

EPILOBEE : étude du rôle des apiculteurs dans le maintien des populations d'abeilles européennes

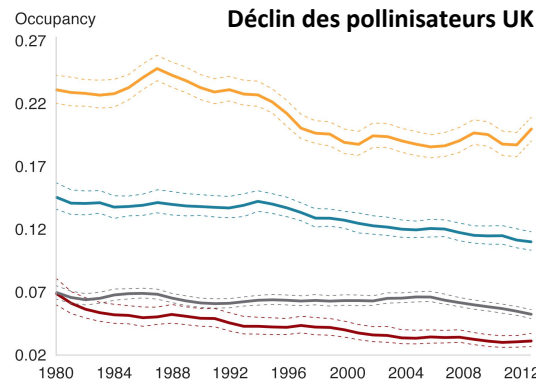
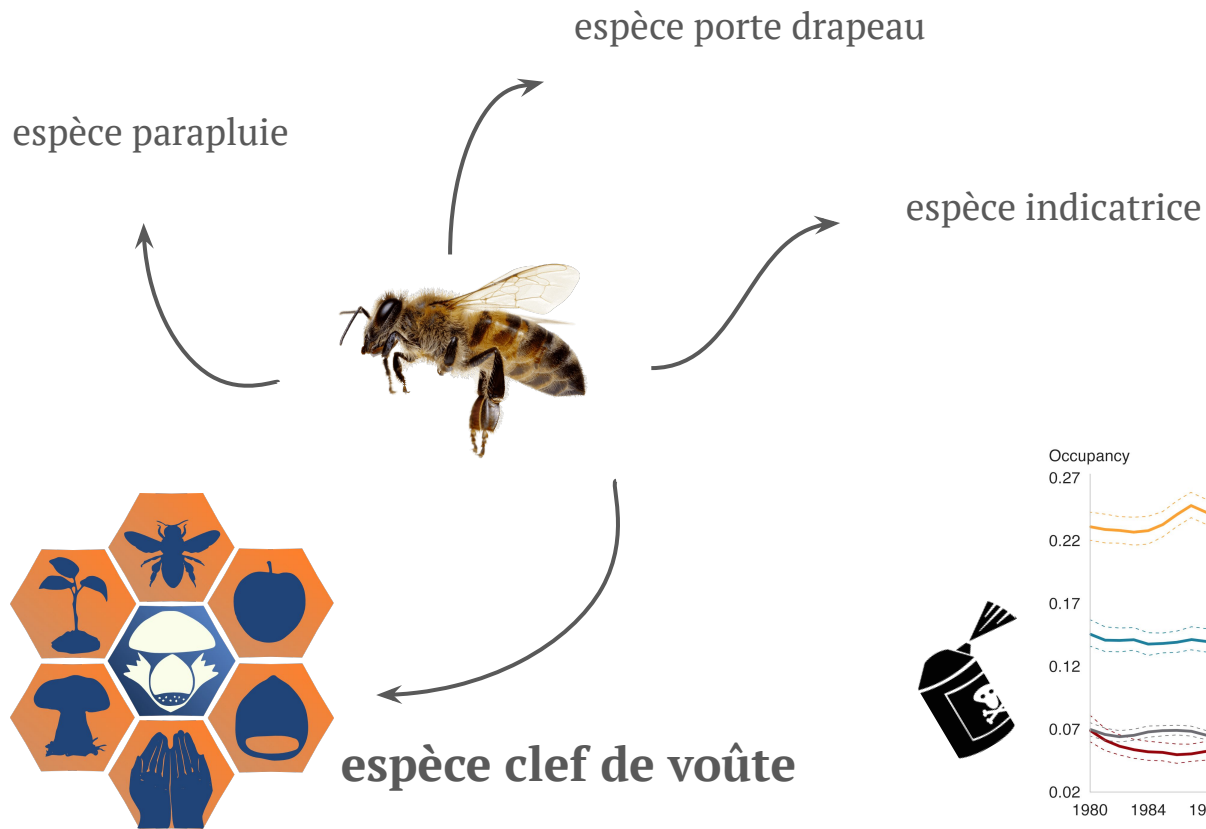
(2012-2014)



*Morgane Besnier - Ambre Casanova - Marjolaine Claret -
David Bigan - Roman Fuchs*



EPILOBEE : programme de surveillance des mortalités et des maladies des abeilles en Europe

