THE RELATIVE IMPORTANCE OF PIG WELFARE
IN SEVEN EUROPEAN COUNTRIES

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❏ **ANIMAL WELFARE** is becoming a relevant **FACTOR**.

❏ Consumers are **DEMANDING** animals being reared **AS CLOSELY AS POSSIBLE** as they would be in their **NATURAL CONDITIONS**.

❏ Is becoming a prominent **POLITICALLY SENSITIVE** issue in EU

❏ Resulting in **CONTINUOUS CHANGES** in **REGULATIONS**.

❏ **BAN** a number of **INTENSIVE** farming methods.

1. INTRODUCTION
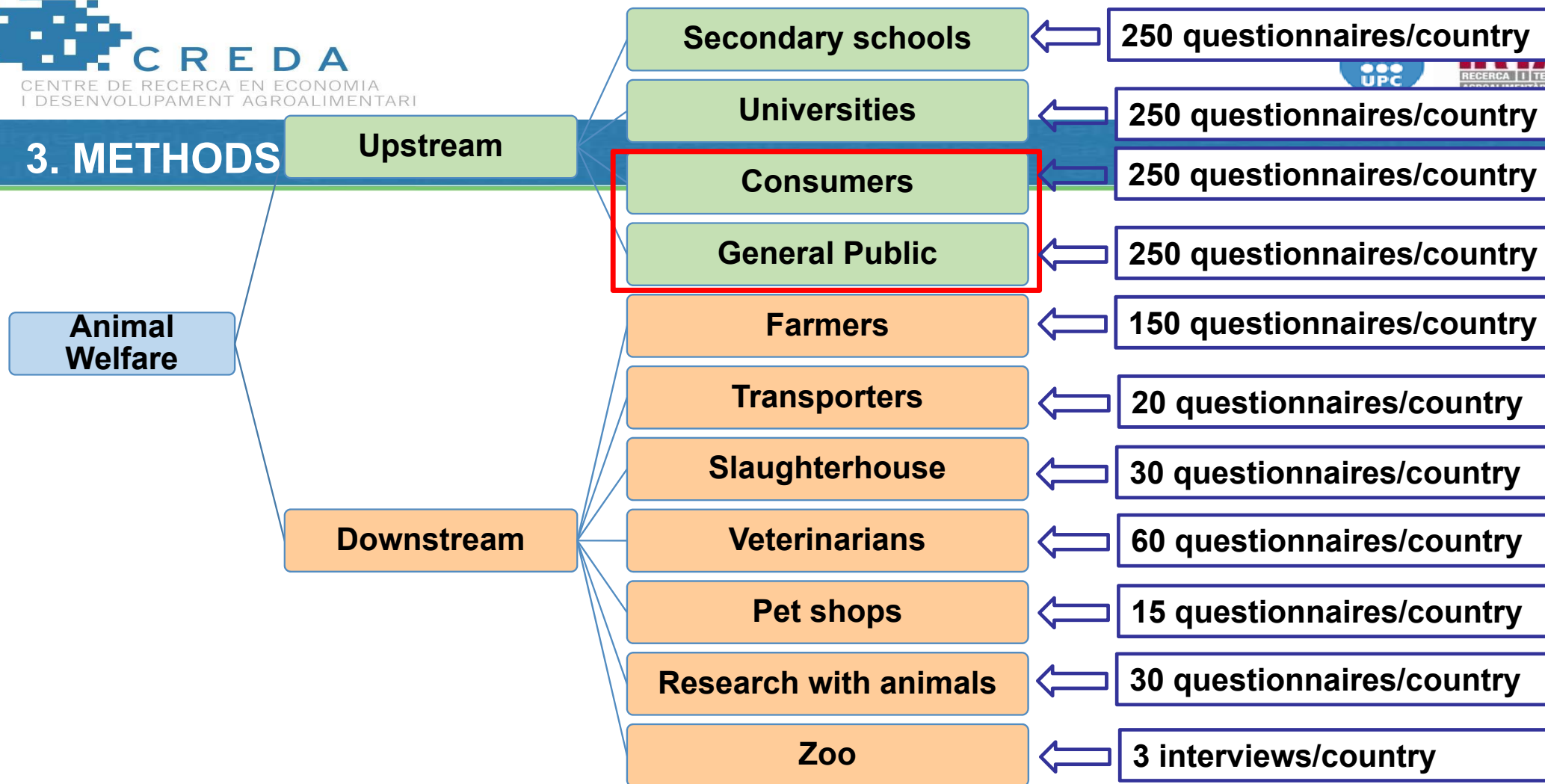
- **PIG WELFARE** is receiving **SPECIAL ATTENTION**.

- **BANNED** the use of **SOW STALLS** by **January 2012**.

