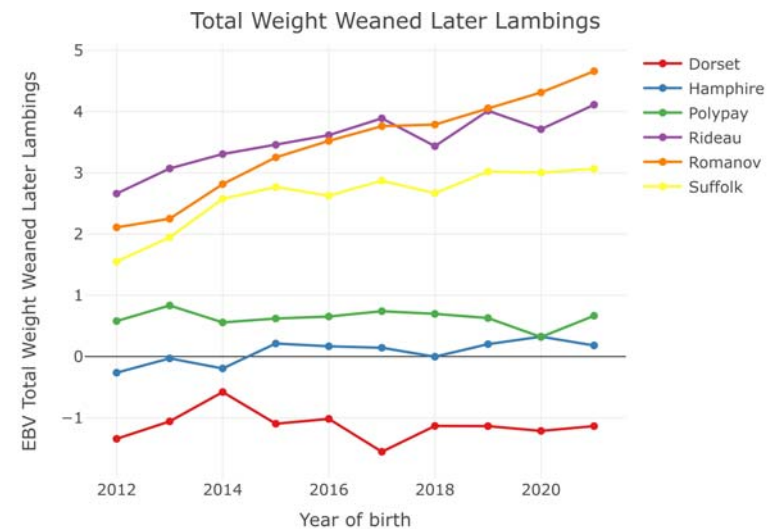
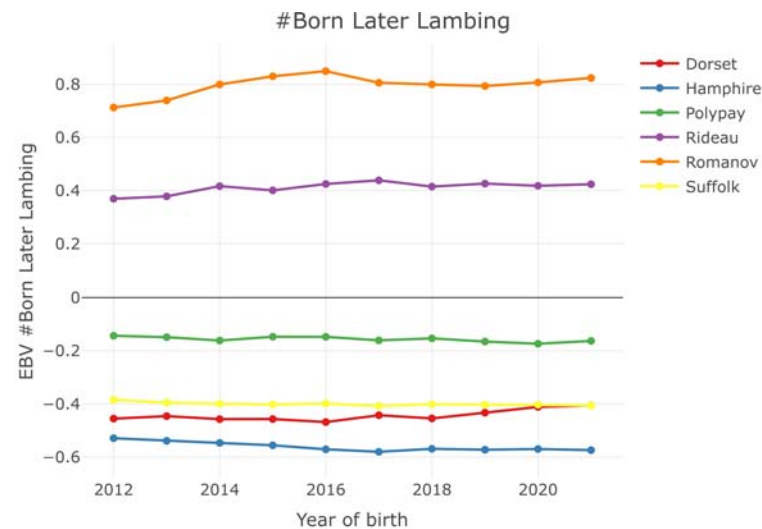
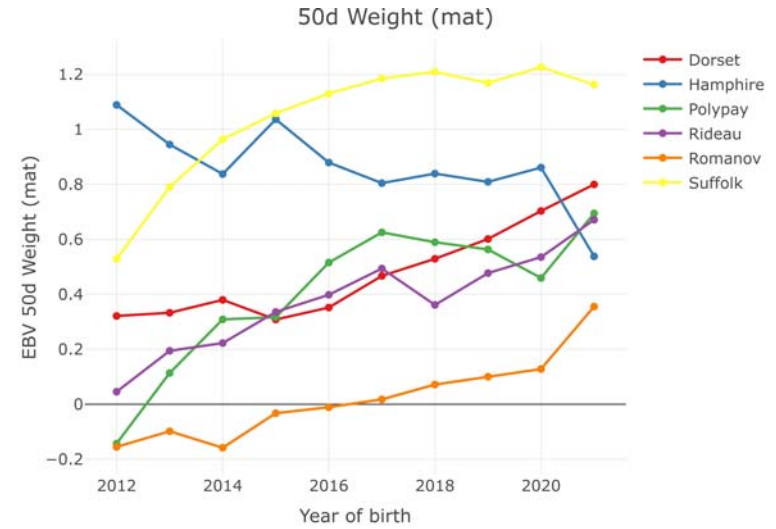
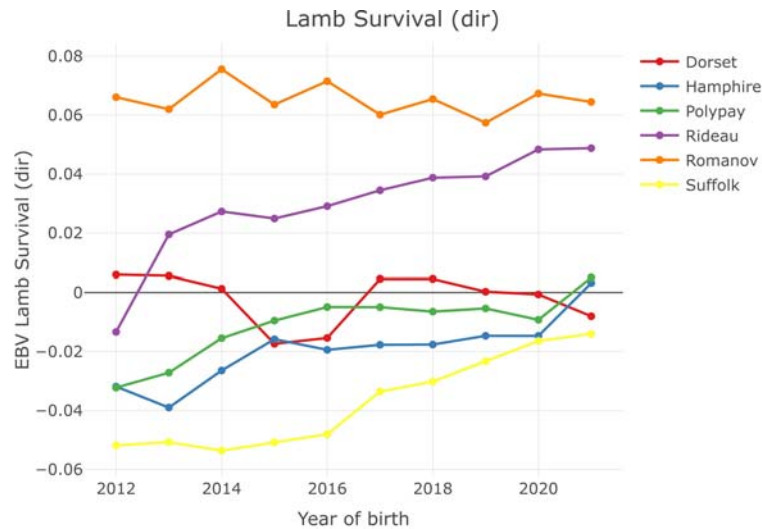
- Carcass index:
  - Terminal breeds (e.g.: Suffolk and Hampshire)
  - Growth & carcass traits
- Maternal index:
  - Prolific breeds (e.g.: Romanov and Rideau Arcott)
  - Growth, carcass, reproduction traits (+ mothering abilities)
- Higher prolificacy index:
  - Maternal breeds (e.g.: Dorset, Polypay)
  - Growth, carcass, reproduction traits (+ prolificacy)



