Operations Research; Statistical Decision Theory

Analysis of Natural Movement of Romanian Population During 2007-2014 - IV

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Abstract:. Article shall carry out the analysis of natural movement of Romanian population During 2007-2014. They are thus treated indicators: Live births, Deceased, Natural increase, Marriages, Divorces and Deaths under 1 year. In addition to the regression analysis, are determined the median, quartiles, the arithmetic mean and standard deviation for each indicator. Also the analysis examines dependence aforementioned indicators of regional GDP variation.

Keywords: Live births; Deceased; Natural increase; Marriages; Divorces

JEL Classification: Q56

1. Introduction

In what follows we shall carry out the analysis of natural movement of Romanian population During 2007-2014. They are thus treated indicators: Live births, Deceased, Natural increase, Marriages, Divorces and Deaths under 1 year. In addition to the regression analysis, are determined the median, quartiles, the arithmetic mean and standard deviation for each indicator. Also the analysis examines dependence aforementioned indicators of regional GDP variation.

In this fourth part, we shall analize the following counties: Satu Mare, Sibiu, Suceava, Teleorman, Timis, Tulcea, Valcea, Vaslui, Vrancea and entire country: Romania.

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2. Analysis of Natural Movement of Romanian Population during 2007-2014

2.34. Analysis of Natural Movement of Satu Mare County Population

Statistics of natural movement corresponding to Satu Mare County are the following:

Table 199. The natural movement of Satu Mare County population during 2007-2008

Month	Live births	Deceased	Natural increase	Marriages	Divorces	Deaths under 1 year	Month	Live births	Deceased	Natural increase	Marriages	Divorces	Deaths under 1 year
ian,07	339	466	-127	285	76	7	ian,08	369	415	-46	140	49	6
feb,07	273	371	-98	374	56	6	feb,08	370	397	-27	133	77	6
mar,07	318	388	-70	239	68	5	mar,08	314	402	-88	140	53	2
apr,07	294	378	-84	243	63	5	apr,08	322	373	-51	89	38	3
mai,07	335	351	-16	270	60	7	mai,08	318	365	-47	303	74	15
iun,07	312	367	-55	256	63	3	iun,08	292	355	-63	182	43	3
iul,07	356	367	-11	318	24	3	iul,08	366	335	31	254	76	3
aug,07	352	346	6	523	53	3	aug,08	364	315	49	554	23	5
sept,07	398	317	81	372	60	8	sept,08	404	333	71	277	33	3
oct,07	321	381	-60	250	66	15	oct,08	381	388	-7	224	46	5
nov,07	289	350	-61	159	78	4	nov,08	279	374	-95	142	87	3
dec,07	336	446	-110	163	109	12	dec,08	369	422	-53	123	45	4

Source: INSSE

Table 200. The natural movement of Satu Mare County population during 2009-2010

Month	Live births	Deceased	Natural increase	Marriages	Divorces	Deaths under 1 year	Month	Live births	Deceased	Natural increase	Marriages	Divorces	Deaths under 1 year
ian,09	325	457	-132	126	73	4	ian,10	342	393	-51	117	36	3
feb,09	283	402	-119	134	59	5	feb,10	283	393	-110	83	73	7
mar,09	307	416	-109	78	24	3	mar,10	299	411	-112	80	52	2
apr,09	305	368	-63	139	49	5	apr,10	258	380	-122	188	91	3
mai,09	303	359	-56	259	44	4	mai,10	256	347	-91	214	66	4
iun,09	337	353	-16	163	35	4	iun,10	314	377	-63	140	56	3
iul,09	346	385	-39	241	38	2	iul,10	322	388	-66	278	22	5
aug,09	324	343	-19	527	36	3	aug,10	368	340	28	551	30	2
sept,09	368	317	51	297	51	5	sept,10	323	332	-9	261	67	2
oct,09	318	376	-58	222	33	3	oct,10	271	399	-128	185	24	2
nov,09	297	405	-108	139	33	0	nov,10	276	337	-61	83	57	3

Source: INSSE

Table 201. The natural movement of Satu Mare County population during 2011-2012

Month	Live births	Deceased	Natural increase	Marriages	Divorces	Deaths under 1 year	Month	Live births	Deceased	Natural increase	Marriages	Divorces	Deaths under 1 year
ian,11	314	422	-108	120	17	1	ian,12	274	397	-123	100	23	7
feb,11	290	403	-113	68	41	1	feb,12	245	372	-127	80	37	4
mar,11	244	378	-134	54	49	3	mar,12	226	366	-140	72	46	0
apr,11	225	359	-134	120	53	4	apr,12	229	363	-134	130	49	4
mai,11	253	376	-123	159	60	3	mai,12	289	351	-62	176	24	4
iun,11	267	343	-76	143	40	1	iun,12	272	338	-66	163	18	5
iul,11	310	335	-25	282	42	2	iul,12	326	358	-32	224	11	1
aug,11	403	331	72	522	49	2	aug,12	444	339	105	514	52	0
sept,11	317	329	-12	239	23	3	sept,12	286	275	11	265	40	5
oct,11	260	368	-108	183	44	2	oct,12	335	388	-53	197	68	2
nov,11	272	324	-52	81	62	6	nov,12	262	308	-46	76	73	5
dec,11	264	439	-175	114	53	6	dec,12	229	370	-141	108	31	2