- **POTENTIAL BAN** OF SURGICAL **PIG CASTRATION** (Voluntary end by January 2018)

Paper prepared for presentation at the IX International Symposium on Mediterranean Pig, 3 - 5 November 2016. Portalegre, Portugal

❑ **ANIMAL WELFARE PERCEPTIONS , in particular the RELATIVE IMPORTANCE of Pig amongst other ANIMAL production systems, in 7 European countries: SPAIN, ITALY, GREECE, ROMANIA, UK, SWEDEN, POLAND and LITHUANIA.**

- ▪ **SUBJECTIVE and OBJECTIVE information level across the seven countries**

- ▪ **OPINIONS towards the CURRENT REGULATIONS about animal welfare**

- ▪ **INFORMATION SOURCES and credibility**

- ▪ **SEGMENTATION of countries regarding ANIMAL WELFARE ASPECTS**

CREDA
CENTRE DE RECERCA EN ECONOMIA
I DESENVOLUPAMENT AGROALIMENTARI

Animal Welfare

Upstream
- Secondary schools ← 250 questionnaires/country
- Universities ← 250 questionnaires/country
- Consumers ← 250 questionnaires/country
- General Public ← 250 questionnaires/country

Downstream
- Farmers ← 150 questionnaires/country
- Transporters ← 20 questionnaires/country
- Slaughterhouse ← 30 questionnaires/country
- Veterinarians ← 60 questionnaires/country
- Pet shops ← 15 questionnaires/country
- Research with animals ← 30 questionnaires/country
- Zoo ← 3 interviews/country

❑ **FACE TO FACE SURVEYS** and **DEEP INTERVIEWS** for different stakeholders

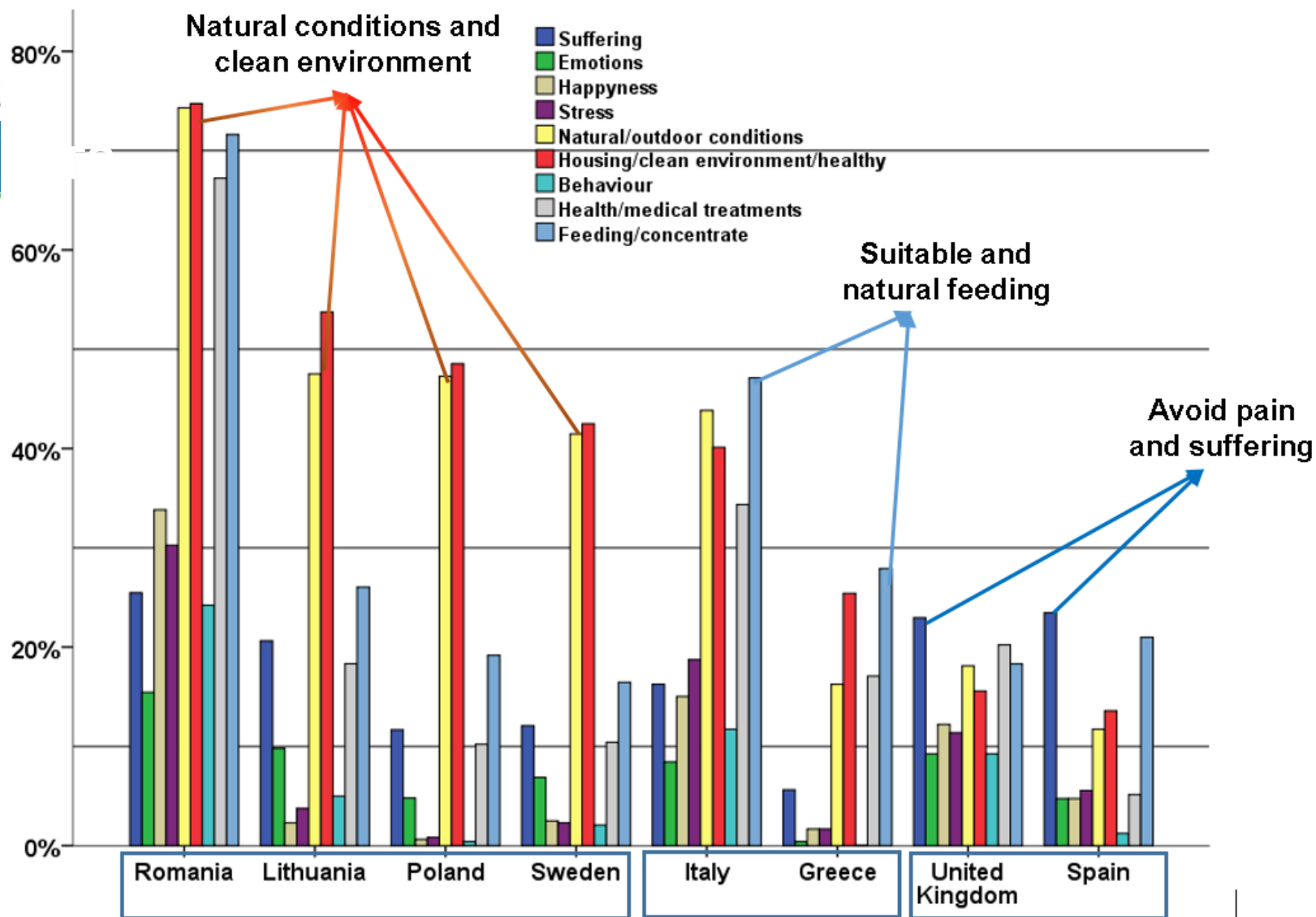| Country		Romania	Italy	Spain	Greece	Lithuania	United Kingdom	Poland	Sweden
Region (%)	North	33.3	43.3	34.4	33.3	31.4	34.2	61.3	14.4
	Centre	66.7	25.3	31.8	33.3	31.6	52.2	26.9	-
	South	-	31.4	33.8	33.3	36.9	13.6	11.9	85.6
Area (%)	Rural	49.7	51.1	52.7	50.0	23.0	44.4	44.8	35.4
	Urban	50.3	48.9	47.3	50.0	77.0	55.6	55.2	64.6
Employment situation (%)	Unemployed	1.7	9.9	7.1	19.2	11.5	7.7	2.3	4.6
	Self-employed	17.0	22.0	5.1	23.4	0.8	8.5	1.3	6.07
	Salaried	64.4	26.7	64.8	35.5	61.0	57.4	76.7	66.3
	Retired	9.0	8.4	3.3	10.4	2.1	4.1	4.0	0.4
	Student	3.8	25.5	18.3	7.7	23.5	19.2	15.2	20.0
	Housewife	4.2	7.6	1.4	3.7	1.0	3.0	0.6	2.1
Gender (%)	Female	61.1	57.9	60.3	62.9	81.5	54.9	70.0	75.8
	Male	38.9	42.1	39.7	37.1	18.5	45.1	30.0	24.2
Age categories (%)	18-30	26.4	40.5	35.6	28.1	62.1	58.2	38.1	45.0
	31-40	33.5	23.2	31.0	22.9	15.6	14.7	23.3	21.5
	41-55	29.7	23.4	22.6	36.3	13.1	20.0	26.3	26.7
	+55	10.4	12.9	10.8	12.7	9.2	7.1	12.3	6.9
Age (average)		38.9	37.4	37.0	40.7	32.2	32.9	37.5	34.9
Observations (n)		481	487	494	480	480	478	480	480
Total		3,860							

