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Alternative Food Networks in Piedmont: Determinants of On-farm and Off-farm Direct Sales by Farmers

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Motivations and research questions

- In recent years, several experiences of Alternative Food Networks
  - short market chains
  - direct sales
  - community-supported agriculture
- "alternative" relative to "conventional" food chains
- many different AFNs, but a common point is more direct links between producers and consumers, possibly on a local basis

Motivations and research questions

- much research on consumers' choice to "buy local"
- much less on farmers' choice to sell directly
- of course, no short chain is possible without adequate supply

Motivations and research questions

Research questions:

- which are the factors that favour farmers' choice to sell their products directly to consumers rather than using conventional marketing chains?
- which are the differences between farmers' choice to sell at the farm (on-farm sales) and to sell in urban areas (off-farm sales)?

Data and method

First, we examine:

- the patterns of territorial distribution of the farms selling directly
- the share of farms selling directly by type of farming

Second, we estimate probit models of the determinants of the choice to sell directly on-farm and off-farm

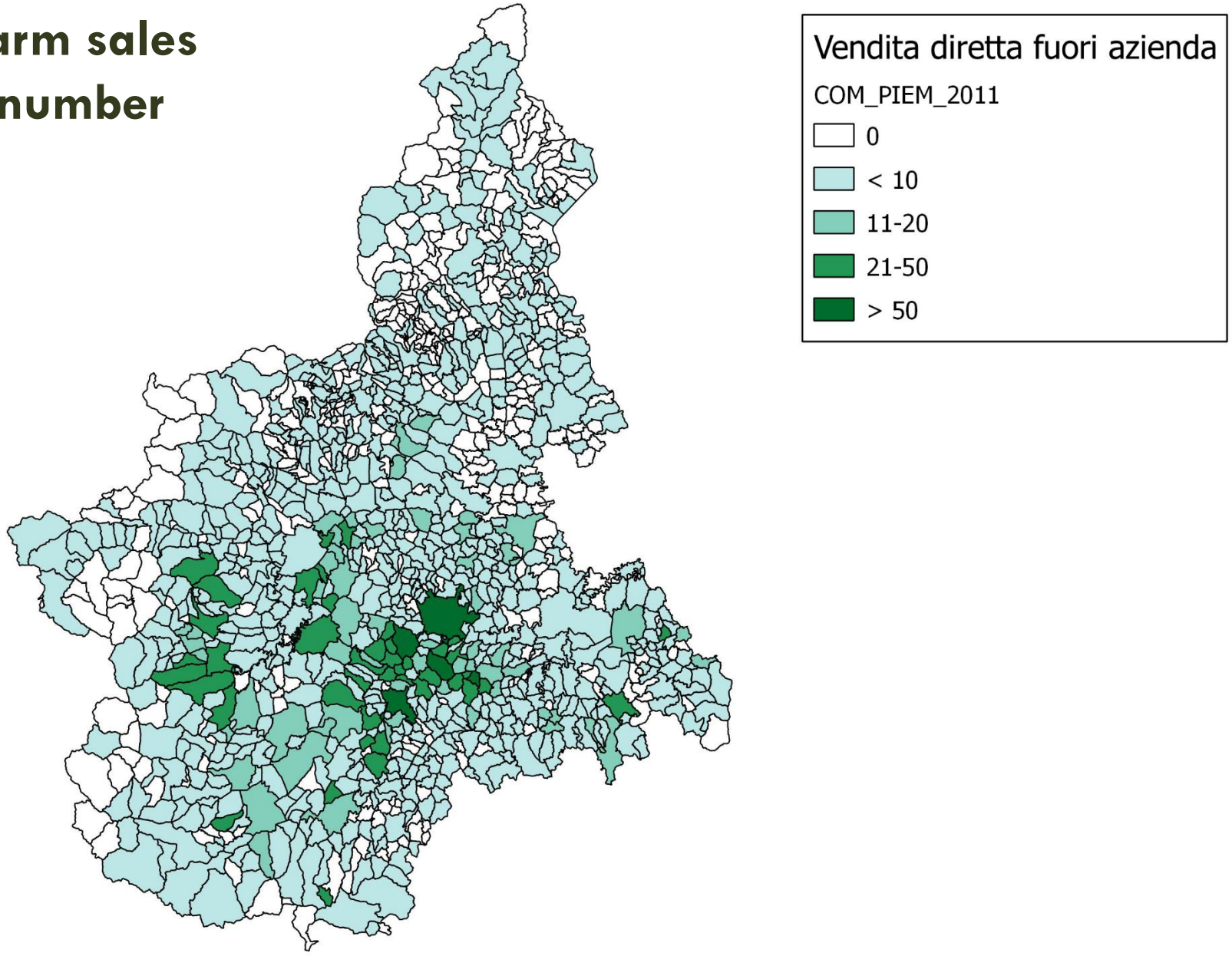
- data are mainly drawn from the 2010 Census of Agriculture (66,459 family farms in Piedmont)
- information on whether farms sell directly to consumers (on-farm and off-farm)