Source: INSSE

Table 202. The natural movement of Satu Mare County population during 2013-2014

Month	Live births	Deceased	Natural increase	Marriages	Divorces	Deaths under 1 year	Month	Live births	Deceased	Natural increase	Marriages	Divorces	Deaths under 1 year
ian,13	290	376	-86	90	27	3	ian,14	300	361	-61	88	8	3
feb,13	240	371	-131	74	50	4	feb,14	249	421	-172	76	46	0
mar,13	273	373	-100	85	37	2	mar,14	278	385	-107	64	56	3
apr,13	273	385	-112	72	71	5	apr,14	265	409	-144	105	57	2
mai,13	286	340	-54	209	55	0	mai,14	277	324	-47	212	60	2
iun,13	246	332	-86	166	35	0	iun,14	269	315	-46	154	30	4
iul,13	368	354	14	233	29	8	iul,14	339	316	23	239	16	4
aug,13	404	312	92	609	46	3	aug,14	411	285	126	598	61	3
sept,13	303	334	-31	223	35	1	sept,14	318	315	3	207	38	2
oct,13	314	339	-25	159	31	3	oct,14	303	330	-27	157	24	1
nov,13	261	328	-67	88	32	2	nov,14	255	355	-100	91	38	3
dec,13	248	397	-149	115	41	0	dec,14	303	389	-86	121	31	1

Source: INSSE

Table 203. The population trends of Satu Mare County during 2007-2014

Year	Population	Year	Population
2007	396796	2011	395212
2008	396470	2012	394308
2009	396273	2013	393652
2010	395918	2014	392794

Source: INSSE

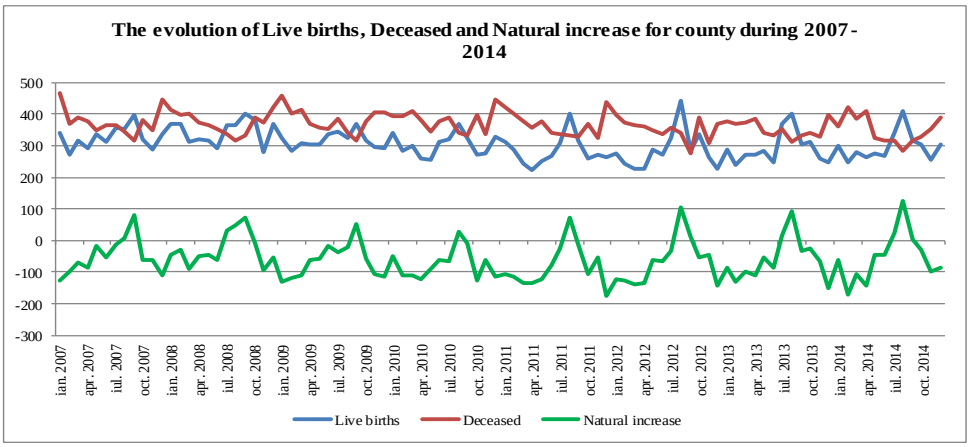


Figure 364

From figure 364 we can see a sinusoidal evolution of the indicator. Except months aug 2007, sept 2007, iul 2008, aug 2008, sept 2008, sept 2009, aug 2010, aug 2011, aug 2012, sept 2012, iul 2013, aug 2013, iul 2014, aug 2014, sept 2014 the natural increase was negative.

Regression analysis relative to indicator "Live births" gives us an equation: y=-0.544641888x+332.9359649 where x is the number of month (Jan, 2007=1), therefore a pronounced downward trend.

Regression analysis relative to indicator "Deceased" gives us an equation: y=-0.423874118x+387.3078947 where x is the number of month (Jan, 2007=1), therefore a pronounced downward trend.

Regression analysis relative to indicator "Natural increase" gives us an equation: y=-0.12076777x+-54.37192982 where x is the number of month (Jan, 2007=1), therefore a downward trend.

For the set of values above, the median indicator for "Live births" is 303, for "Deceased" is 368 and for "Natural increase": -63. This means that the probability that the indicator has a value less than the median is equal to the probability that it has a higher value than this.

Also, the distribution of quartiles is for "Live births": (225,272.75,303,335,444), for "Deceased": (275,338.75,367.5,388.25,466) and for "Natural increase": (-175,-110,-62.5,-26.5,126).

The arithmetic mean and the standard deviation for "Live births" are: (307,46.16), for "Deceased": (367,36.91) and for "Natural increase": (-60,62.89). This means that with a probability greather than 0.68 "Live births" are in the range [261,353], for "Deceased" in [330,404] and for "Natural increase" in [-123,3].

Percentiles length indicators analysis (Figure 365) show that, indeed the concentration is around the middle of the data.