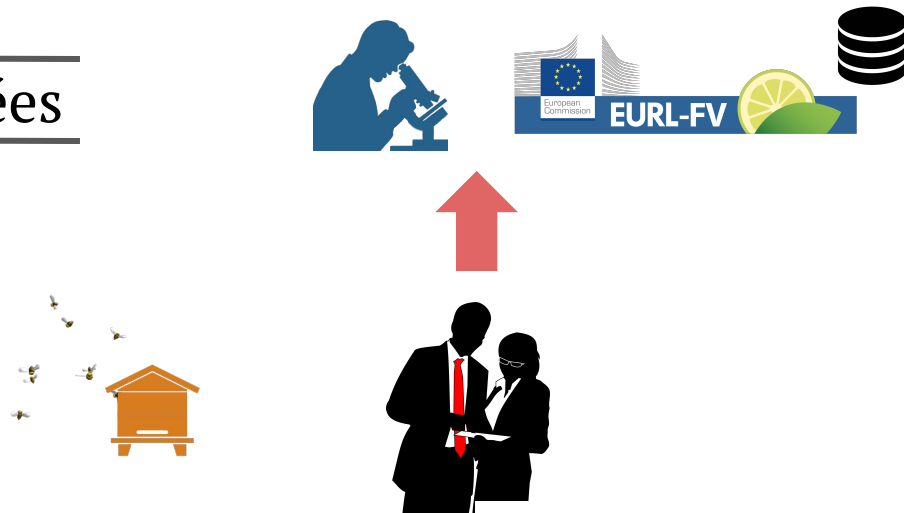


Occupancy is an estimate of the proportion of 1km grid cells where the species is present

