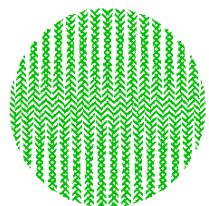




Mortality of dairy calves and heifers in France

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EBF 2011



Number of cattle deaths

	2005	2006
Total deaths	1 245 000	1 228 000
Total cattle	22 000 000	22 000 000
Mortality rate	≈ 6 %	≈ 6 %



Data :
BDNI

- Databases
 - BDNI 2005 - 2006
- Indicators of production and health
 - Per herd, per group of animals, per age
 - Mortality rate :

Category	Age	Denominator	Subcategories
Calf	0-2d	# born	All, Pure breed, Crossed
Calf	3d-1m	# at D3 & # calf-month	All, Pure breed, Crossed
Heifer	3d-1m	# calf-month	
	1m-6m	# heifer ¹ / ₂ year	
	6m-calv1	# heifer-year	

- Statistics
 - Linear models / Heckman method

1 – Mortality rates

Calves 0-2d

2005	Dairy calves 0-2 d
# farms (101 467)	99,221
<i># calves</i>	3,564,774
<i># died calves</i>	261,798
<i># farms without mortality</i>	27,202 (27%)
<i># farms with mortality</i>	72,019 (73%)
Mean (0-excluded)	0.09
Median (0-excluded)	0.08
SD (0-excluded)	0.06
Mean (0-included)	0.07
Median (0-included)	0.06
SD (0-included)	0.06

Calves 0-2d

2005	Dairy calves 0-2 d	Dairy calves 0-2 d, pure breed	Dairy calves 0-2 d, crossed
# farms (101 467)	99,221	86,631	36,783
# calves	3,564,774		
# died calves	261,798		
# farms without mortality	27,202 (27%)		19,401 (53%)
# farms with mortality	72,019 (73%)		17,382 (47%)
Mean (0-excluded)	0.09	0.09	0.14
Median (0-excluded)	0.08		
SD (0-excluded)	0.06		
Mean (0-included)	0.07	0.07	0.07
Median (0-included)	0.06		
SD (0-included)	0.06		

Calves 3d-1m

2005	Dairy calves 3d-1m
# farms (101 467)	98832
# calves	3,302,976
<i># died calves</i>	<i>138,913</i>
<i># farms without mortality</i>	<i>43,523 (44%)</i>
<i># farms with mortality</i>	<i>55,309 (56%)</i>
Mean (0-excluded)	0.07
Mean (0-included)	0.04
# calf-month	2,388,069
Mean (0-excluded)	0.10
Mean (0-included)	0.06

Calves 3d-1m

2005	Dairy calves 3d-1m	Dairy calves 3d-1m, pure breed	Dairy calves 3d-1m, crossed
# farms (101 467)	98,832	86,160	34,842
# calves	3,302,976		
# died calves	138,913		
<i># farms without mortality</i>	<i>43,523 (44%)</i>		
<i># farms with mortality</i>	<i>55,309 (56%)</i>		
Mean (0-excluded)	0.07	0.07	0.13
Mean (0-included)	0.04	0.04	0.04
# calf-month	2,388,069	2,044,520	345,527
Mean (0-excluded)	0.10	0.10	0.17
Mean (0-included)	0.06	0.05	0.06

Heifers

2005	Dairy heifers 3d-1m	Dairy heifers 1m-6m	Dairy heifers 6m-calving #1
# farms (101 467)	71,846	72,096	67,754
# heifer-month heifer-year	1,158,838 h-m	1,125,546 h^{1/2}y	943,008 h-y
<i># heifer died</i>	52,722	35,454	40,928
<i># farms without mortality</i>	43,196 (76%)	50,067 (83%)	45,866 (76%)
<i># farms with mortality</i>	28,650 (24%)	22,029 (17%)	21,888 (24%)
Mean (0-excluded)	0.11	0.10	0.13
Mean (0-included)	0.05	0.03	0.04