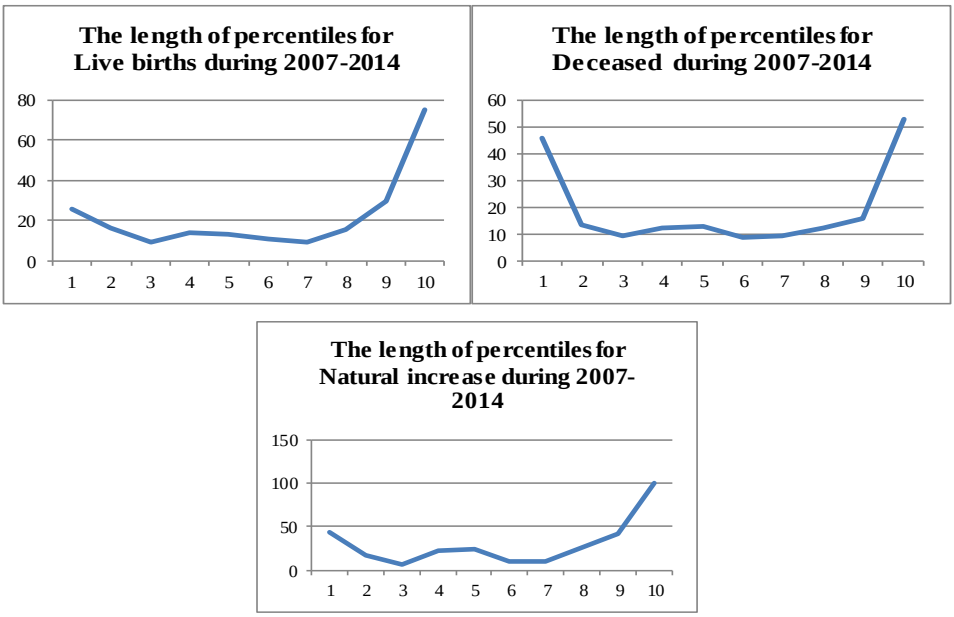


Figure 365

Taking into account the population dynamics during the analyzed period we have the following evolution of the indicators: Live births/10000 inh., Deceased/10000 inh. and Natural increase/10000 inh. as in the figure 366.

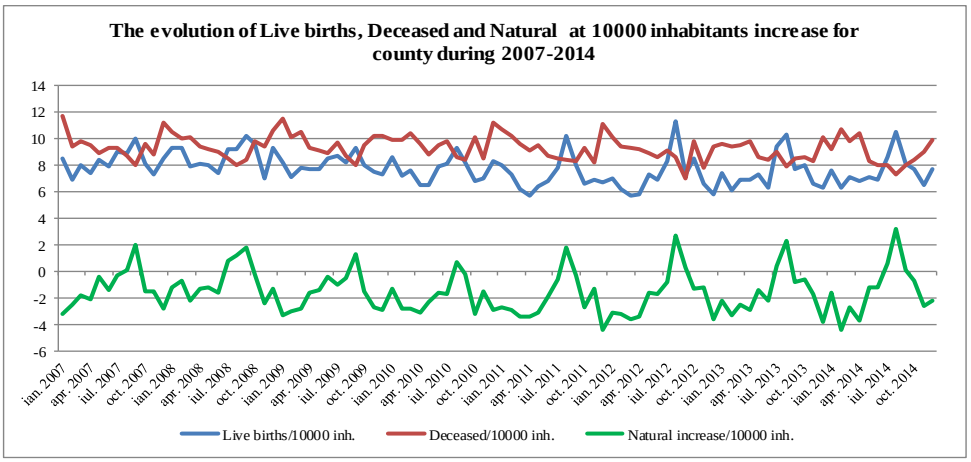


Figure 366

Regression analysis relative to indicator "Live births/10000 inh." gives us an equation: y=-0.012813755x+8.376883772 where x is the number of month (Jan, 2007=1), therefore a very small downward trend.

Regression analysis relative to indicator "Deceased/10000 inh." gives us an equation: y=-0.009635852x+9.747234649 where x is the number of month (Jan, 2007=1), therefore a very small downward trend.

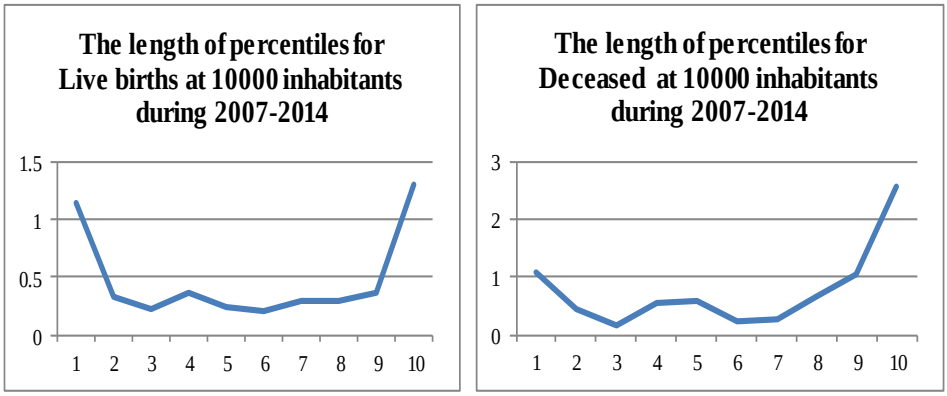
Regression analysis relative to indicator "Natural increase/10000 inh." gives us an equation: y=-0.003207474x+-1.368708333 where x is the number of month (Jan, 2007=1), therefore a very small downward trend.

For the set of values above, the median indicator for "Live births/10000 inh." is 8, for "Deceased/10000 inh." is 9 and for "Natural increase/10000 inh.": -2. This means that the probability that the indicator has a value less than the median is equal to the probability that it has a higher value than this.

Also, the distribution of quartiles is for "Live births/10000 inh.": (5.69,6.895,7.7,8.4475,11.26), for "Deceased/10000 inh.": (6.97,8.585,9.285,9.855,11.74) and for "Natural increase/10000 inh.": (-4.43,-2.7725,-1.58,-0.67,3.21).