Source: Nature Communications

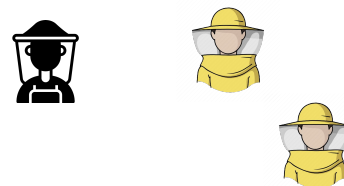


collecte des données



Sélection des apiculteurs

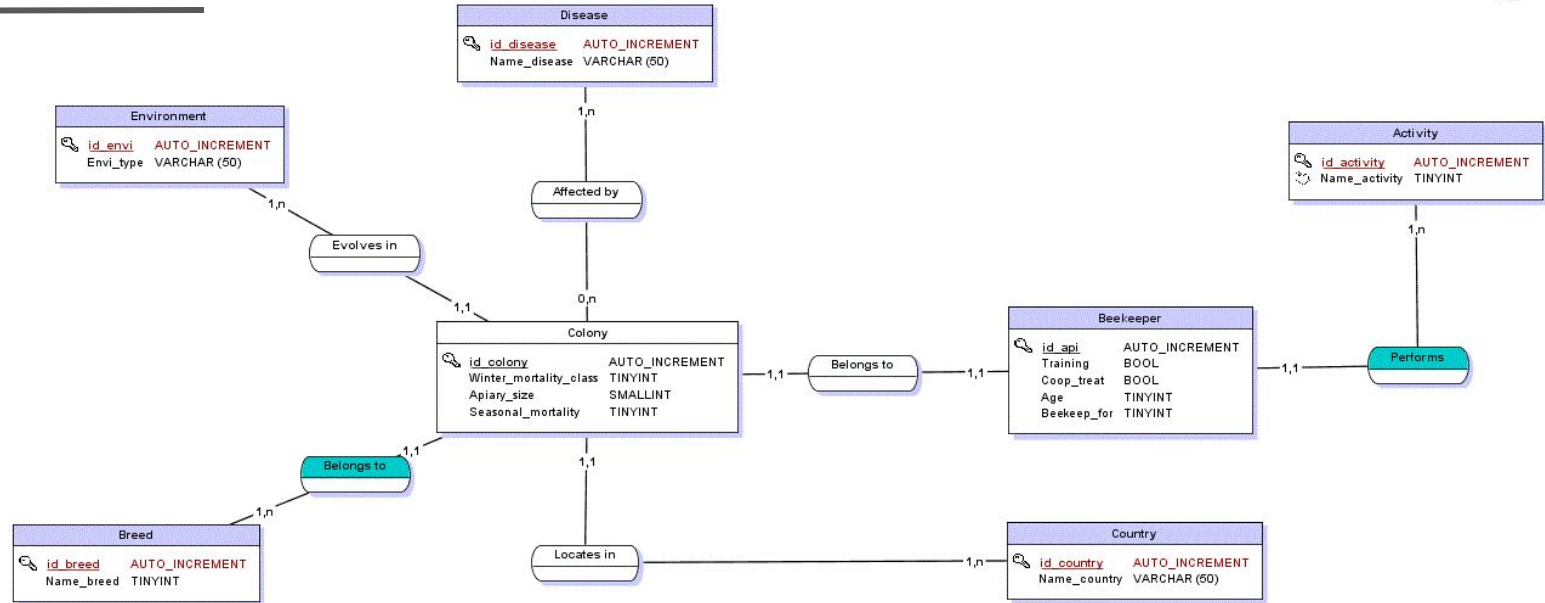
Renouvellement des 2/3 des apiculteurs



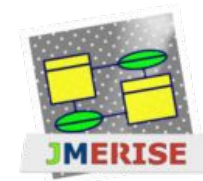
Evolution du modèle conceptuel



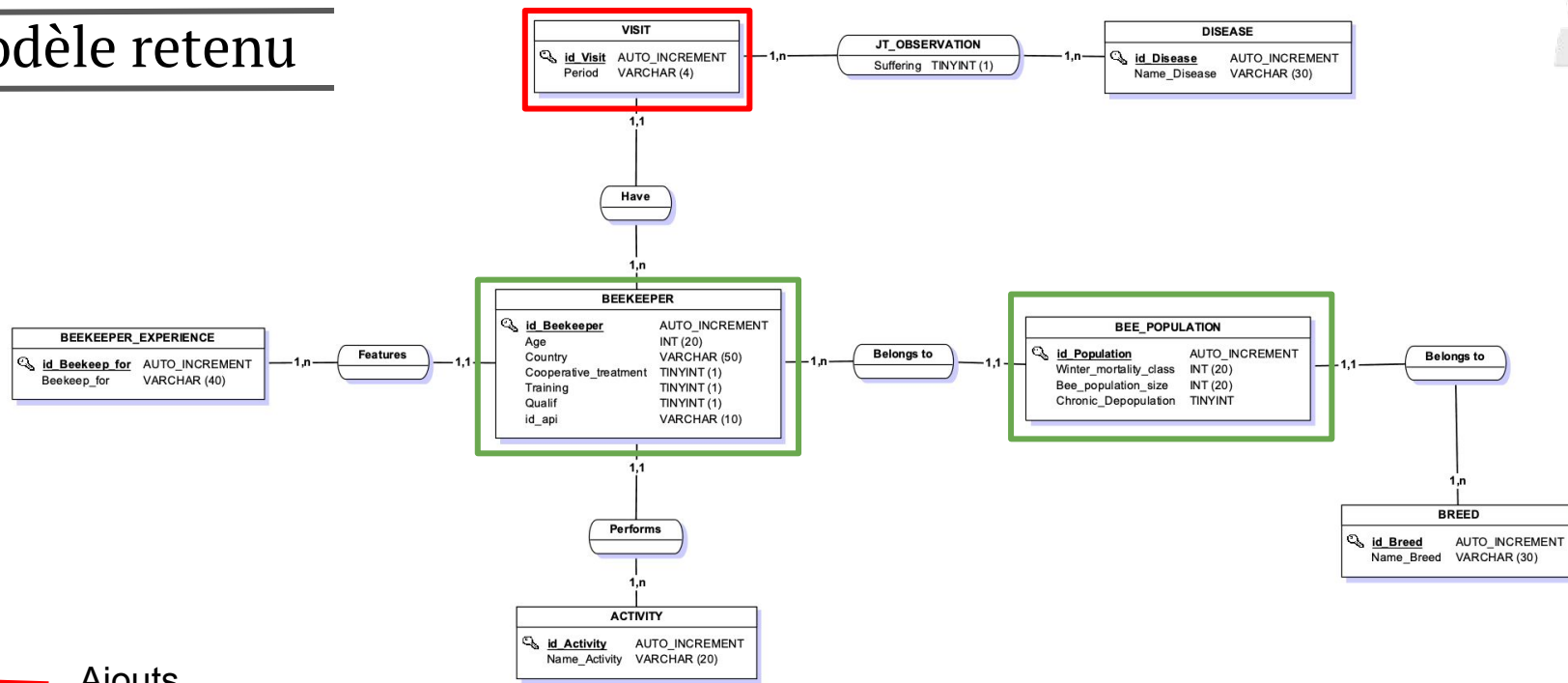
modèle déposé



Evolution du modèle conceptuel



modèle retenu



— Ajouts
— Modifications

Volume des données



Statistical analysis on the EPILOBEE dataset:
explanatory variables related to honeybee colony
mortality in EU during a 2 year survey