Figure 3: What animal welfare concept means across countries

Country	Romania	Italy	Spain	Greece	Lithuania	United Kingdom	Poland	Sweden
Subjective information (0-10)	4.43[d]	4.55[d]	4.28[d]	4.24[d]	5.64[b,c]	5.14[c]	6.25[a]	5.72[b]

❑ **In your opinion, how much informed are you about animal welfare?**

Non-informed	0	1	2	3	4	5	6	7	8	9	10	Very informed
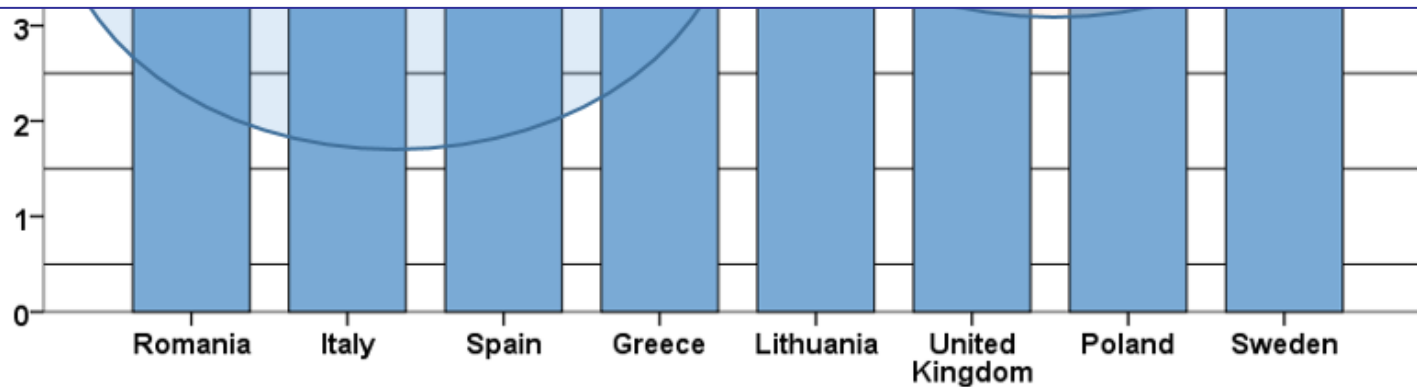
Figure 4: Subjective information level about animal welfare across countries