Territorial distribution of direct sales

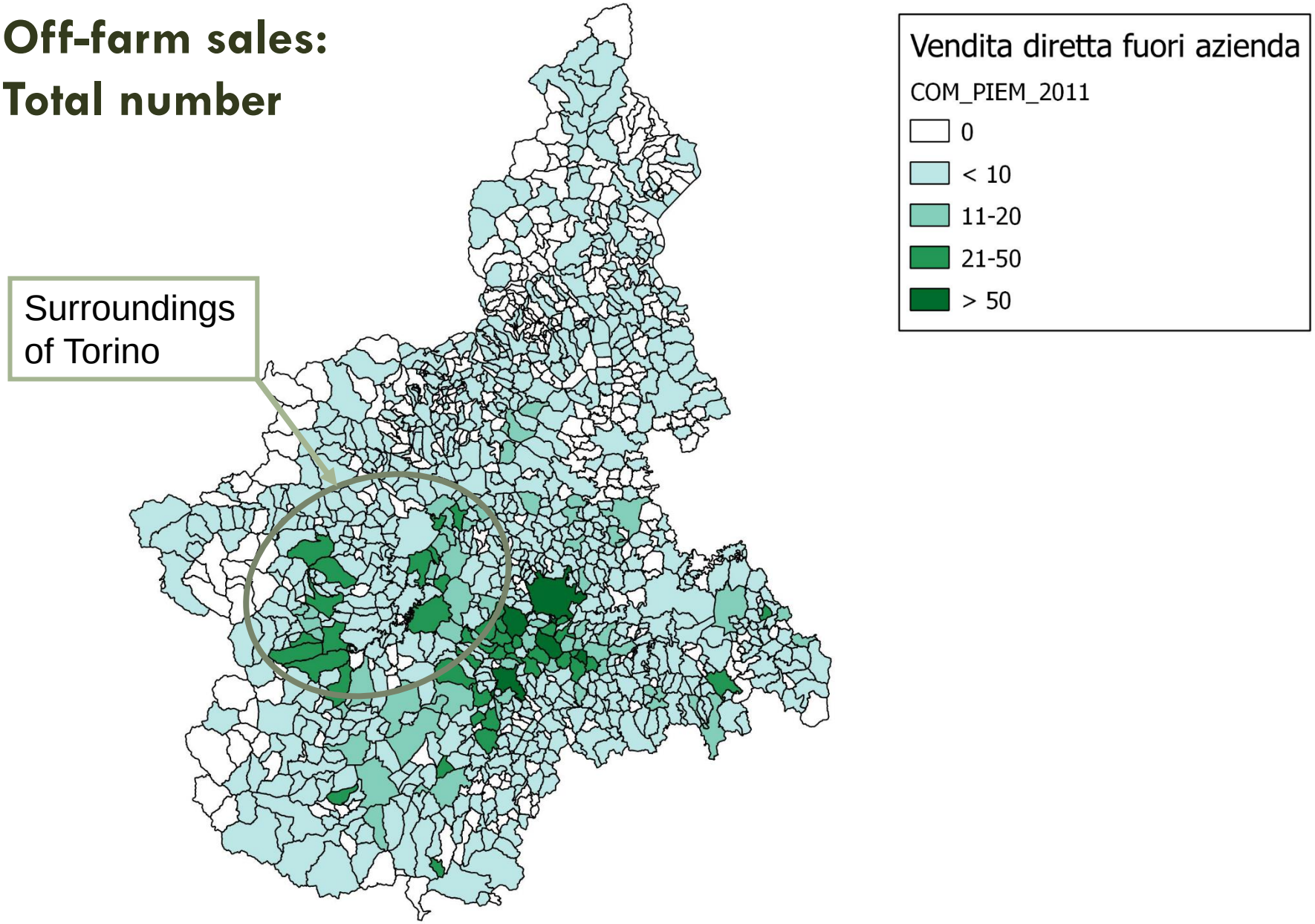
Analysed with:

- # of farms in each municipality practicing direct sales
  - On-farm
  - Off-farm
- ratios of the number of farms practicing direct sales to the total number of farms by municipality in Piedmont
  - On-farm
  - Off-farm

Off-farm sales
Total number



Off-farm sales: Total number



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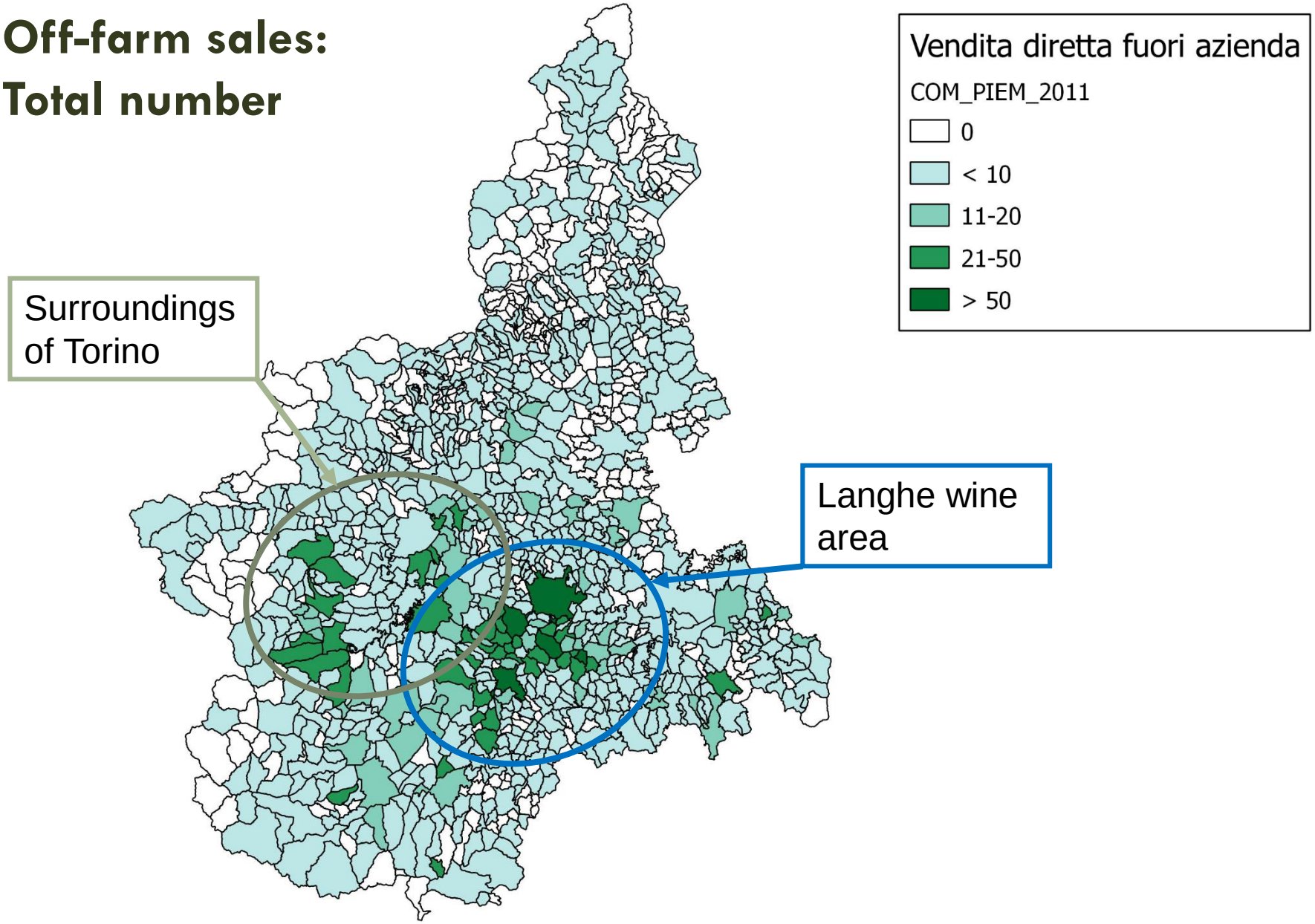
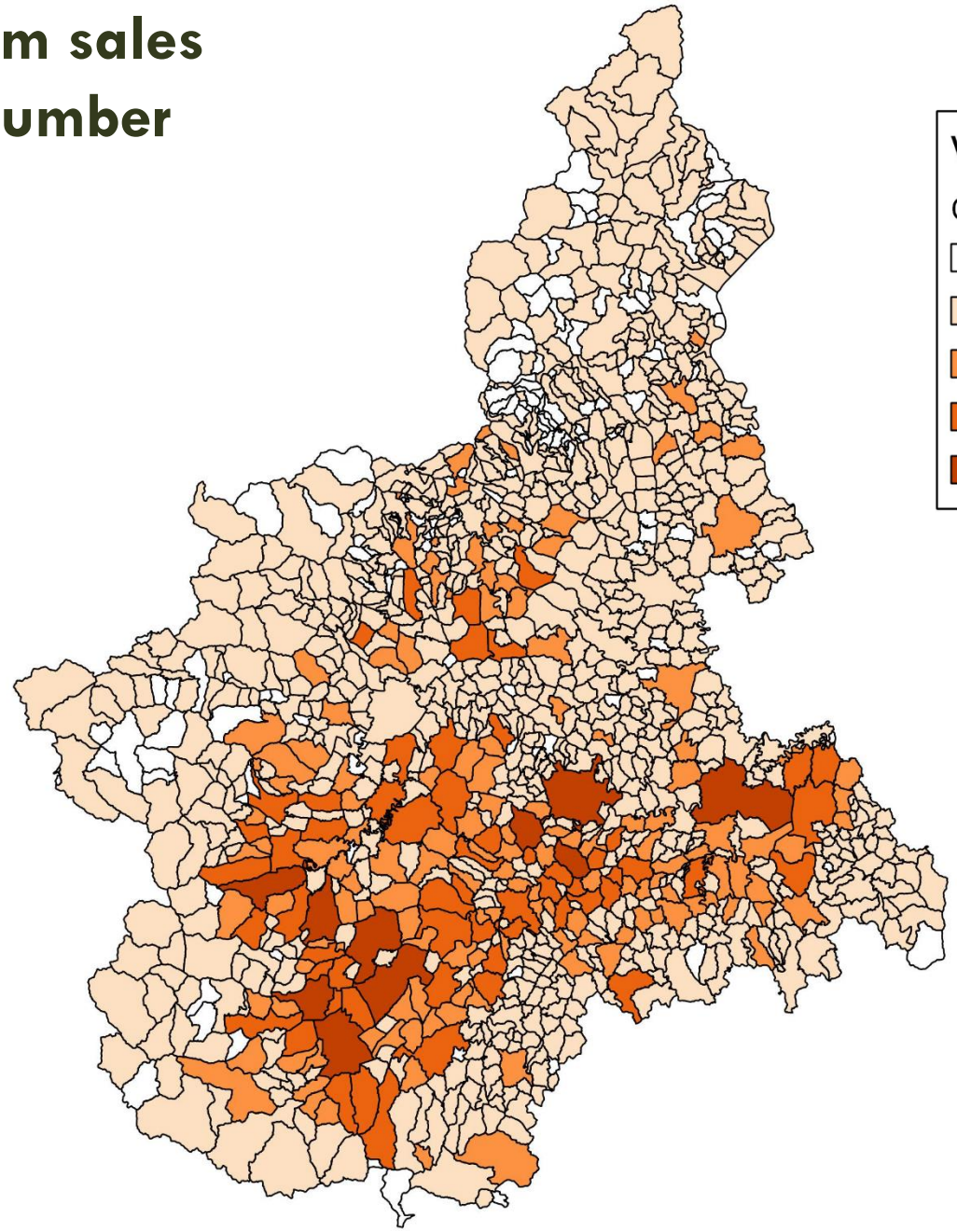
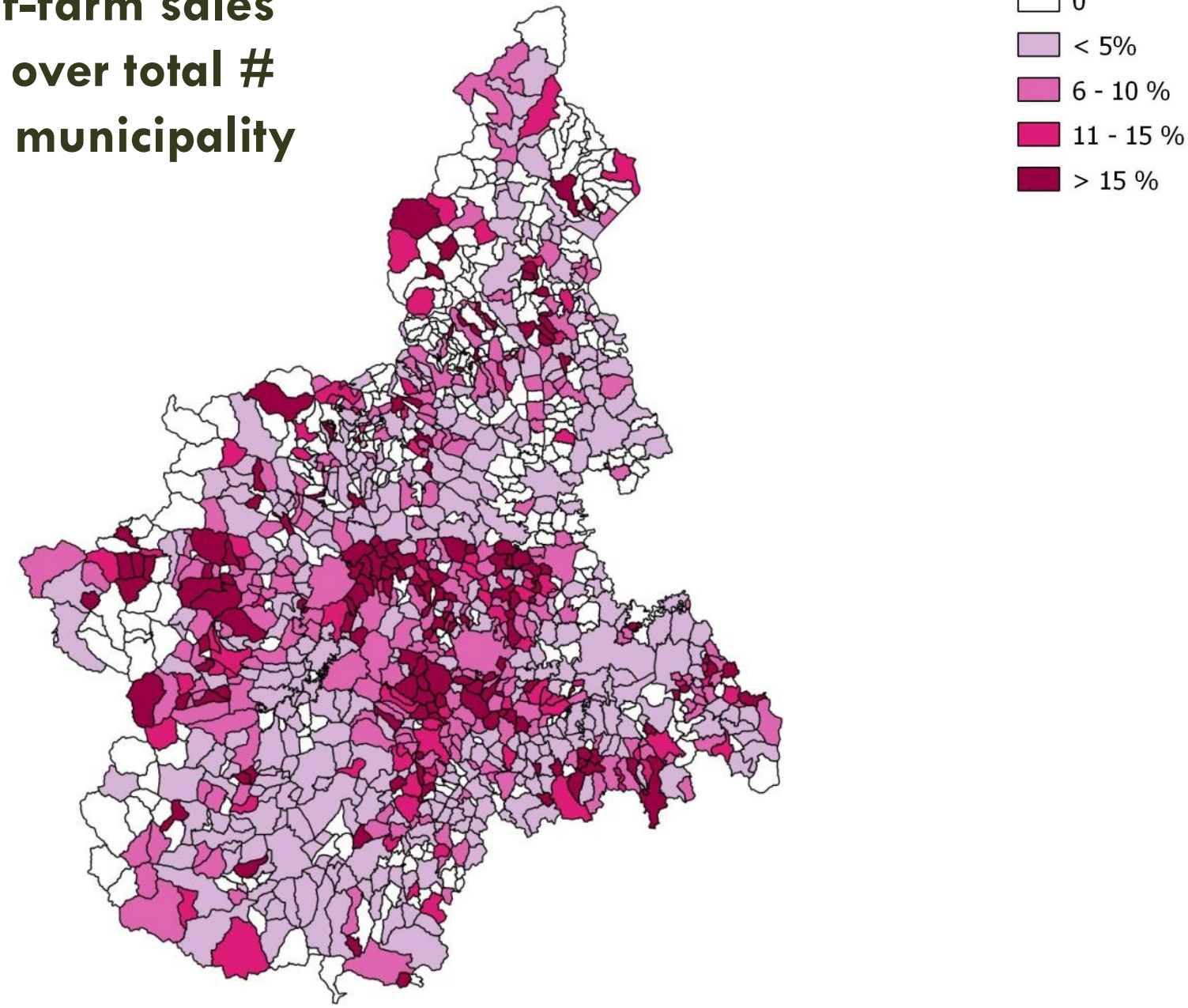


