```sql
USE INE;
CREATE TABLE gado_e_dados_socio_economicos_2 (
    NutsID VARCHAR(50),
    DICOFRE VARCHAR(50),
    region_name VARCHAR(255),
    year INT,
    edu_none INT,
    edu_basic INT,
    edu_secondary INT,
    edu_superior INT,
    labour_family INT,
    labour_holder INT,
    labour_spouse INT,
    labour_other_family INT,
    labour_non_family INT,
    labour_regular INT,
    labour_non_regular INT,
    labour_not_hired INT,
    production_eur DECIMAL(15, 2),
    production_area DECIMAL(15, 2),
    livestock_cattle INT,
    livestock_pigs INT,
    livestock_sheep INT,
    livestock_goats INT,
    livestock_equidae INT,
    livestock_poultry INT,
    livestock_rabbits INT,
    livestock_hives INT
);
INSERT INTO gado_e_dados_socio_economicos (NutsID, DICOFRE, region_name, year,
edu_none, edu_basic, edu_secondary, edu_superior, labour_family, labour_holder,
labour_spouse, labour_other_family, labour_non_family, labour_regular, labour_non_regular,
labour_not_hired, production_eur, production_area, livestock_cattle, livestock_pigs,
livestock_sheep, livestock_goats, livestock_equidae, livestock_poultry, livestock_rabbits,
livestock_hives)
SELECT NutsID, DICOFRE, region_name, year, edu_none, edu_basic, edu_secondary,
edu_superior, labour_family, labour_holder, labour_spouse, labour_other_family,
labour_non_family, labour_regular, labour_non_regular, labour_not_hired, production_eur,
production_area, livestock_cattle, livestock_pigs, livestock_sheep, livestock_goats,
livestock_equidae, livestock_poultry, livestock_rabbits, livestock_hives
FROM tabela_recenseamentoagricolaine;




USE Ine;
DELETE FROM gado_e_dados_socio_economicos
```

```sql
WHERE NutsID IS NULL
  OR DICOFRE IS NULL
  OR region_name IS NULL
  OR year IS NULL
  OR edu_none IS NULL
  OR edu_basic IS NULL
  OR edu_secondary IS NULL
  OR edu_superior IS NULL
  OR labour_family IS NULL
  OR labour_holder IS NULL
  OR labour_spouse IS NULL
  OR labour_other_family IS NULL
  OR labour_non_family IS NULL
  OR labour_regular IS NULL
  OR labour_non_regular IS NULL
  OR labour_not_hired IS NULL
  OR production_eur IS NULL
  OR production_area IS NULL
  OR livestock_cattle IS NULL
  OR livestock_pigs IS NULL
  OR livestock_sheep IS NULL
  OR livestock_goats IS NULL
  OR livestock_equidae IS NULL
  OR livestock_poultry IS NULL
  OR livestock_rabbits IS NULL
  OR livestock_hives IS NULL;


USE Ine;
CREATE TABLE gado_e_dados_socio_economicos_aggregated_2 AS
SELECT
  year,
  SUM(edu_none) AS edu_none,
  SUM(edu_basic) AS edu_basic,
  SUM(edu_secondary) AS edu_secondary,
  SUM(edu_superior) AS edu_superior,
  SUM(labour_family) AS labour_family,
  SUM(labour_holder) AS labour_holder,
  SUM(labour_spouse) AS labour_spouse,
  SUM(labour_other_family) AS labour_other_family,
  SUM(labour_non_family) AS labour_non_family,
  SUM(labour_regular) AS labour_regular,
  SUM(labour_non_regular) AS labour_non_regular,
  SUM(labour_not_hired) AS labour_not_hired,
  SUM(production_eur) AS production_eur,
  SUM(production_area) AS production_area,
  SUM(livestock_cattle) AS livestock_cattle,
  SUM(livestock_pigs) AS livestock_pigs,
  SUM(livestock_sheep) AS livestock_sheep,
  SUM(livestock_goats) AS livestock_goats,
  SUM(livestock_equidae) AS livestock_equidae,
  SUM(livestock_poultry) AS livestock_poultry,