❑ **Which of the followings aspects do you think are regulated by Animal welfare legislation?**
1. **SPACE** allowance per animal in relation to the weight
2. Age and method of the **CASTRATION** of animals
3. The limitation to use **CAGES** and ties in animals
4. The obligation for certain species to use straw as **BEDDING** material or environmental enrichment material
5. The animals that are suitable or not to be **TRANSPORTED**
6. The obligation to stun animals before **SLAUGHTERING**
7. The obligation to **FEED** animals after certain hours at the slaughterhouse
8. The obligation to use showers in cases of **HEAT STRESS**
9. The obligation to have background **MUSIC** in farmyards
10. The obligation to limit the **GROUPS** of animals to 4 individuals
11. The obligation to have available **WATER** for animals that are transported, whatever the duration of transport
12. The obligation that animals have a space for **RESTING** before slaughtering
13. The number of animals per **DRINKING** troughs in the pen

	Romania	Italy	Spain	Greece	Lithuania	United Kingdom	Poland	Sweden
T test for difference	-2.79	-2.56	-4.68	-3.87	2.73	2.46	8.01	1.76
P value	0.005	0.01	0.000	0.000	0.007	0.014	0.000	0.078

$$Y_n^{1-7} = (7-1) \times \left(\frac{y_n - \min}{\max - \min} \right) + 1$$
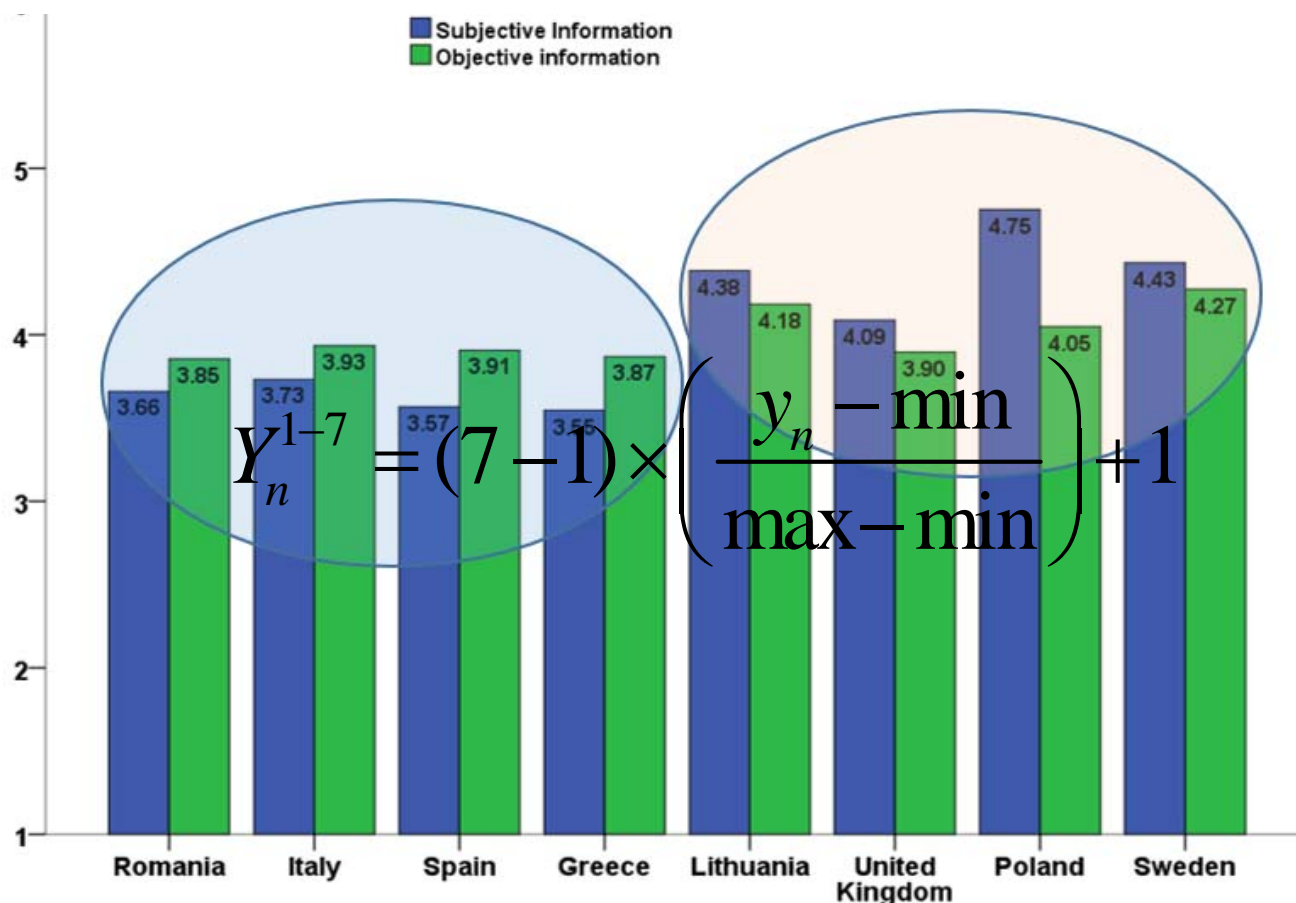
Figure 6: Subjective and objective information level on common scale across countries , Portugal