On-farm sales
Total number

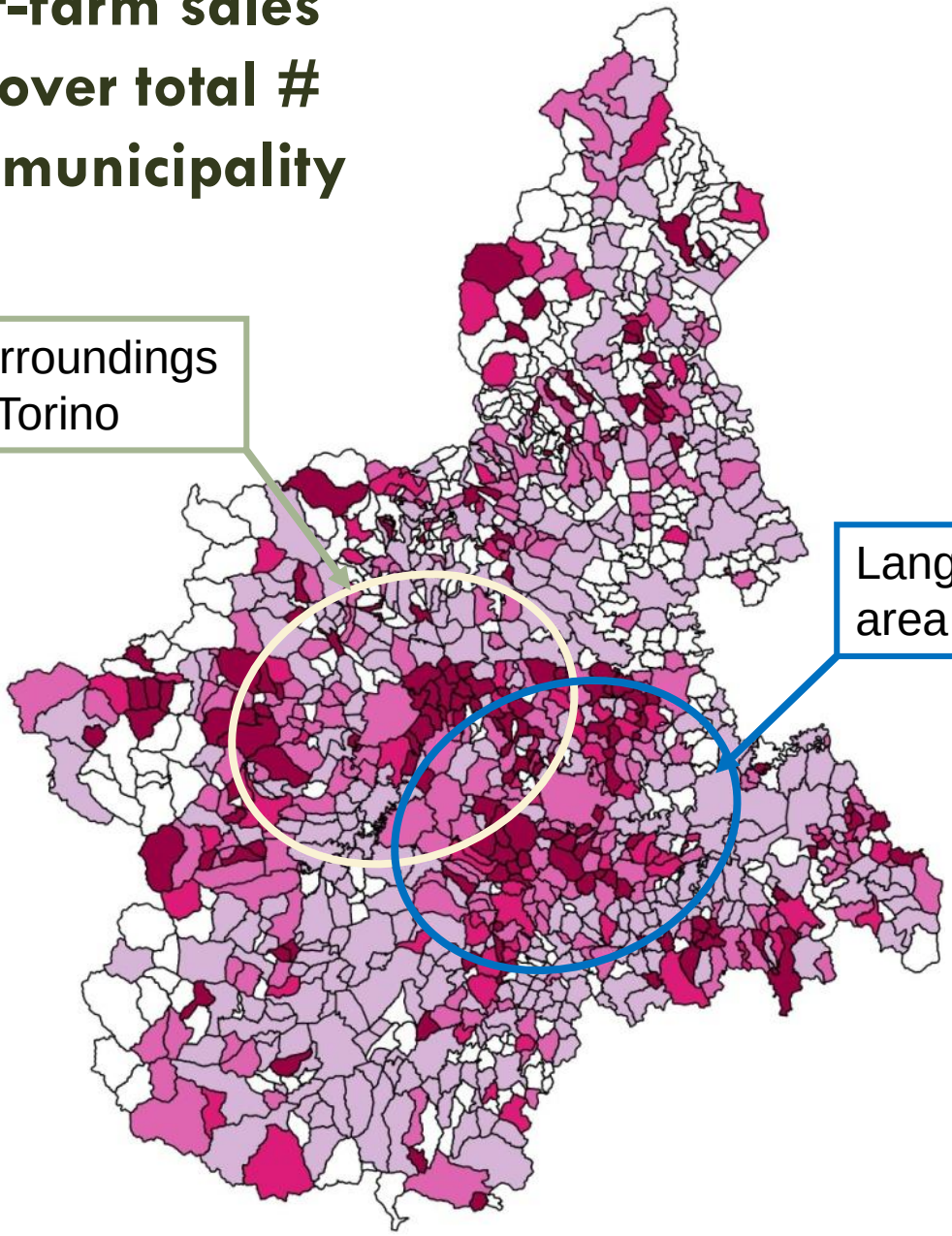


No very clear pattern

Off-farm sales
% over total
by municipality