  SUM(livestock_rabbits) AS livestock_rabbits,
```

```sql
CREATE TEMPORARY TABLE year_comparison AS
SELECT
    year,
    edu_none,
    edu_basic,
    edu_secondary,
    edu_superior,
    labour_family,
    labour_holder,
    labour_spouse,
    labour_other_family,
    labour_non_family,
    production_eur,
    production_area,
    livestock_cattle,
    livestock_pigs,
    livestock_sheep,
    livestock_goats,
    livestock_equidae,
    livestock_poultry,
    livestock_rabbits,
    livestock_hives

SELECT
    'edu_none' AS metric,
    CASE WHEN y1999.edu_none IS NULL OR y1999.edu_none = 0 THEN NULL ELSE 100
* (y2009.edu_none - y1999.edu_none) / y1999.edu_none END AS `1999_2009`,
    CASE WHEN y2009.edu_none IS NULL OR y2009.edu_none = 0 THEN NULL ELSE 100
* (y2019.edu_none - y2009.edu_none) / y2009.edu_none END AS `2009_2019`
FROM
    (SELECT * FROM year_comparison WHERE year = 1999) AS y1999,
    (SELECT * FROM year_comparison WHERE year = 2009) AS y2009,
    (SELECT * FROM year_comparison WHERE year = 2019) AS y2019
UNION ALL
SELECT
    'edu_basic' AS metric,
    CASE WHEN y1999.edu_basic IS NULL OR y1999.edu_basic = 0 THEN NULL ELSE
100 * (y2009.edu_basic - y1999.edu_basic) / y1999.edu_basic END AS
`1999_2009`,
    CASE WHEN y2009.edu_basic IS NULL OR y2009.edu_basic = 0 THEN NULL ELSE
100 * (y2019.edu_basic - y2009.edu_basic) / y2009.edu_basic END AS
`2009_2019`
FROM
    (SELECT * FROM year_comparison WHERE year = 1999) AS y1999,
    (SELECT * FROM year_comparison WHERE year = 2009) AS y2009,
    (SELECT * FROM year_comparison WHERE year = 2019) AS y2019
UNION ALL
SELECT
    'edu_secondary' AS metric,
    CASE WHEN y1999.edu_secondary IS NULL OR y1999.edu_secondary = 0 THEN
NULL ELSE 100 * (y2009.edu_secondary - y1999.edu_secondary) /
y1999.edu_secondary END AS `1999_2009`,
```

```sql
        CASE WHEN y2009.edu_secondary IS NULL OR y2009.edu_secondary = 0 THEN
NULL ELSE 100 * (y2019.edu_secondary - y2009.edu_secondary) /
y2009.edu_secondary END AS `2009_2019`
FROM
    (SELECT * FROM year_comparison WHERE year = 1999) AS y1999,
    (SELECT * FROM year_comparison WHERE year = 2009) AS y2009,
    (SELECT * FROM year_comparison WHERE year = 2019) AS y2019
UNION ALL
SELECT
    'edu_superior' AS metric,
    CASE WHEN y1999.edu_superior IS NULL OR y1999.edu_superior = 0 THEN NULL
ELSE 100 * (y2009.edu_superior - y1999.edu_superior) / y1999.edu_superior END
AS `1999_2009`,
    CASE WHEN y2009.edu_superior IS NULL OR y2009.edu_superior = 0 THEN NULL
ELSE 100 * (y2019.edu_superior - y2009.edu_superior) / y2009.edu_superior END
AS `2009_2019`
FROM
    (SELECT * FROM year_comparison WHERE year = 1999) AS y1999,
    (SELECT * FROM year_comparison WHERE year = 2009) AS y2009,
    (SELECT * FROM year_comparison WHERE year = 2019) AS y2019
UNION ALL
SELECT
    'labour_family' AS metric,
    CASE WHEN y1999.labour_family IS NULL OR y1999.labour_family = 0 THEN
NULL ELSE 100 * (y2009.labour_family - y1999.labour_family) /
y1999.labour_family END AS `1999_2009`,
    CASE WHEN y2009.labour_family IS NULL OR y2009.labour_family = 0 THEN
NULL ELSE 100 * (y2019.labour_family - y2009.labour_family) /
y2009.labour_family END AS `2009_2019`
FROM
    (SELECT * FROM year_comparison WHERE year = 1999) AS y1999,
    (SELECT * FROM year_comparison WHERE year = 2009) AS y2009,