French Agency for Food, Environmental and Occupational Health &
Safety (ANSES)

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BEEKEEPER APIARY	...	PRODUCTION	MANAGEMENT	COLONY	ENVIRONNEMENT
ID API	Org_member	Production	Management	Chronic_depoc	Environnement
Age	Migration		Queen_produced	Breed	
Country	Program		Queen_bought	ClinSign_Brood	
Activity	Apiary_size		Swarm_bought	ClinSign_Honeybees	
Beekeep_for	Beekeep_for		Swarm_produced	H_Rate_ColMortality	
Qualif	Apiarist book			H_Rate_HoneyMortality	
Training	Bee_population_size			QueenProblems	
Continue				Seasonal_mortality	
Coop_treat				Winter_Class_mortality	
				VarroaMites/Varroosis/..	
				.	

4 759

Fichier csv

Volume des données

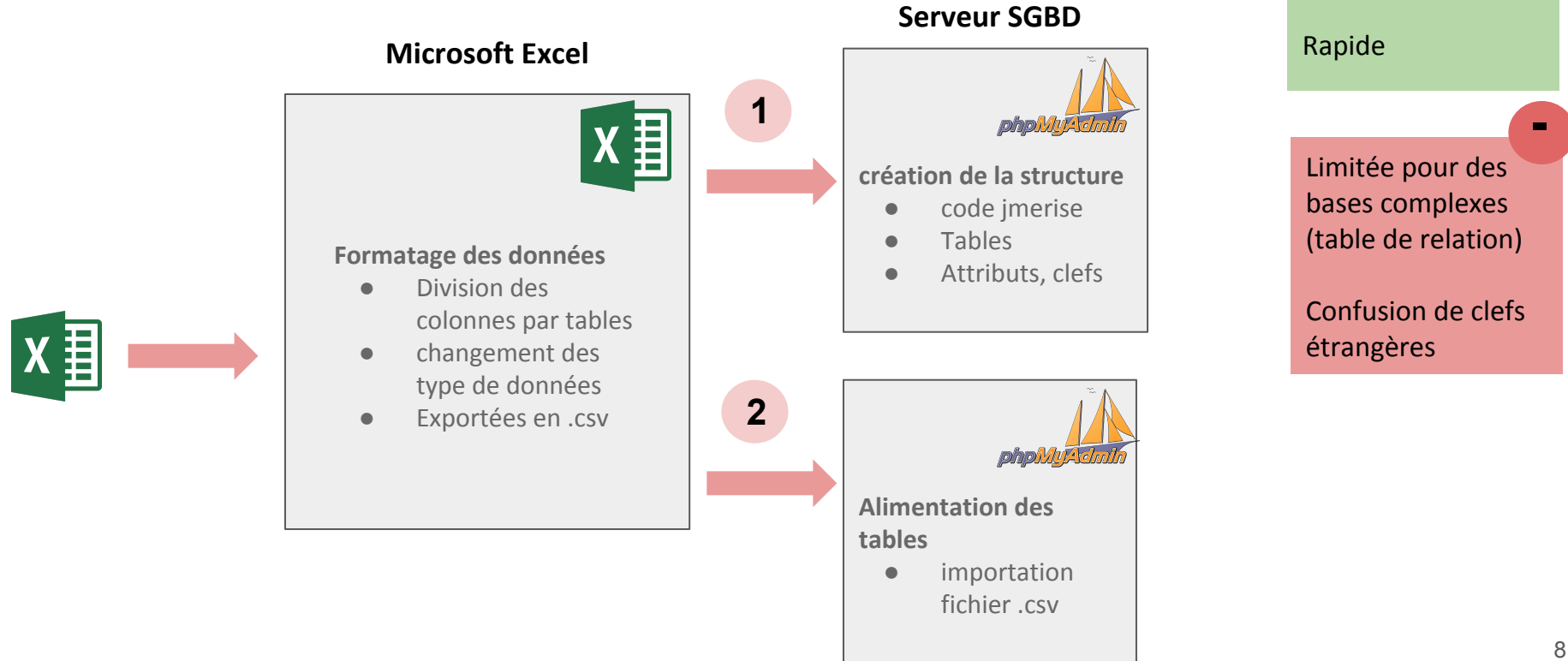
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BEEKEEPER APIARY	...			COLONY	
ID API				Chronic_depop	
Age				Breed	
Country					
Activity					
Beekeep_for	Beekeep_for				
Qualif					
Training	Bee_population_size				
Coop_treat				Winter_Class_mortality	
				VarroaMites/Varroosis/..	
				.	