Off-farm sales % over total # by municipality



On-farm sales
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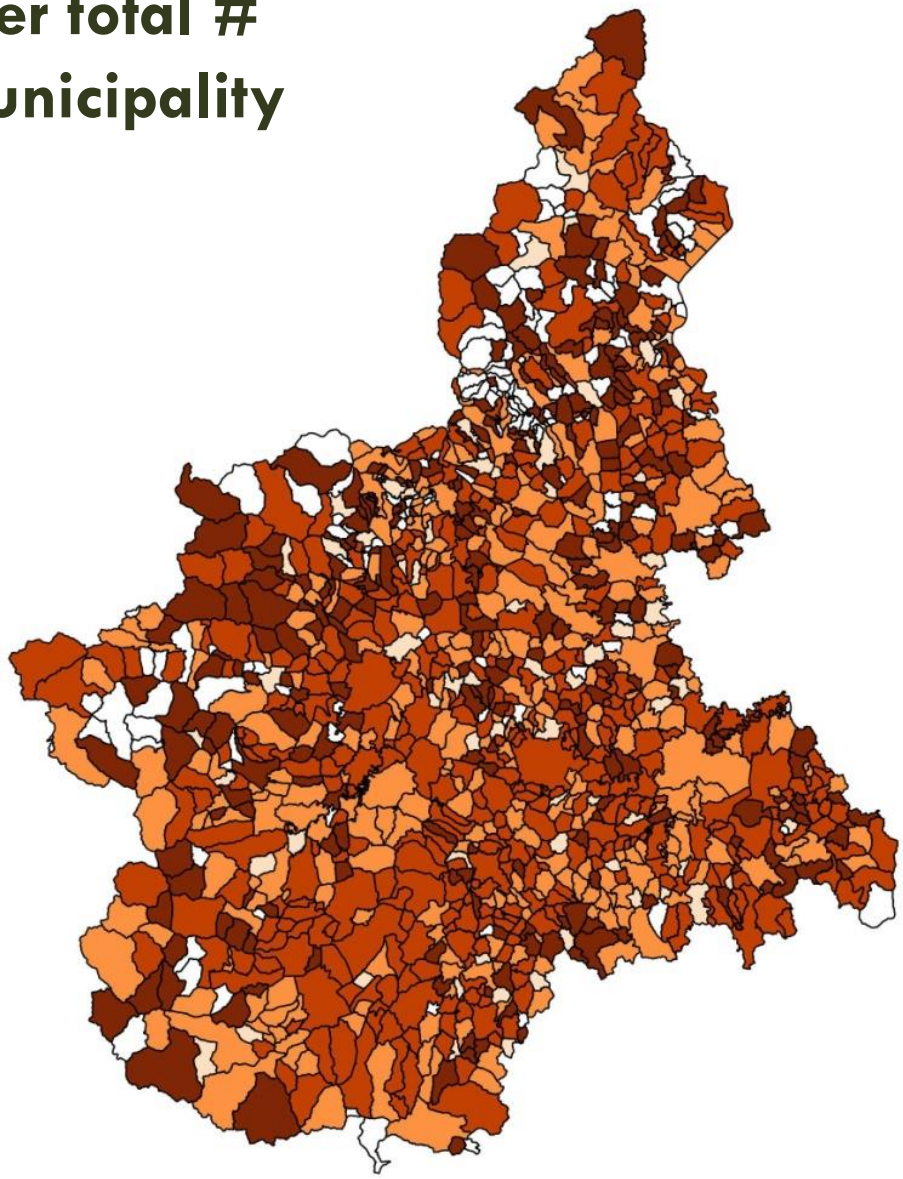