The arithmetic mean and the standard deviation for "Live births/10000 inh." are: (8,1.16), for "Deceased/10000 inh.": (9,0.92) and for "Natural increase/10000 inh.": (-2,1.59). This means that with a probability greather than 0.68 "Live births/10000 inh." are in the range [7,9], for "Deceased/10000 inh." in [8,10] and for "Natural increase/10000 inh." in [-4,0].

Percentiles length indicators analysis (Figure 367) show that, indeed the concentration is around the middle of the data.



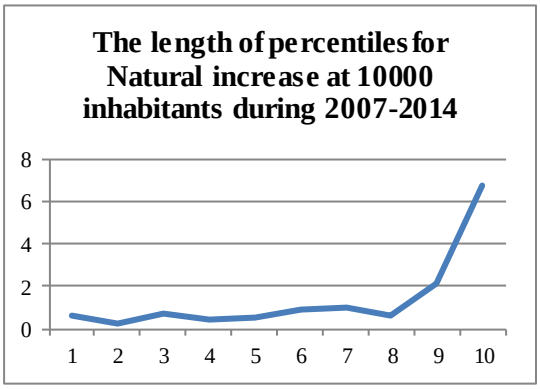


Figure 367

A comparison of the indicator "Live births" with the national level shows that it is about the same with the national, being better in 47.92% cases. For "Deceased" the indicator is about the same with the national, being better in 54.17% cases. Finally, for "Natural increase", the indicator is better than the national, being better in 61.46% cases.

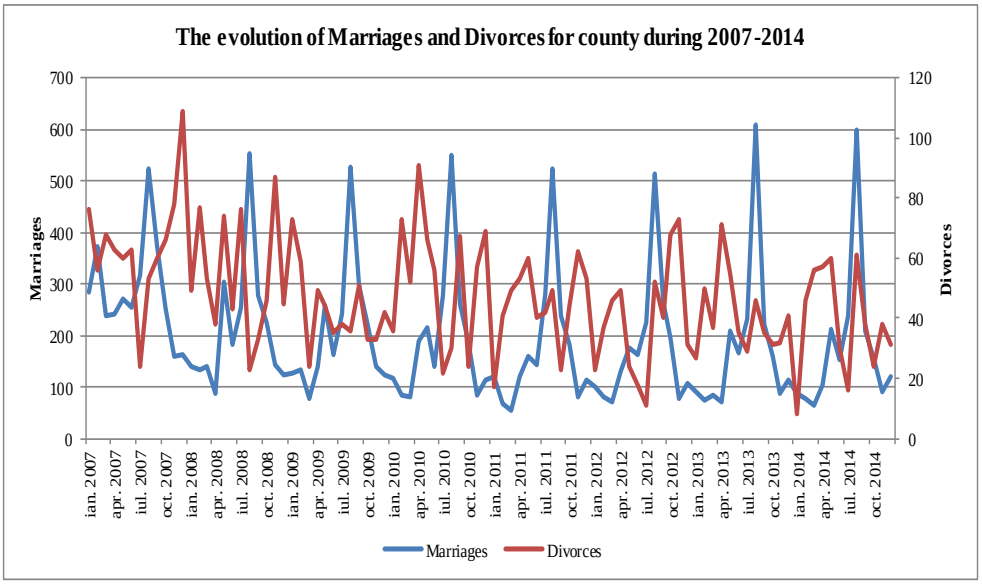


Figure 368

Regression analysis relative to indicator "Marriages" gives us an equation: y=-0.929218665x+244.8796053 where x is the number of month (Jan, 2007=1), therefore a pronounced downward trend.

Regression analysis relative to indicator "Divorces" gives us an equation: y=-0.259407216x+59.8625 where x is the number of month (Jan, 2007=1), therefore a downward trend.

For the set of values above, the median indicator for "Marriages" is 161 and for "Divorces" is 46. Also, the distribution of quartiles is for "Marriages": (54,114.75,161,244.75,609) and for "Divorces": (8,33,46,60,109). The arithmetic mean and the standard deviation for "Marriages" are: (200,128.6) and for "Divorces": (47,18.85). This means that with a probability greather than 0.68 "Marriages" are in the range [71,329] and for "Divorces" in [28,66].

Percentiles length indicators analysis (Figure 369) show that, indeed the concentration is around the middle of the data.

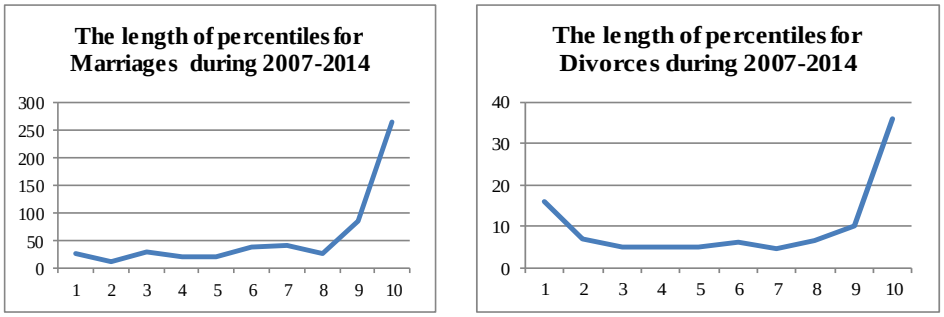


Figure 369

Taking into account the population dynamics during the analyzed period we have the following evolution of the indicators: Marriages/10000 inh. and Divorces/10000 inh. as in the figure 370.