    (SELECT * FROM year_comparison WHERE year = 2019) AS y2019
UNION ALL
SELECT
    'labour_holder' AS metric,
    CASE WHEN y1999.labour_holder IS NULL OR y1999.labour_holder = 0 THEN
NULL ELSE 100 * (y2009.labour_holder - y1999.labour_holder) /
y1999.labour_holder END AS `1999_2009`,
    CASE WHEN y2009.labour_holder IS NULL OR y2009.labour_holder = 0 THEN
NULL ELSE 100 * (y2019.labour_holder - y2009.labour_holder) /
y2009.labour_holder END AS `2009_2019`
FROM
    (SELECT * FROM year_comparison WHERE year = 1999) AS y1999,
    (SELECT * FROM year_comparison WHERE year = 2009) AS y2009,
    (SELECT * FROM year_comparison WHERE year = 2019) AS y2019
UNION ALL
SELECT
    'labour_spouse' AS metric,
    CASE WHEN y1999.labour_spouse IS NULL OR y1999.labour_spouse = 0 THEN
NULL ELSE 100 * (y2009.labour_spouse - y1999.labour_spouse) /
y1999.labour_spouse END AS `1999_2009`,
```

```sql
    CASE WHEN y2009.labour_spouse IS NULL OR y2009.labour_spouse = 0 THEN
NULL ELSE 100 * (y2019.labour_spouse - y2009.labour_spouse) /
y2009.labour_spouse END AS `2009_2019`
FROM
    (SELECT * FROM year_comparison WHERE year = 1999) AS y1999,
    (SELECT * FROM year_comparison WHERE year = 2009) AS y2009,
    (SELECT * FROM year_comparison WHERE year = 2019) AS y2019
UNION ALL
SELECT
    'labour_other_family' AS metric,
    CASE WHEN y1999.labour_other_family IS NULL OR y1999.labour_other_family
= 0 THEN NULL ELSE 100 * (y2009.labour_other_family -
y1999.labour_other_family) / y1999.labour_other_family END AS `1999_2009`,
    CASE WHEN y2009.labour_other_family IS NULL OR y2009.labour_other_family
= 0 THEN NULL ELSE 100 * (y2019.labour_other_family -
y2009.labour_other_family) / y2009.labour_other_family END AS `2009_2019`
FROM
    (SELECT * FROM year_comparison WHERE year = 1999) AS y1999,
    (SELECT * FROM year_comparison WHERE year = 2009) AS y2009,
    (SELECT * FROM year_comparison WHERE year = 2019) AS y2019
UNION ALL
SELECT
    'labour_non_family' AS metric,
    CASE WHEN y1999.labour_non_family IS NULL OR y1999.labour_non_family = 0
THEN NULL ELSE 100 * (y2009.labour_non_family - y1999.labour_non_family) /
y1999.labour_non_family END AS `1999_2009`,
    CASE WHEN y2009.labour_non_family IS NULL OR y2009.labour_non_family = 0
THEN NULL ELSE 100 * (y2019.labour_non_family - y2009.labour_non_family) /
y2009.labour_non_family END AS `2009_2019`
FROM
    (SELECT * FROM year_comparison WHERE year = 1999) AS y1999,
    (SELECT * FROM year_comparison WHERE year = 2009) AS y2009,
    (SELECT * FROM year_comparison WHERE year = 2019) AS y2019
UNION ALL
SELECT
    'production_eur' AS metric,
    CASE
        WHEN y1999.production_eur IS NULL OR y1999.production_eur = 0 THEN
NULL
        ELSE 100 * (y2009.production_eur - y1999.production_eur) /
y1999.production_eur
    END AS `1999_2009`,
    CASE
        WHEN y2009.production_eur IS NULL OR y2009.production_eur = 0 THEN
NULL
        ELSE 100 * (y2019.production_eur - y2009.production_eur) /
y2009.production_eur
    END AS `2009_2019`
FROM
    (SELECT * FROM year_comparison WHERE year = 1999) AS y1999,
    (SELECT * FROM year_comparison WHERE year = 2009) AS y2009,
    (SELECT * FROM year_comparison WHERE year = 2019) AS y2019
union all
```

```sql
SELECT
    'production_area' AS metric,
    CASE
        WHEN y1999.production_area IS NULL OR y1999.production_area = 0 THEN