Diffused over the whole Region

Relevant in mountain areas

Results

In short:

- Territorial distribution gives some weak hint, but no clear-cut pattern
- A second possible analysis concerns the type of product that farmers produce

Results

Preliminary analysis by TYPE OF FARMING

- On-farm direct sales are higher for unspecialised farms and vineyards
- Off-farm direct sales are higher for horticulture and mixed farming and vineyards again
- Fieldcrops and cattle have the lowest percentages
- Technical (need for processing) and supply reasons

Results

Type of farming	Direct market (%)	
	on-farm	*off-farm*
Fieldcrops (specialist cereals - rice inclusive - and general field cropping)	5.0	3.5
Specialist horticulture	13.2	16.1
Specialist vineyards	24.3	13.6
Other permanent crops (specialist fruit, olives and various permanent crops combined)	15.3	8.6
Specialist dairying	13.5	5.6
Specialist cattle (rearing and fattening and dairying, rearing and fattening combined)	7.5	2.7
Specialist sheep, goats and other grazing livestock	14.1	4.7
Specialist granivores (pigs, poultry and various combined)	8.3	4.4
Other types (mixed cropping, mixed livestock, field crops and grazing livestock combined, various crops and livestock combined)	24.4	14.7
Total	**14.0**	**8.1**

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Results

Statistical analysis

- *probit* models estimated separately for on-farm and off-farm direct sales
- dependent variable: a dummy variable equal to1 for the farms with a positive share of direct sales for one or more products (0 otherwise)
- Explanatory variables concerning farmers' human capital, farm location and size, the type of farming
- Estimation over all family farms in Piedmont (58,304 farms)