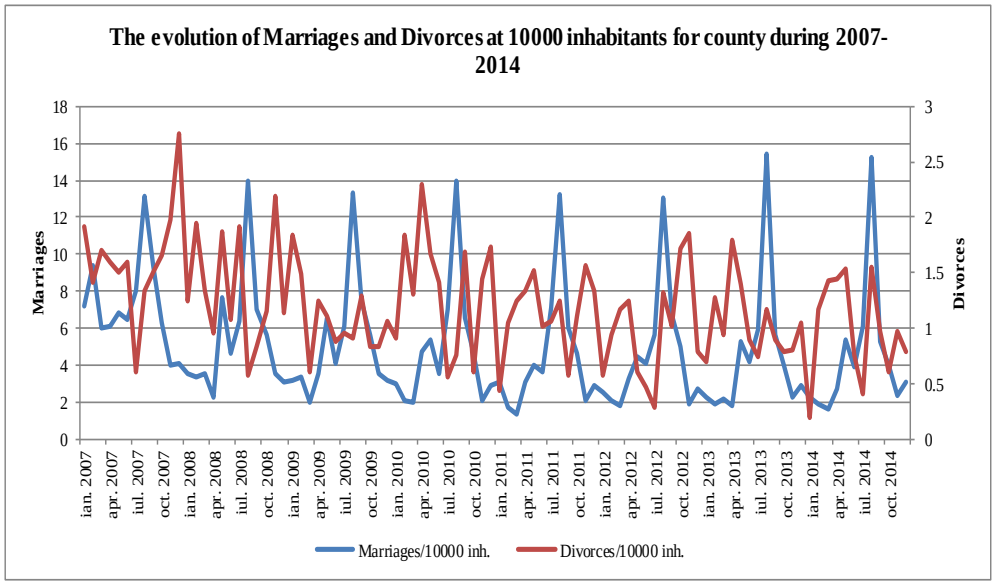


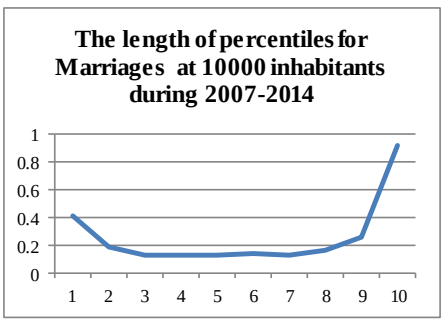
Figure 370

Regression analysis relative to indicator "Marriages/10000 inh." gives us an equation: y=-0.022860418x+6.163105263 where x is the number of month (Jan, 2007=1), therefore a very small downward trend.

Regression analysis relative to indicator "Divorces/10000 inh." gives us an equation: y=-0.006421867x+1.507502193 where x is the number of month (Jan, 2007=1), therefore a very small downward trend.

For the set of values above, the median indicator for "Marriages/10000 inh." is 4 and for "Divorces/10000 inh." is 1. Also, the distribution of quartiles is for "Marriages/10000 inh.": (1.37,2.895,4.075,6.165,15.47) and for "Divorces/10000 inh.": (0.2,0.83,1.17,1.5125,2.75). The arithmetic mean and the standard deviation for "Marriages/10000 inh." are: (5,3.25) and for "Divorces/10000 inh.": (1,0.48). This means that with a probability greather than 0.68 "Marriages/10000 inh." are in the range [2,8] and for "Divorces/10000 inh." in [1,1].

Percentiles length indicators analysis (Figure 371) show that, indeed the concentration is around the middle of the data.



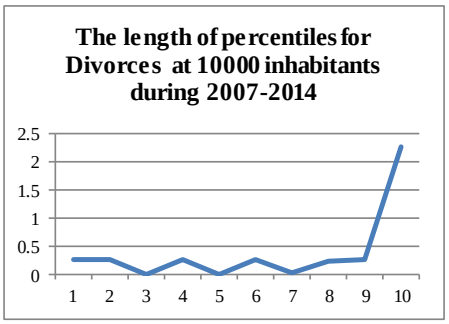


Figure 371

A comparison of the indicator "Marriages" with the national level shows that it is about the same with the national, being better in 56.25% cases. For "Divorces" the indicator is about the same with the national, being better in 50% cases.