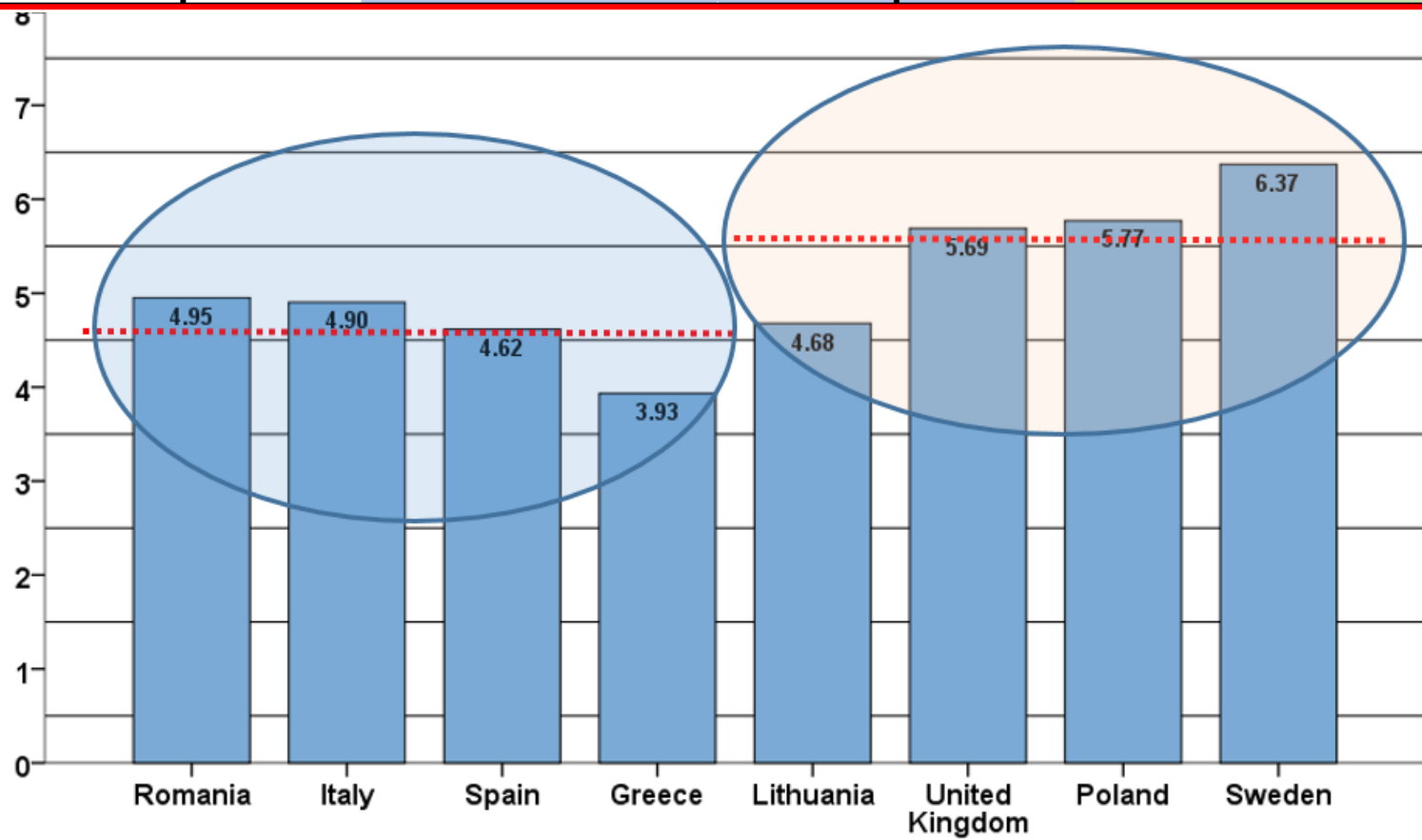| Country	Romania	Italy	Spain	Greece	Lithuania	United Kingdom	Poland	Sweden
Opinion to **current** regulations (0-10)	4.95[c]	4.90[d]	4.62[d]	3.93[d]	4.68[d]	5.69[b]	5.77[b]	6.37[a]

Figure 7: Opinions regarding the current level of animal welfare regulations

	Romania	Italy	Spain	Greece	Lithuania	United Kingdom	Poland	Sweden
Correlation with opinions regarding the current level of animal welfare regulations								
Subjective information	0.33***	0.23***	0.16***	0.17***	0.31***	0.21***	-0.14***	0.04
Objective information	0.19***	0.09	0.23***	0.07	0.16***	0.18***	-0.02	0.01