2 – Effects influencing mortality rates

$$\text{Probit}(\text{MO-RA} = 1) = \mu + \text{herd size} + \text{breed} + \text{typology} + \text{purchase} + \% \text{Parity1} + \% \text{males} + \% \text{crossed calves} + \text{calving peak} + \text{MCP-Mb} + \text{GBP-Mb} + \text{area} + \varepsilon$$

$$\text{LM}(\text{MO-RA} = 1) = \mu + \text{herd size} + \text{breed} + \text{typology} + \text{purchase} + \% \text{Parity1} + \% \text{males} + \% \text{crossed calves} + \text{culling rate} + \text{calving peak} + \text{MCP-Mb} + \text{GBP-Mb} + \text{area} + \text{IMR} + \varepsilon$$

Not included : average calving interval, cattle density, culling rate

Risk factors

- Herd size **POSITIVE** (Wells, 1996, James, 1984; Gulliksen, 2009)
- Purchase of cows/calves **POSITIVE** (Raboisson, 2011)
- Milk Ct Prog membership **POSITIVE** (Raboisson, 2011)
- Good breeding pract. mb **NEGATIVE**
- Peak of calving in autumn **NEGATIVE**

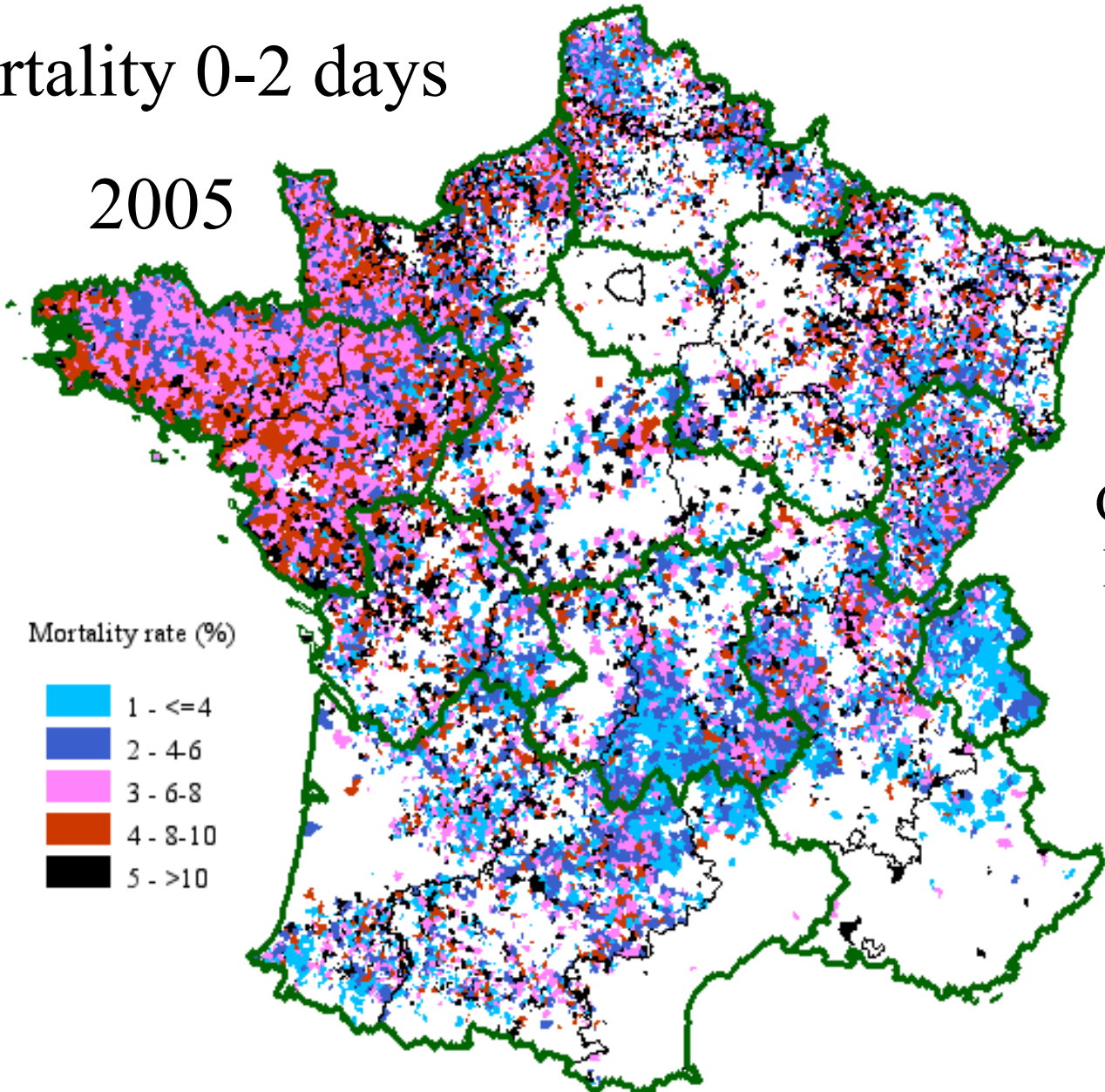
Risk factors

- Proportion of primiparous **POSITIVE** or **NEGATIVE**
- Beef herd in the farm **POSITIVE** or **NEGATIVE**
- Male / female ratio **POSITIVE** or **NEGATIVE**
- Crossed breed calf % **POSITIVE** or **NEGATIVE**

- **Negative** effect on mortality for
 - Heifers 3d-1m & Heifers 1m-6m & Heifers 6m-claving#1
 - Calves 3d-1m non-crossed
 - **Dynamic of culling and primiparous**
- **Positive** effect on mortality for (Meyer, 2001)
 - Calves 0d-2d crossed & non-crossed
 - Calves 3d-1m crossed
 - **Dystocia** (Bicalho, 2008, Meyer, 2000 ; Meyer, 2001 ; Lombard, 2007 ; Linden, 2009)

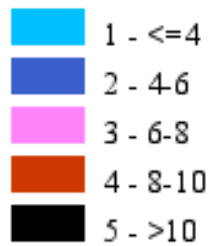
Mortality 0-2 days

2005



CALVES FROM
DAIRY HERDS

Mortality rate (%)