NULL
        ELSE 100 * (y2009.production_area - y1999.production_area) /
y1999.production_area
    END AS `1999_2009`,
    CASE
        WHEN y2009.production_area IS NULL OR y2009.production_area = 0 THEN
NULL
        ELSE 100 * (y2019.production_area - y2009.production_area) /
y2009.production_area
    END AS `2009_2019`
FROM
    (SELECT * FROM year_comparison WHERE year = 1999) AS y1999,
    (SELECT * FROM year_comparison WHERE year = 2009) AS y2009,
    (SELECT * FROM year_comparison WHERE year = 2019) AS y2019
UNION ALL
SELECT
    'livestock_cattle' AS metric,
    CASE
        WHEN y1999.livestock_cattle IS NULL OR y1999.livestock_cattle = 0
THEN NULL
        ELSE 100 * (y2009.livestock_cattle - y1999.livestock_cattle) /
y1999.livestock_cattle
    END AS `1999_2009`,
    CASE
        WHEN y2009.livestock_cattle IS NULL OR y2009.livestock_cattle = 0
THEN NULL
        ELSE 100 * (y2019.livestock_cattle - y2009.livestock_cattle) /
y2009.livestock_cattle
    END AS `2009_2019`
FROM
    (SELECT * FROM year_comparison WHERE year = 1999) AS y1999,
    (SELECT * FROM year_comparison WHERE year = 2009) AS y2009,
    (SELECT * FROM year_comparison WHERE year = 2019) AS y2019
 UNION ALL
SELECT
    'livestock_pigs' AS metric,
    CASE
        WHEN y1999.livestock_pigs IS NULL OR y1999.livestock_pigs = 0 THEN
NULL
        ELSE 100 * (y2009.livestock_pigs - y1999.livestock_pigs) /
y1999.livestock_pigs
    END AS `1999_2009`,
    CASE
        WHEN y2009.livestock_pigs IS NULL OR y2009.livestock_pigs = 0 THEN
NULL
        ELSE 100 * (y2019.livestock_pigs - y2009.livestock_pigs) /
y2009.livestock_pigs
    END AS `2009_2019`
FROM
```

```
    (SELECT * FROM year_comparison WHERE year = 1999) AS y1999,
    (SELECT * FROM year_comparison WHERE year = 2009) AS y2009,
    (SELECT * FROM year_comparison WHERE year = 2019) AS y2019
UNION ALL
SELECT
    'livestock_sheep' AS metric,
    CASE
        WHEN y1999.livestock_sheep IS NULL OR y1999.livestock_sheep = 0 THEN
NULL
        ELSE 100 * (y2009.livestock_sheep - y1999.livestock_sheep) /
y1999.livestock_sheep
    END AS `1999_2009`,
    CASE
        WHEN y2009.livestock_sheep IS NULL OR y2009.livestock_sheep = 0 THEN
NULL
        ELSE 100 * (y2019.livestock_sheep - y2009.livestock_sheep) /
y2009.livestock_sheep
    END AS `2009_2019`
FROM
    (SELECT * FROM year_comparison WHERE year = 1999) AS y1999,
    (SELECT * FROM year_comparison WHERE year = 2009) AS y2009,
    (SELECT * FROM year_comparison WHERE year = 2019) AS y2019
UNION ALL
SELECT
    'livestock_goats' AS metric,
    CASE
        WHEN y1999.livestock_goats IS NULL OR y1999.livestock_goats = 0 THEN
NULL
        ELSE 100 * (y2009.livestock_goats - y1999.livestock_goats) /
y1999.livestock_goats
    END AS `1999_2009`,
    CASE
        WHEN y2009.livestock_goats IS NULL OR y2009.livestock_goats = 0 THEN
NULL
        ELSE 100 * (y2019.livestock_goats - y2009.livestock_goats) /
y2009.livestock_goats
    END AS `2009_2019`
FROM
    (SELECT * FROM year_comparison WHERE year = 1999) AS y1999,
    (SELECT * FROM year_comparison WHERE year = 2009) AS y2009,
    (SELECT * FROM year_comparison WHERE year = 2019) AS y2019
UNION ALL
SELECT
    'livestock_equidae' AS metric,
    CASE
        WHEN y1999.livestock_equidae IS NULL OR y1999.livestock_equidae = 0