1 500

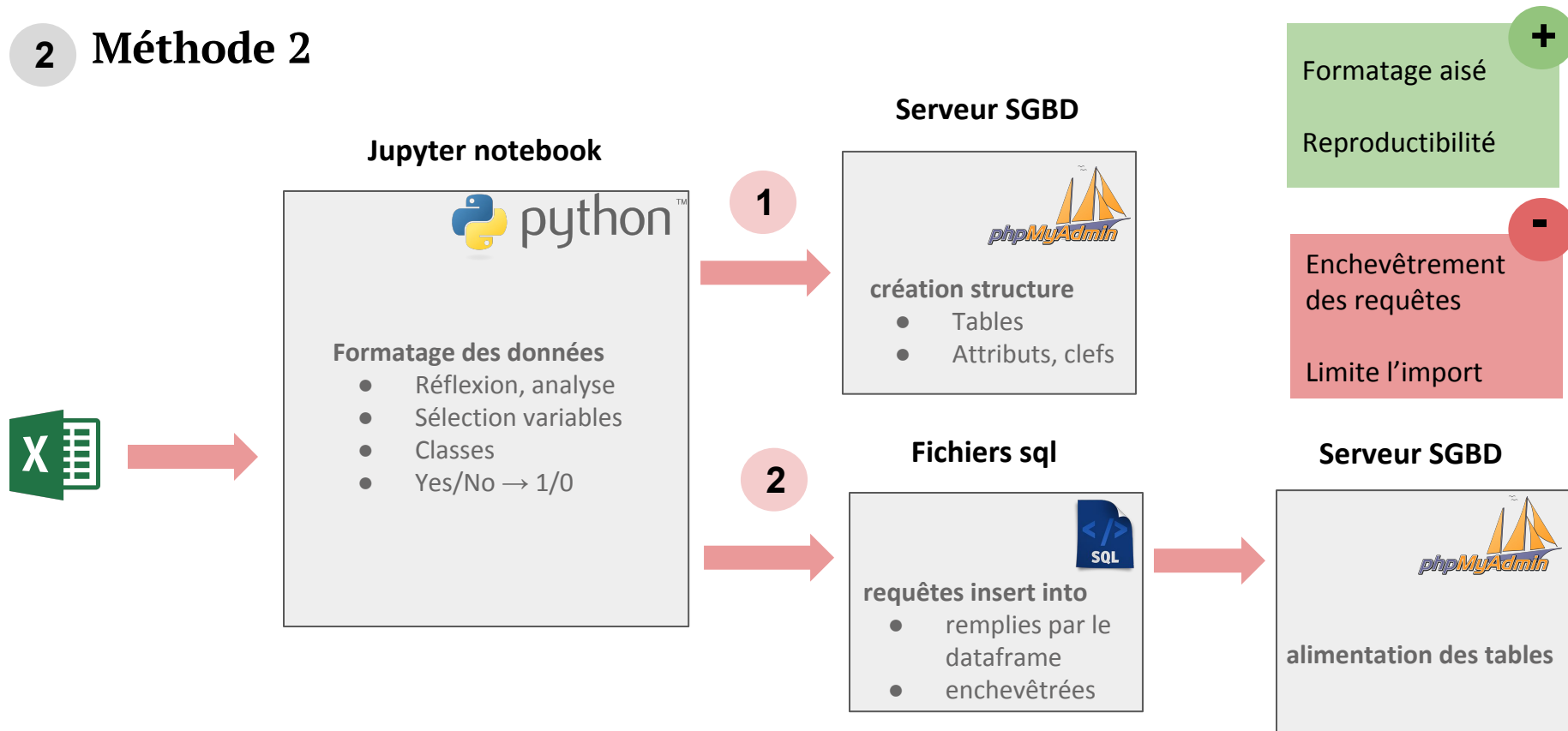
Création et alimentation de la base de données