INFORMATION level, POSITIVE OPINIONS towards current level of animal welfare regulations
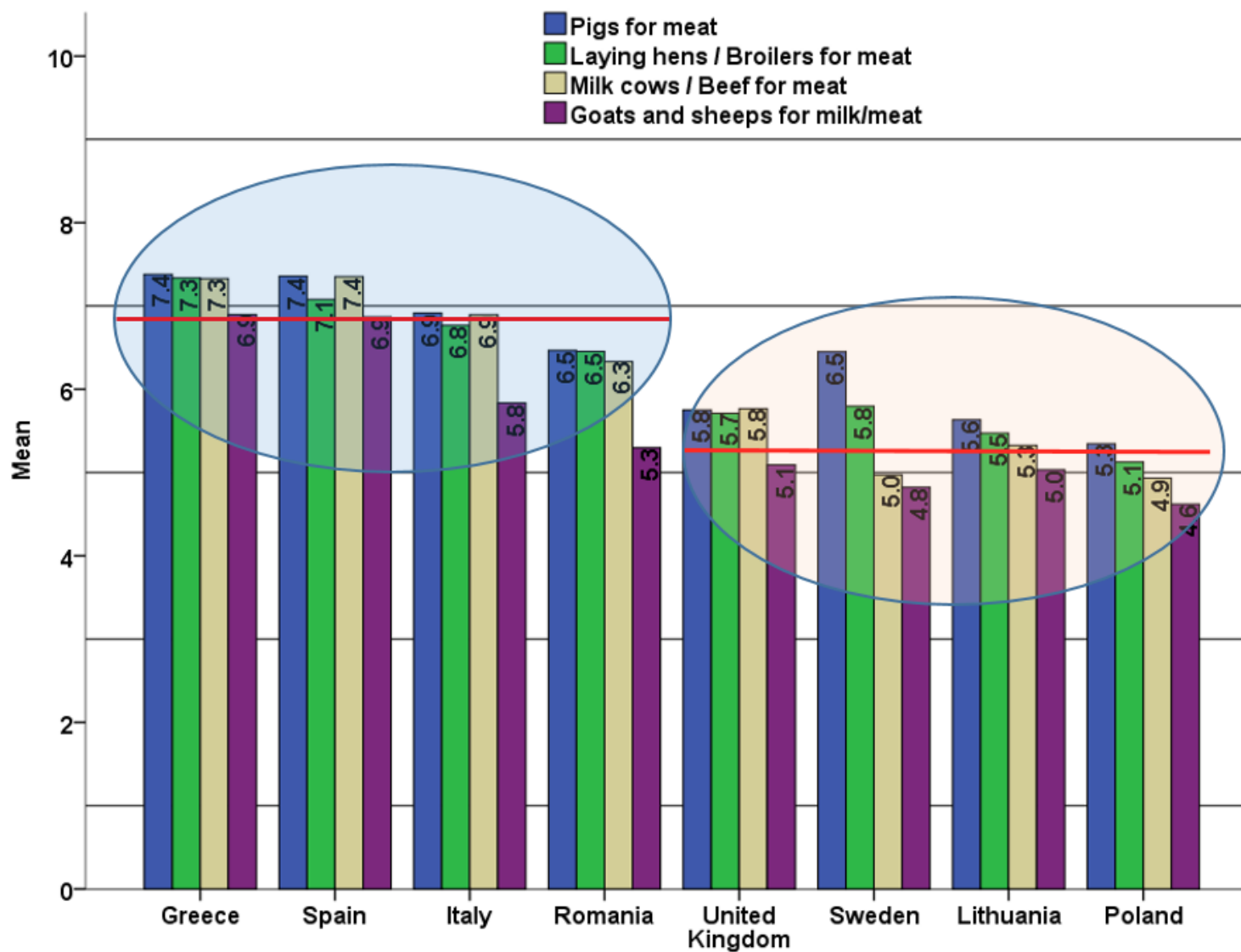
Figure 8: Worry levels regarding the animal welfare of different animal species

a) News from TV and radio

c) Specific programs/ radio or TV documentaries

d) Generalist newspapers

e) Specialized magazines

f) Books

g) Informative brochures

h) Label of the products

i) Communication campaigns of private companies

j) Generalist websites in internet

K) Specialized websites in internet

Principal Component Analysis (PCA)