THEN NULL
        ELSE 100 * (y2009.livestock_equidae - y1999.livestock_equidae) /
y1999.livestock_equidae
    END AS `1999_2009`,
    CASE
        WHEN y2009.livestock_equidae IS NULL OR y2009.livestock_equidae = 0
THEN NULL
```

```sql
        ELSE 100 * (y2019.livestock_equidae - y2009.livestock_equidae) /
y2009.livestock_equidae
    END AS `2009_2019`
FROM
    (SELECT * FROM year_comparison WHERE year = 1999) AS y1999,
    (SELECT * FROM year_comparison WHERE year = 2009) AS y2009,
    (SELECT * FROM year_comparison WHERE year = 2019) AS y2019
UNION ALL
SELECT
    'livestock_poultry' AS metric,
    CASE
        WHEN y1999.livestock_poultry IS NULL OR y1999.livestock_poultry = 0
THEN NULL
        ELSE 100 * (y2009.livestock_poultry - y1999.livestock_poultry) /
y1999.livestock_poultry
    END AS `1999_2009`,
    CASE
        WHEN y2009.livestock_poultry IS NULL OR y2009.livestock_poultry = 0
THEN NULL
        ELSE 100 * (y2019.livestock_poultry - y2009.livestock_poultry) /
y2009.livestock_poultry
    END AS `2009_2019`
FROM
    (SELECT * FROM year_comparison WHERE year = 1999) AS y1999,
    (SELECT * FROM year_comparison WHERE year = 2009) AS y2009,
    (SELECT * FROM year_comparison WHERE year = 2019) AS y2019
UNION ALL
SELECT
    'livestock_rabbits' AS metric,
    CASE
        WHEN y1999.livestock_rabbits IS NULL OR y1999.livestock_rabbits = 0
THEN NULL
        ELSE 100 * (y2009.livestock_rabbits - y1999.livestock_rabbits) /
y1999.livestock_rabbits
    END AS `1999_2009`,
    CASE
        WHEN y2009.livestock_rabbits IS NULL OR y2009.livestock_rabbits = 0
THEN NULL
        ELSE 100 * (y2019.livestock_rabbits - y2009.livestock_rabbits) /
y2009.livestock_rabbits
    END AS `2009_2019`
FROM
    (SELECT * FROM year_comparison WHERE year = 1999) AS y1999,
    (SELECT * FROM year_comparison WHERE year = 2009) AS y2009,
    (SELECT * FROM year_comparison WHERE year = 2019) AS y2019
UNION ALL
SELECT
    'livestock_hives' AS metric,
    CASE
        WHEN y1999.livestock_hives IS NULL OR y1999.livestock_hives = 0 THEN
NULL
        ELSE 100 * (y2009.livestock_hives - y1999.livestock_hives) /
y1999.livestock_hives
```

```
        END AS `1999_2009`,
    CASE
        WHEN y2009.livestock_hives IS NULL OR y2009.livestock_hives = 0 THEN
NULL
        ELSE 100 * (y2019.livestock_hives - y2009.livestock_hives) /
y2009.livestock_hives
    END AS `2009_2019`
FROM
    (SELECT * FROM year_comparison WHERE year = 1999) AS y1999,
    (SELECT * FROM year_comparison WHERE year = 2009) AS y2009,
    (SELECT * FROM year_comparison WHERE year = 2019) AS y2019;
```

```python
Python

import csv

# Read the CSV file
with
open('_SELECT_edu_none_AS_metric_CASE_WHEN_y1999_edu_none_IS_NULL_OR_y_
202406121850.csv', 'r') as file:
    reader = csv.reader(file)
    data = list(reader)

# Transpose the data
transposed_data = list(map(list, zip(*data)))

# Write the transposed data back to a new CSV file
with open('transposed_file.csv', 'w', newline='') as file:
    writer = csv.writer(file)
    writer.writerows(transposed_data)
```

```sql
USE INE;
CREATE TABLE gado_e_dados_socio_economicos_2 (
    NutsID VARCHAR(50),
    DICOFRE VARCHAR(50),
    region_name VARCHAR(255),
    year INT,
    edu_none INT,
    edu_basic INT,
    edu_secondary INT,
    edu_superior INT,