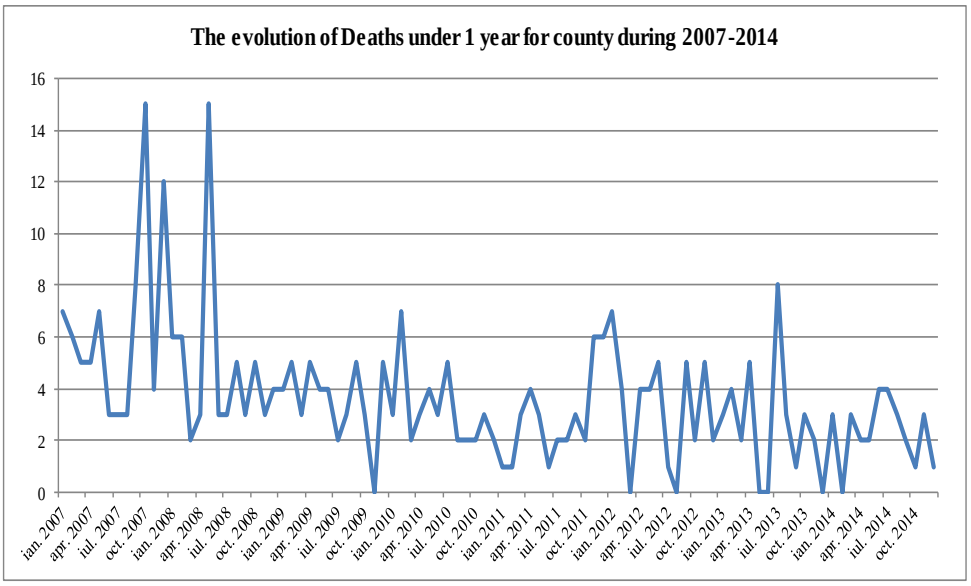


Figure 372

Regression analysis relative to indicator "Deaths under 1 year" gives us an equation: y=-0.041135377x+5.630482456 where x is the number of month (Jan, 2007=1), therefore a very small downward trend.

For the set of values above, the median indicator for "Deaths under 1 year" is 3 and the distribution of quartiles is for "Deaths under 1 year": (0,2,3,5,15). The arithmetic mean and the standard deviation for "Deaths under 1 year" are: (4,2.63)

which means that with a probability greather than 0.68 “Deaths under 1 year” are in the range [1,7].

Percentiles length indicators analysis (Figure 373) show that, indeed the concentration is around the middle of the data.

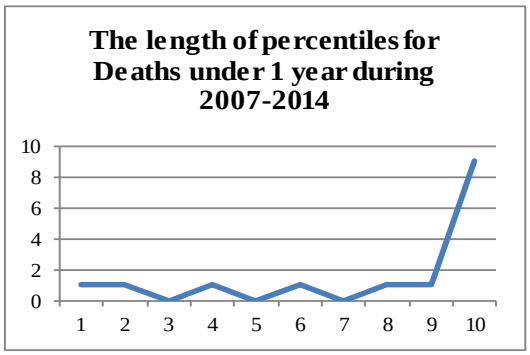


Figure 373

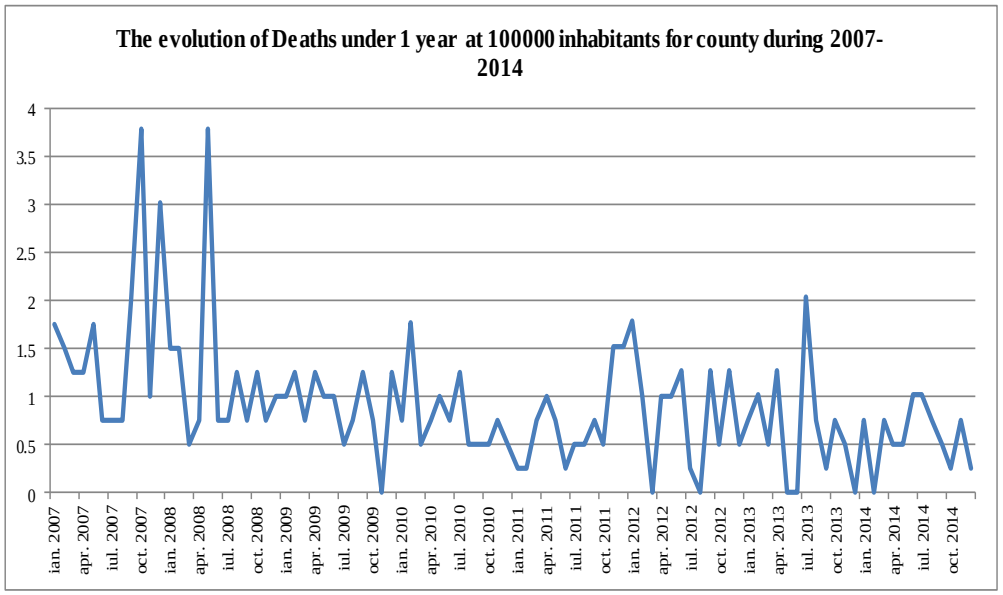


Figure 374

Regression analysis relative to indicator “Deaths under 1 year/100000 inh.” gives us an equation: y=-0.010307311x+1.419175439 where x is the number of month (Jan, 2007=1), therefore a very small downward trend.

For the set of values above, the median indicator for “Deaths under 1 year/100000 inh.” is 1 and the distribution of quartiles is for “Deaths under 1 year/100000 inh.”:

(0,0.51,0.76,1.26,3.78). The arithmetic mean and the standard deviation for "Deaths under 1 year/100000 inh." are: (1,0.66) which means that with a probability greather than 0.68 "Deaths under 1 year/100000 inh." are in the range [0,2].

A comparison of the indicator "Deaths under 1 year" with the national level shows that it is about the same with the national, being better in 43.75% cases.

A final analysis examines dependence aforementioned indicators of regional GDP variation.

Table 204. The evolution of Satu Mare County GDP during 2007-2014

Year	GDP (in mil. lei 2007)	Variation (%)
2007	5215	-
2008	5479	5.07
2009	5179	-5.47
2010	4929	-4.83
2011	4854	-1.52
2012	5131	5.69
2013	5429	5.82
2014	5513	1.54

Source: INSSE and own calculations

In what follows, we shall investigate if there is a dependency between GDP variation (noted with dGDP) and the aforementioned indicators.