- Varimax method for rotation

- Eigen value (> 1) for extraction

Goodness of fit

- Alpha of Cronbach =0.81

- Explain 62% of the total variability

- Kaiser-Meyer-Olkin = 0.79
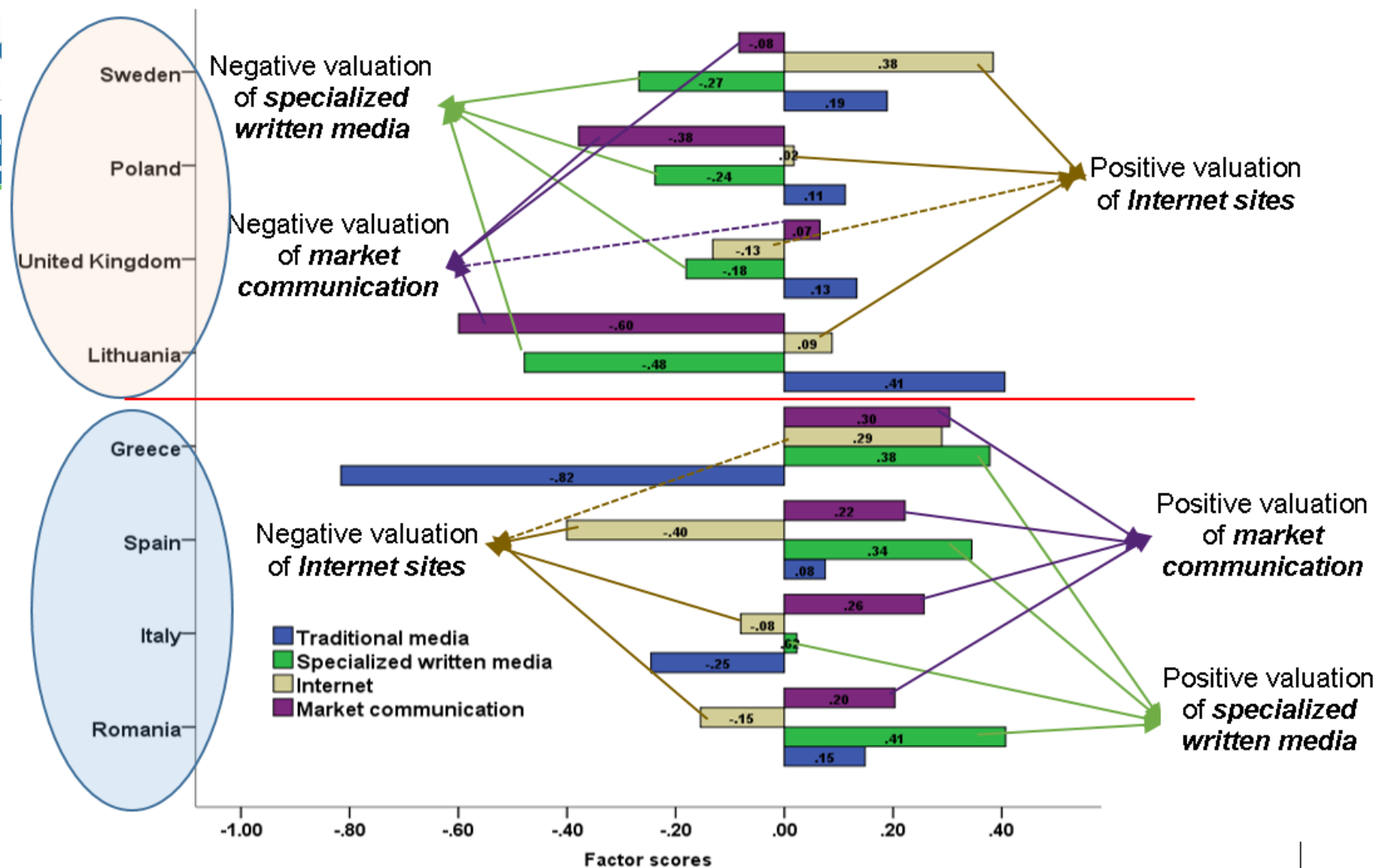
- Bartlett test (χ^2 highly significant)