    labour_family INT,
    labour_holder INT,
    labour_spouse INT,
```

```
        labour_other_family INT,
        labour_non_family INT,
        labour_regular INT,
        labour_non_regular INT,
        labour_not_hired INT,
        livestock_cattle INT,
        livestock_pigs INT,
        livestock_sheep INT,
        livestock_goats INT,
        livestock_equidae INT,
        livestock_poultry INT,
        livestock_rabbits INT,
        livestock_hives INT
);
INSERT INTO gado_e_dados_socio_economicos_2 (NutsID, DICOFRE, region_name, year,
edu_none, edu_basic, edu_secondary, edu_superior, labour_family, labour_holder,
labour_spouse, labour_other_family, labour_non_family, labour_regular, labour_non_regular,
labour_not_hired, livestock_cattle, livestock_pigs, livestock_sheep, livestock_goats,
livestock_equidae, livestock_poultry, livestock_rabbits, livestock_hives)
SELECT NutsID, DICOFRE, region_name, year, edu_none, edu_basic, edu_secondary,
edu_superior, labour_family, labour_holder, labour_spouse, labour_other_family,
labour_non_family, labour_regular, labour_non_regular, labour_not_hired, livestock_cattle,
livestock_pigs, livestock_sheep, livestock_goats, livestock_equidae, livestock_poultry,
livestock_rabbits, livestock_hives
FROM tabela_recenseamentoagricolaine;
```

```
USE Ine;
CREATE TABLE gado_e_dados_socio_economicos_aggregated_2 AS
SELECT
  year,
  SUM(edu_none) AS edu_none,
  SUM(edu_basic) AS edu_basic,
  SUM(edu_secondary) AS edu_secondary,
  SUM(edu_superior) AS edu_superior,
  SUM(labour_family) AS labour_family,
  SUM(labour_holder) AS labour_holder,
  SUM(labour_spouse) AS labour_spouse,
  SUM(labour_other_family) AS labour_other_family,
  SUM(labour_non_family) AS labour_non_family,
  SUM(labour_regular) AS labour_regular,
  SUM(labour_non_regular) AS labour_non_regular,
  SUM(labour_not_hired) AS labour_not_hired,
  SUM(livestock_cattle) AS livestock_cattle,
  SUM(livestock_pigs) AS livestock_pigs,
  SUM(livestock_sheep) AS livestock_sheep,
  SUM(livestock_goats) AS livestock_goats,
  SUM(livestock_equidae) AS livestock_equidae,
  SUM(livestock_poultry) AS livestock_poultry,
```

```sql
    SUM(livestock_rabbits) AS livestock_rabbits,
    SUM(livestock_hives) AS livestock_hives
FROM gado_e_dados_socio_economicos_2
GROUP BY year;




CREATE TABLE aggregated_data AS
SELECT
    nutsid2,
    year,
    SUM(edu_none) AS edu_none,
    SUM(edu_basic) AS edu_basic,
    SUM(edu_secondary) AS edu_secondary,
    SUM(edu_superior) AS edu_superior,
    SUM(labour_family) AS labour_family,
    SUM(labour_holder) AS labour_holder,
    SUM(labour_spouse) AS labour_spouse,
    SUM(labour_other_family) AS labour_other_family,
    SUM(labour_non_family) AS labour_non_family,
    SUM(labour_regular) AS labour_regular,
    SUM(labour_non_regular) AS labour_non_regular,
    SUM(labour_not_hired) AS labour_not_hired,
    SUM(livestock_cattle) AS livestock_cattle,
    SUM(livestock_pigs) AS livestock_pigs,
    SUM(livestock_sheep) AS livestock_sheep,
    SUM(livestock_goats) AS livestock_goats,
    SUM(livestock_equidae) AS livestock_equidae,
    SUM(livestock_poultry) AS livestock_poultry,
    SUM(livestock_rabbits) AS livestock_rabbits,
    SUM(livestock_hives) AS livestock_hives
FROM
    daw.tabela_recenseamentoagricolaine_csv
GROUP BY
    nutsid2,
    year;
```