Results

Results of the *probit* models of the determinants of direct sales

53.304 observations	On-farm			Off-farm		
	Coeff.	Std.Err.	Marginal effect	Coeff.	Std.Err.	Marginal effect
Constant	-1.121***	0.055		-1.293***	0.063	
Operator's age (years)	-0.004***	0.001	-0.0011	-0.007***	0.001	-0.0010
Operator's gender (1=M)	0.049***	0.016	0.0079	0.041**	0.018	0.0045
Operator's schooling (years)	0.018***	0.002	0.0017	0.009***	0.003	0.0003
Op.'s agricultural school (0,1)	0.207***	0.031	0.0487	0.081**	0.034	0.0138
Op.'s professional training (0,1)	0.224***	0.025	0.0512	0.214***	0.028	0.0316
Hills (0,1)	0.445***	0.021	0.0705	0.433***	0.024	0.0444
Mountains (0,1)	0.631***	0.028	0.1221	0.301***	0.034	0.0331
Standard Output (0,000 €)	0.001*	0.000	0.0002	0.000***	0.000	0.0002
Agro-tourism (0,1)	0.883***	0.042	0.2519	0.301***	0.049	0.0488
Recreational activities (0,1)	0.453***	0.110	0.1067	0.226*	0.127	0.0322
Organic farming (0,1)	0.248***	0.033	0.0690	0.344***	0.038	0.0595
PDG-PGI (0,1)	-0.154***	0.037	-0.0168	-0.283***	0.047	-0.0227
Fieldcrops (0,1)	-0.786***	0.024	-0.1099	-0.644***	0.027	-0.0582
Horticulture (0,1)	-0.441***	0.044	-0.0515	-0.013	0.043	0.0041
Vineyards (0,1)	-0.052***	0.022	-0.0054	-0.098***	0.025	-0.0082
Other permanent crops (0,1)	-0.338***	0.024	-0.0470	-0.298***	0.027	-0.0266
Dairying (0,1)	-0.357***	0.040	-0.0491	-0.435***	0.049	-0.0345
Beef (0,1)	-0.714***	0.032	-0.0817	-0.846***	0.041	-0.0542
Sheep and goats (0,1)	-0.558***	0.040	-0.0841	-0.637***	0.052	-0.0516
Granivores (0,1)	-0.576***	0.071	-0.0696	-0.624***	0.086	-0.0429
# commercial poles within 1/2 hr. driving distance	0.008*	0.004	0.0018	0.050***	0.004	0.0058
Log-likelihood	-20957.2			-14962.02		
Chi-squared (d.f.)	5403.479 (21)			2853.966 (21)		

Results

- **Main determinants of the choice to sell <u>on-farm</u>:**
  - having attended an agricultural school/university or a professional training course in the last two years → increases the probability by 5%
  - mountain farms → +12.2%
  - hill farms → +7%
  - diversification activities undertaken by the farm: agro-tourism → +25%; recreational activities → + 11%
  - organic farming → +7%

Results

- **Variables with <u>weak or negative</u> effects on the choice to sell <u>on-farm</u>:**
  - the economic size: a rise in Standard Output *increases* the probability, but only by 0.02% for a 10,000 euro increase
  - specialised types of farms (TFs): taking the mixed TFs as reference, the difference ranges between -11% for cereals to -0.5% for viticulture. Even for vegetables and flowers the probability is -5%
  - the number of "pole" municipalities that can be reached in a half hour drive → +0.2%
  - The effect of gender is negligible (males 0.1% more likely)

Results

- **Main determinants of the choice to sell off-farm:**
  - personal characteristics bear the same signs as for on-farm direct sales, often with weaker effects
  - the same apply to mountain and hill farms, though in a lower measure relative to on-farm direct sales (+3%, +4%)
  - agro-tourism and recreational activities were not expected to influence off-farm sales, but they are nevertheless significant and positive (+5%, +3%)
  - organic farming → +6%

Results

- **Variables with weak or negative effects on the choice to sell off-farm:**
  - specialised TFs have a negative and significant effect relative to mixed TF
  - nevertheless, vegetables and flowers TF is not significantly different from mixed TF → +0.4%
  - the number of "pole" municipalities that can be reached in a half hour drive → +0.6% (transportation costs, though relevant, are not crucial in this field)

Ongoing developments

- So far, the assumption was that TFs shift the likelihood, but do not affect the way the other variables impact on the likelihood
- We are testing the assumption that the effect of the variables is different according to the TF
- Actually, LR tests strongly reject the H_0 that the parameters estimated on farms belonging to a specific TF are equal to the parameters estimated on the overall sample

Ongoing developments

- In other words: the way in which e.g. education influence the probability of direct sales is different (in some cases, signs are opposite) for farmers in different TFs
- E.g.:
- Organic farming increases the probability of off-farm direct sales by 11% for mixed TF, by 16% in viticulture, and by 21% in horticulture
- Gender has no significant effect for mixed farming, but males are more likely to make off-farm direct sales in viticulture, but less likely in horticulture

Ongoing developments

- We are also trying to find better variables for location
- For off-farm sales, distance to markets is arguably relevant, regardless of the dimension of urban population
- For on-farm sales, the relevant point is the potential number of consumers going to the farm, and hence:
  - Closeness to big urban centres
  - Touristic areas

Conclusions

- Need to distinguish between on-farm and off-farm direct sales
- Some determinants seem in common: personal characteristics, complementarity with agro-tourism…
- But Location is important, but interaction with type of direct sales and types of farming still unclear
- Probably the effect of location is different between the two types of direct sales
- Research is ongoing…

Thank you for your attention