Searching dependence annual variations of "Live births" from GDP, we find that there is a dependence of Live births from GDP in the current year and the regression equation is: 0.8985dGDP+-2.0444. Searching dependence annual variations of "Deceased" from GDP, we find that there is not a dependence of the variation of GDP. Searching dependence annual variations of "Natural increase" from GDP, we find that there is not a dependence of the variation of GDP. Searching dependence annual variations of "Marriages" from GDP, we find that there is a dependence of Marriages from GDP offset by 1 year and the regression equation is:0.4977dGDP+-3.4798. Searching dependence annual variations of "Divorces" from GDP, we find that there is not a dependence of the variation of GDP. Searching dependence annual variations of "Deaths under 1 year" from GDP, we find that there is not a dependence of the variation of GDP.

2.35. Analysis of Natural Movement of Sibiu County Population

Statistics of natural movement corresponding to Sibiu County are the following:

Table 205. The natural movement of Sibiu County population during 2007-2008

Month	Live births	Deceased	Natural increase	Marriages	Divorces	Deaths under 1 year	Month	Live births	Deceased	Natural increase	Marriages	Divorces	Deaths under 1 year
ian,07	393	440	-47	193	80	8	ian,08	439	382	57	98	52	6
feb,07	292	338	-46	512	97	4	feb,08	381	345	36	166	62	4
mar,07	340	402	-62	337	91	7	mar,08	383	368	15	157	53	5
apr,07	352	350	2	260	78	5	apr,08	344	396	-52	102	65	2
mai,07	342	333	9	321	76	5	mai,08	386	374	12	301	83	1
iun,07	376	352	24	298	42	5	iun,08	381	347	34	280	42	4
iul,07	424	379	45	433	49	10	iul,08	473	385	88	403	116	0
aug,07	381	315	66	543	69	3	aug,08	390	364	26	593	69	3
sept,07	387	327	60	475	23	4	sept,08	388	368	20	425	29	3
oct,07	374	378	-4	341	36	2	oct,08	407	410	-3	272	30	6
nov,07	368	357	11	224	51	9	nov,08	338	335	3	216	50	3
dec,07	363	409	-46	82	68	6	dec,08	419	463	-44	108	61	8

Source: INSSE

Table 206. The natural movement of Sibiu County population during 2009-2010

Month	Live births	Deceased	Natural increase	Marriages	Divorces	Deaths under 1 year	Month	Live births	Deceased	Natural increase	Marriages	Divorces	Deaths under 1 year
ian,09	399	408	-9	75	58	8	ian,10	393	428	-35	84	36	2
feb,09	391	432	-41	100	35	4	feb,10	361	354	7	89	74	3
mar,09	338	340	-2	168	75	3	mar,10	415	375	40	54	84	2
apr,09	378	358	20	76	58	1	apr,10	385	404	-19	215	76	2
mai,09	384	358	26	119	57	2	mai,10	371	330	41	264	56	1
iun,09	368	365	3	300	59	4	iun,10	388	362	26	115	101	2
iul,09	399	368	31	228	74	7	iul,10	395	344	51	401	40	3
aug,09	507	355	152	395	86	5	aug,10	410	349	61	479	95	3
sept,09	483	381	102	469	42	1	sept,10	409	383	26	351	40	3
oct,09	417	388	29	365	11	7	oct,10	348	357	-9	294	38	1
nov,09	389	341	48	144	30	2	nov,10	379	361	18	136	23	3
dec,09	376	487	-111	112	52	2	dec,10	364	467	-103	89	103	2

Source: INSSE

Table 207. The natural movement of Sibiu County population during 2011-2012

Month	Live births	Deceased	Natural increase	Marriages	Divorces	Deaths under 1 year	Month	Live births	Deceased	Natural increase	Marriages	Divorces	Deaths under 1 year
ian,11	390	409	-19	79	29	3	ian,12	365	378	-13	71	19	4
feb,11	298	332	-34	112	169	2	feb,12	282	418	-136	123	48	1
mar,11	350	342	8	81	57	4	mar,12	337	403	-66	51	139	0
apr,11	325	382	-57	87	55	2	apr,12	285	405	-120	124	45	2
mai,11	332	393	-61	236	105	1	mai,12	435	371	64	203	26	3
iun,11	332	319	13	231	81	3	iun,12	338	323	15	247	70	0
iul,11	386	317	69	352	26	1	iul,12	418	348	70	352	113	3
aug,11	431	342	89	377	117	2	aug,12	454	359	95	412	55	5
sept,11	388	332	56	315	47	2	sept,12	383	326	57	377	17	6
oct,11	349	366	-17	252	30	2	oct,12	429	381	48	237	64	2
nov,11	376	427	-51	153	43	5	nov,12	365	420	-55	154	49	2
dec,11	308	369	-61	72	106	4	dec,12	291	440	-149	102	81	3