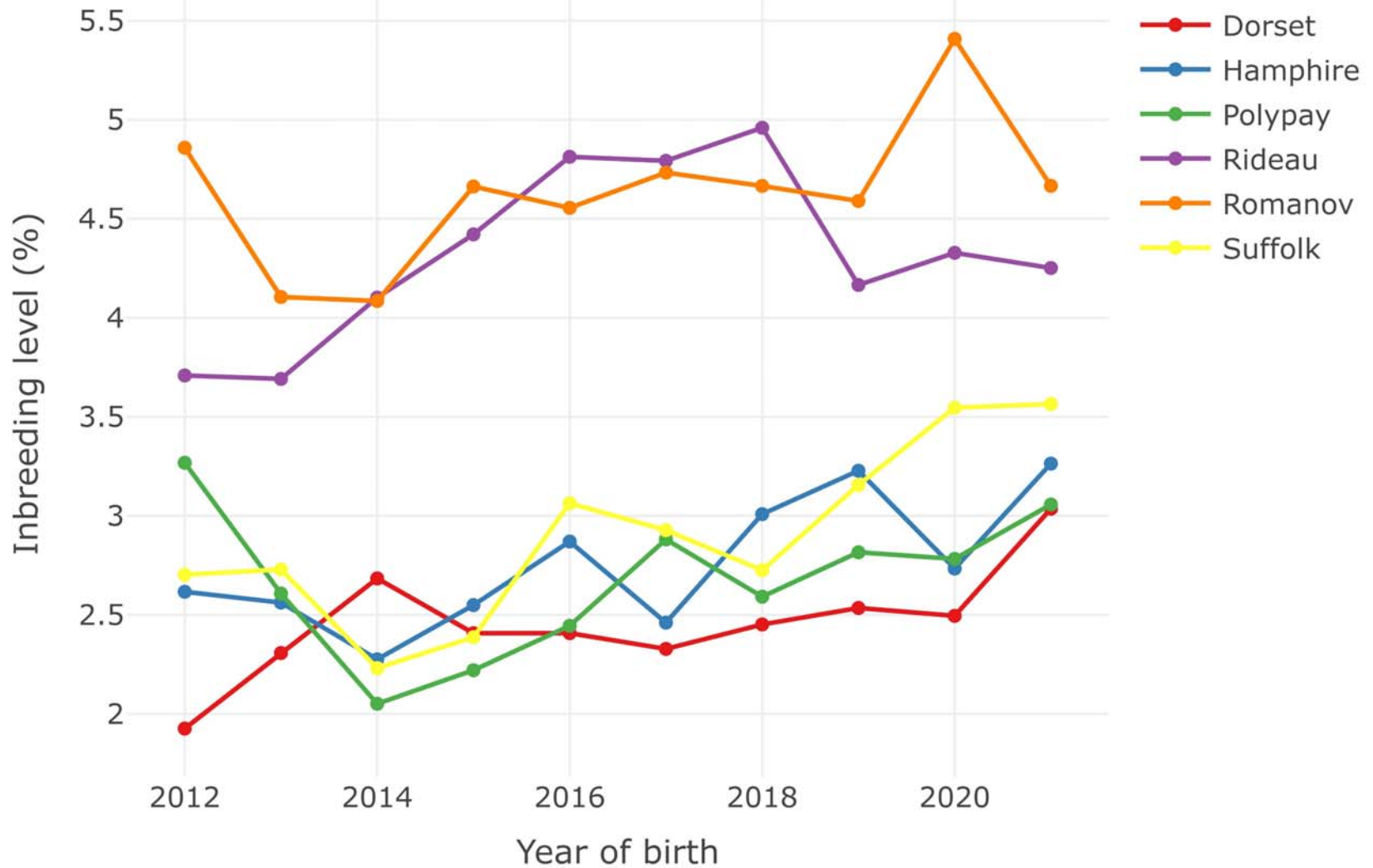
# Genetic trends: Growth & Carcass traits



# Genetic trends: Lamb survival & Maternal traits

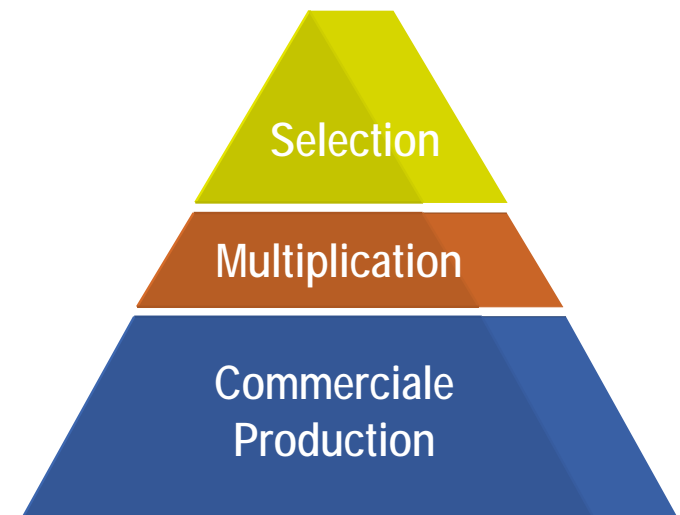


# Average inbreeding level



# Perspectives

- Integration of genetic services for small ruminants
  - Collaboration (CCSI, CGIL, CLRC, AgSights, CEPOQ, CSBA, CMGA, CGS, OSF)
  - Better standardisation
- Data enhancement:
  - Genomics
  - Precision livestock farming
  - Pyramid structure (commercial data)
- Address current and emerging challenges:
  - Economic viability
  - Environmental sustainability
  - Resiliency



# Acknowledgements

- ❖ Dr. Larry Schaeffer
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Questions?