1 Méthode 1



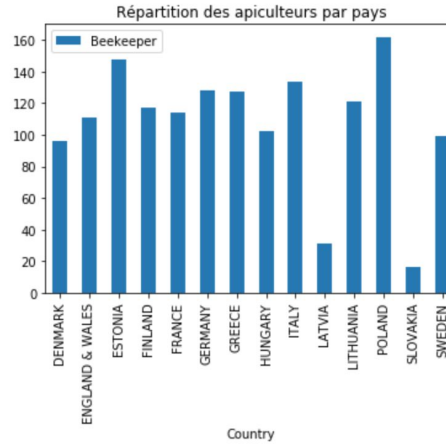
Création et alimentation de la base de données

2 Méthode 2



Requêtes (résultats et analyse -1-)

```
SELECT Country,
COUNT(id_Beekeeper) AS `nb_Beekeeper`
FROM BEEKEEPER
GROUP BY Country
```

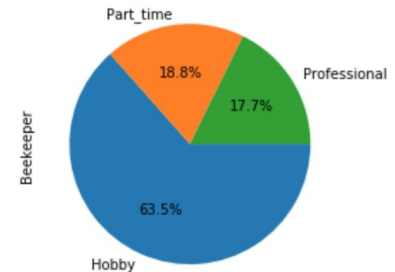


Country	nb_Beekeeper
DENMARK	96
ENGLAND & WALES	111
ESTONIA	148
FINLAND	117
FRANCE	114
GERMANY	128
GREECE	127
HUNGARY	102
ITALY	134
LATVIA	31
LITHUANIA	121
POLAND	162
SLOVAKIA	16
SWEDEN	99

```
SELECT Name_Activity, Beekeep_for,
COUNT(`BEEKEEPER`.`id_api`) AS nb_Beekeeper
FROM BEEKEEPER
JOIN ACTIVITY ON ACTIVITY.id_Activity = BEEKEEPER.FK_Activity
JOIN BEEKEEPER_EXPERIENCE ON BEEKEEPER_EXPERIENCE.id_Beekeep_for =
BEEKEEPER.FK_Activity
GROUP BY Name_Activity, Beekeep_for
```

Name_Activity	nb_Beekeeper
Hobby	956
Part_time	283
Professional	267

Répartition des apiculteurs selon l'activité

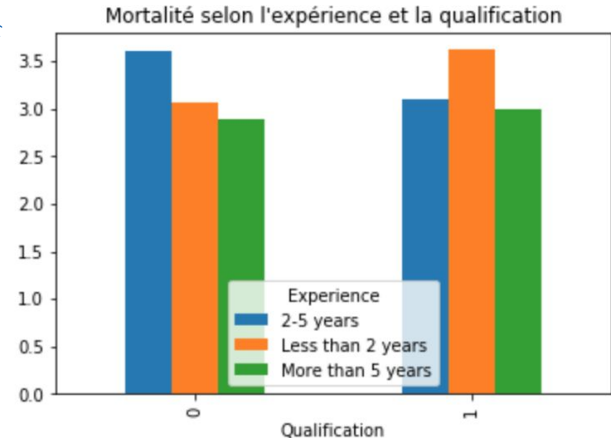
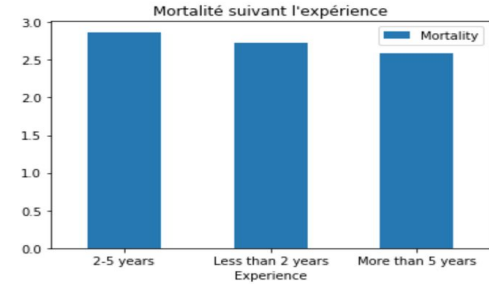


Requêtes (résultats et analyse -2-)

```
SELECT Beekeep_for, AVG(Winter_mortality_class) AS Mortalite_moyenne FROM
BEEKEEPER
JOIN BEEKEEPER_EXPERIENCE ON BEEKEEPER_EXPERIENCE.id_Beekeep_for =
BEEKEEPER.FK_Experience
JOIN BEE_POPULATION ON BEE_POPULATION.FK_Beekeeper = BEEKEEPER.id_Beekeeper
GROUP BY Beekeep_for
```

```
SELECT Beekeep_for, Qualification, AVG(winter_mortality_class) AS
Mortalite_moyenne FROM BEEKEEPER
JOIN BEEKEEPER_EXPERIENCE ON
BEEKEEPER_EXPERIENCE.id_Beekeep_for=BEEKEEPER.FK_Experience
JOIN BEE_POPULATION ON BEE_POPULATION.FK_Beekeeper=BEEKEEPER.id_Beekeeper
GROUP BY Beekeep_for, Qualification
```