Figure 9: PCA results across countries

Countries	Cluster 1* N= 1,990 (52.1%)		Custer 2* N=1,831 (47.9%)		P value (ANOVA)
	Romania 59.6%		Lithuania 65.3%		
	Italy 66.6%		UK 57.7%		(χ^2)
	Spain 76.9%		Poland 77.1%		0.000
	Greece 79.8%		Sweden 66.5%		
Subjective information (Low 0 - 10 High)	⬇	3.75	6.42	⬆	0.000
Objective information (Incorrect 0 - 13 Correct)		6.41	6.61		0.000
Opinion toward current regulations (Low 0 - 10 High)	▭	4.64	5.62	✚	0.000
Concern for pig production (Not worried 0 - 10 Very worried)	⬆	7.65	5.08	⬇	0.000
Average concerns for animal production (Not worried 0 - 10 Very worried)		7.09	4.76		0.000
The received information about animal welfare (Insufficient 0 - 10 Sufficient)	⬇	3.39	5.12	⬆	0.000
PCA: Credibility of specialized written media (Books, magazines, brochures)	✚	0.11	-0.12	▭	0.000
PCA: Credibility of market communication (Product label and private promotion campaigns)	✚	0.09	-0.10	▭	0.000
PCA: Credibility of Internet communication (generalist and specialized web sites)	▭	-0.03	0.04	✚	0.017
Agreement with the role of animal for sports (Disagree 0, Agree 10)		4.49	5.84	≪	0.000
Agreement with the role of animal for fur production (Disagree 0, Agree 10)		2.58	3.42	≪	0.000
Agreement with using animal for testing cosmetics (Disagree 0, Agree 10)		1.95	2.13	≪	0.041
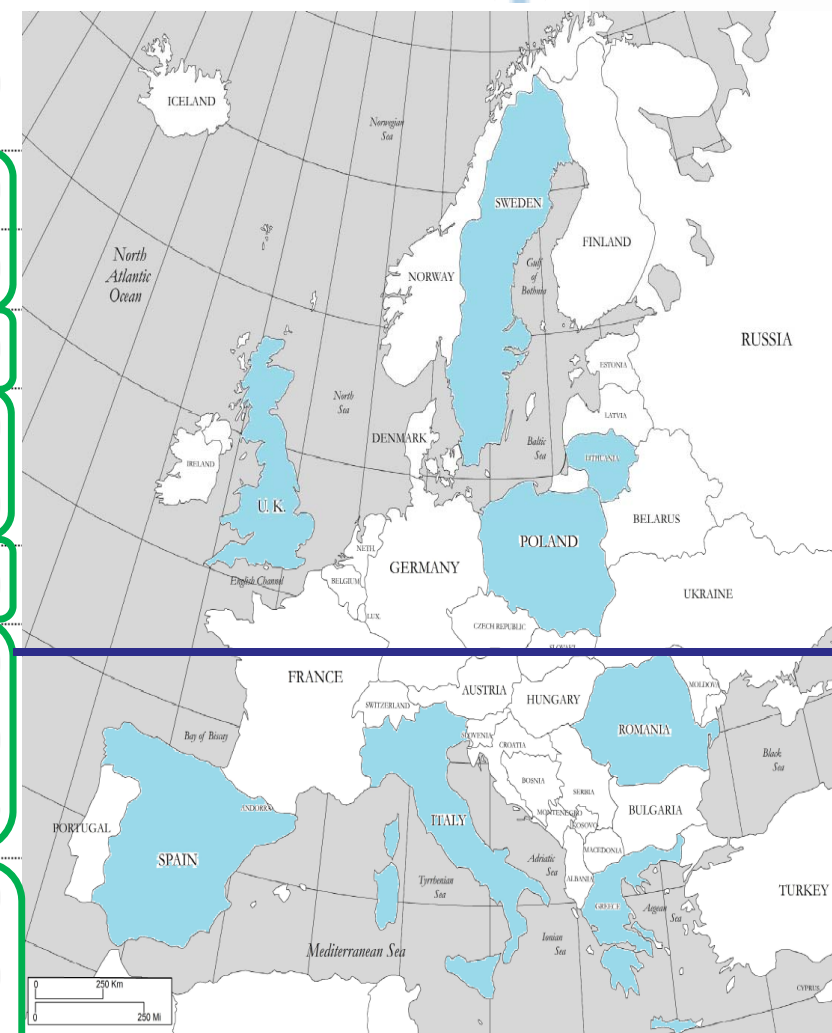
, 3 - 5 November 2016. Portalegre, Portugal

❑ **The OBJECTIVE INFORMATION level is CALCULATED by COUNTING for each INDIVIDUAL the CORRECT IDENTIFICATION of 13 ASPECTS if they are regulated**

❑ **The OBJECTIVE INFORMATION is a variable:**

- **Count**

- **Non-negative**

- **Integer**

- **Censored at right (≤ 13)**

❑ **For COUNT DATA**

- **POISSON REGRESSION MODEL** → Best approach

❏ An **INCREASE** in using (News from TV and radio, Specific programs/ radio or TV documentaries and Generalist newspapers): PCA 1→ An **INCREASE** of the **OBJECTIVE INFORMATION 1.5 TIMES**.

❏ An **INCREASE** in using (Generalist websites in internet and Specialized websites in internet): PCA: 4→ An **INCREASE** of the **OBJECTIVE INFORMATION 2.20 TIMES**.

5. CONCLUSIONS

❑ Results showed the most **EFFECTIVE WAY TO INCREASE OBJECTIVE INFORMATION COUNTRY** level→ **POSITIVE OPINIONS** TOWARDS regulations

❑ There is a **HETEROGENEOUS** understanding regarding animal welfare concept

❑ Regulations for **ANIMAL WELFARE** should be at **REGIONAL, COUNTRY OR EUROPEAN LEVEL?**

❑ Sensitive countries with animal welfare are driving **other countries towards more restrictive regulations which create tension between producers & regulators.**

Thank you for your attention