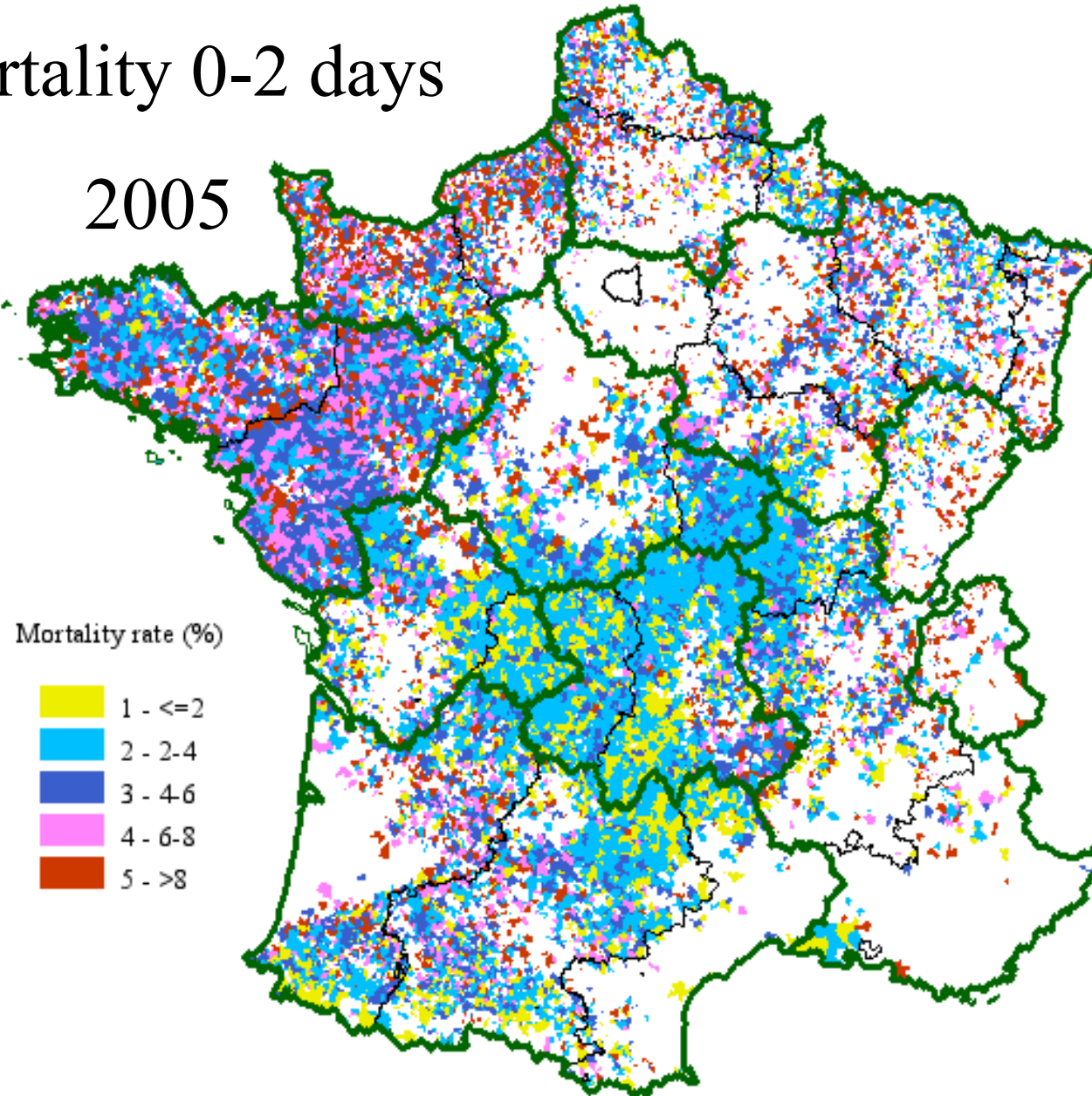


Sources : *BDNI*

Carto Dynamique INRA 2005

Mortality 0-2 days

2005



CALVES FROM
COW-CALF
HERDS

Sources: *BDNI*

Carto Dynamique INRA 2005

Area



P<0,001	Negative effect
P<0,001	Positive effect

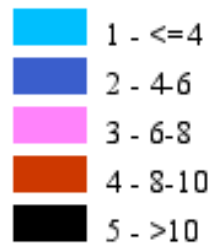
Category		Area											
		1	2	3	4	5	6	7	8	9	10	11	
		GOuest	Norm	Nord	Est	Centre	Poitou	MCent	Rhône	SOuest	Jura	Alpes	
Calf 0-2d	Pure breed	Reference	Red	Green	Yellow	Green	Green	Green	Green	Green	Yellow	Green	
	Crossed		Red	Red	Red	Green	Green	Green	Green	Green	Red	Green	
Calf 3d-1m	Pure breed		Red	Red	Red	White	Green	Green	Green	White	White	Red	Red
	Crossed		Red	Red	Red	White	Green	Green	Green	Green	Red	Red	Red
Heifer	3d-1m		Red	Red	Red	White	Green	White	White	Red	Red	Red	Red
	1m-6m		Red	Green	Green	Green	Green	White	White	Red	Green	Green	Green
	6m-calv 1		Green	Red	Red	White	White	Red	Red	Red	Red	Red	Red

Mortality 0-2 days

2005

DAIRY
CALVES

Mortality rate (%)



Sources : *BDNI*

Carto Dynamique INRA 2005

- **Mortality rate**
 - Depends on category of calves
 - Depends on the way it is calculated
 - Difficulties to compare to literature

- **Herd factors of mortality**
 - Several ...
 - Livestock system / area



Thanks to

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