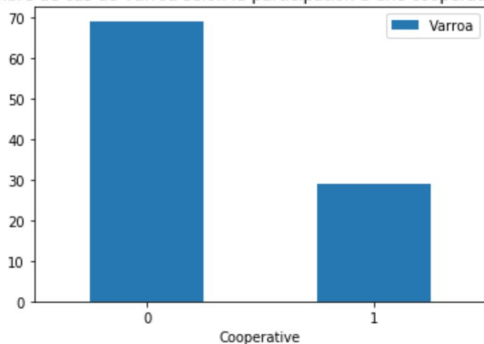
Beekeep_for	Qualification	Mortalite_moyenne
2-5 years	0	2.6875
2-5 years	1	3.2679
Less than 2 years	0	2.7848
Less than 2 years	1	2.2857
More than 5 years	0	2.7305
More than 5 years	1	2.5231



Requêtes (résultats et analyse -3-)

```
SELECT Cooperative_treatment, Country, Name_Disease, AVG(Winter_mortality_class) AS `Mortalite` FROM
BEEKEEPER
JOIN BEE_POPULATION ON BEE_POPULATION.FK_Beekeeper = BEEKEEPER.id_Beekeeper
JOIN VISIT ON VISIT.FK_Beekeeper = BEEKEEPER.id_Beekeeper
JOIN JT_OBSERVATION ON JT_OBSERVATION.FK_Visit = VISIT.id_Visit
JOIN DISEASE ON DISEASE.id_Disease = JT_OBSERVATION.FK_Disease
WHERE Country = "ESTONIA" AND id_disease = 6 AND Suffering = 1
GROUP BY Cooperative_treatment
```

Estonie : nombre de cas de Varroa selon la participation à une cooperative de traitement



Cooperative_treatment	Country	Name_Disease	Mortalite
0	ESTONIA	Varroa mites	3.4928
1	ESTONIA	Varroa mites	2.8621

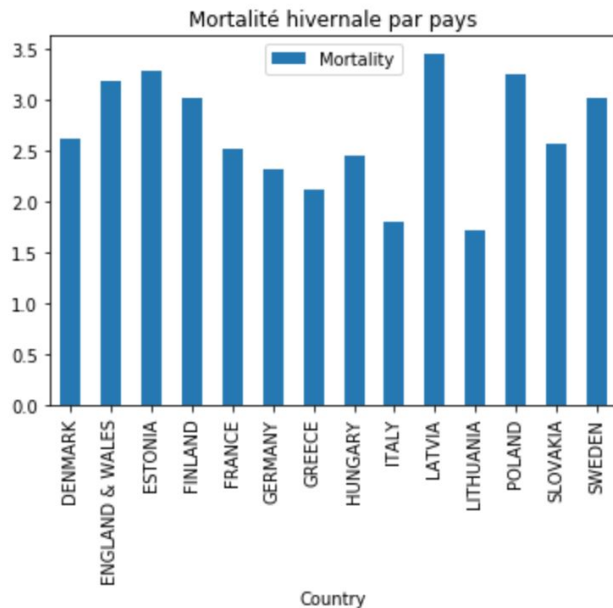
Cooperative_treatment	Country	Name_Disease	Mortalite
1	FINLAND	Varroa mites	1.0000

Cooperative_treatment	Country	Name_Disease	Mortalite
1	SLOVAKIA	Varroa mites	1.0000



Requêtes (résultats et analyse -4-)

```
SELECT Country, AVG(Winter_mortality_class) AS Mortalité_Hivernale FROM
BEE_POPULATION
JOIN BEEKEEPER ON BEEKEEPER.id_Beekeeper =BEE_POPULATION.FK_Beekeeper
GROUP BY Country
```



Country	Mortalité_Hivernale
DENMARK	2.6250
ENGLAND & WALES	3.1892
ESTONIA	3.2973
FINLAND	3.0171
FRANCE	2.5263
GERMANY	2.3125
GREECE	2.1190
HUNGARY	2.4510
ITALY	1.8060
LATVIA	3.4615
LITHUANIA	1.7190
POLAND	3.2593
SLOVAKIA	2.5625
SWEDEN	3.0202



Conclusion



Merci pour votre attention