Source: INSSE

Table 208. The natural movement of Sibiu County population during 2013-2014

Month	Live births	Deceased	Natural increase	Marriages	Divorces	Deaths under 1 year	Month	Live births	Deceased	Natural increase	Marriages	Divorces	Deaths under 1 year
ian,13	412	352	60	90	24	5	ian,14	391	390	1	83	25	2
feb,13	321	382	-61	95	86	5	feb,14	325	359	-34	131	38	5
mar,13	317	329	-12	122	63	3	mar,14	363	385	-22	85	58	2
apr,13	319	381	-62	83	37	3	apr,14	360	369	-9	129	20	2
mai,13	347	381	-34	196	32	2	mai,14	346	368	-22	245	45	4
iun,13	341	362	-21	244	55	4	iun,14	405	367	38	216	72	2
iul,13	366	376	-10	320	29	3	iul,14	423	346	77	366	16	5
aug,13	395	305	90	451	28	2	aug,14	375	328	47	506	56	4
sept,13	430	345	85	318	23	3	sept,14	420	373	47	356	16	3
oct,13	374	399	-25	246	41	2	oct,14	392	370	22	282	46	1
nov,13	334	363	-29	141	39	2	nov,14	321	373	-52	124	47	6
dec,13	329	483	-154	110	25	3	dec,14	333	489	-156	128	86	1

Source: INSSE

Table 209. The population trends of Sibiu County during 2007-2014

Year	Population	Year	Population
2007	456189	2011	461629
2008	457417	2012	462262
2009	458919	2013	462809
2010	460003	2014	463228

Source: INSSE

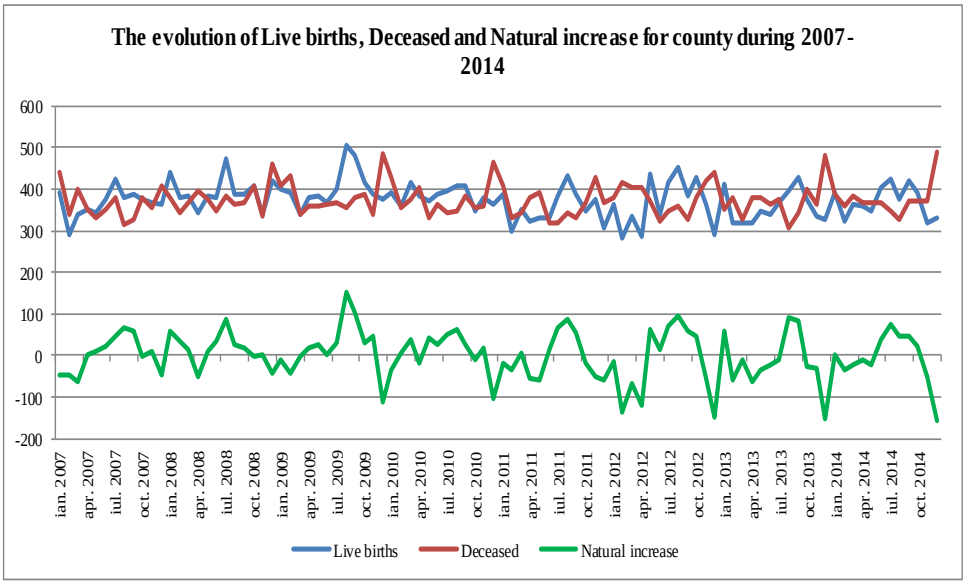


Figure 375

From figure 375 we can see a sinusoidal evolution of the indicator. Except months apr 2007, mai 2007, iun 2007, iul 2007, aug 2007, sept 2007, nov 2007, ian 2008, feb 2008, mar 2008, mai 2008, iun 2008, iul 2008, aug 2008, sept 2008, nov 2008, apr 2009, mai 2009, iun 2009, iul 2009, aug 2009, sept 2009, oct 2009, nov 2009, feb 2010, mar 2010, mai 2010, iun 2010, iul 2010, aug 2010, sept 2010, nov 2010, mar 2011, iun 2011, iul 2011, aug 2011, sept 2011, mai 2012, iun 2012, iul 2012, aug 2012, sept 2012, oct 2012, ian 2013, aug 2013, sept 2013, ian 2014, iun 2014, iul 2014, aug 2014, sept 2014, oct 2014 the natural increase was negative.

Regression analysis relative to indicator "Live births" gives us an equation: y=-0.259047748x+387.0846491 where x is the number of month (Jan, 2007=1), therefore a downward trend.

Regression analysis relative to indicator "Deceased" gives us an equation: y=0.055527672x+371.1506579 where x is the number of month (Jan, 2007=1), therefore an upward trend.

Regression analysis relative to indicator “Natural increase” gives us an equation: y=-0.314575421x+15.93399123 where x is the number of month (Jan, 2007=1), therefore a downward trend.

For the set of values above, the median indicator for “Live births” is 377, for “Deceased” is 368 and for “Natural increase”: 5. This means that the probability that the indicator has a value less than the median is equal to the probability that it has a higher value than this.

Also, the distribution of quartiles is for “Live births”: (282,343.5,377,395,507), for “Deceased”: (305,347.75,368,388.5,489) and for “Natural increase”: (-156,-34.25,5,42,152).

The arithmetic mean and the standard deviation for “Live births” are: (375,42.05), for “Deceased”: (374,37.88) and for “Natural increase”: (1,58.59). This means that with a probability greather than 0.68 “Live births” are in the range [333,417], for “Deceased” in [336,412] and for “Natural increase” in [-58,60].

Percentiles length indicators analysis (Figure 376) show that, indeed the concentration is around the middle of the data.

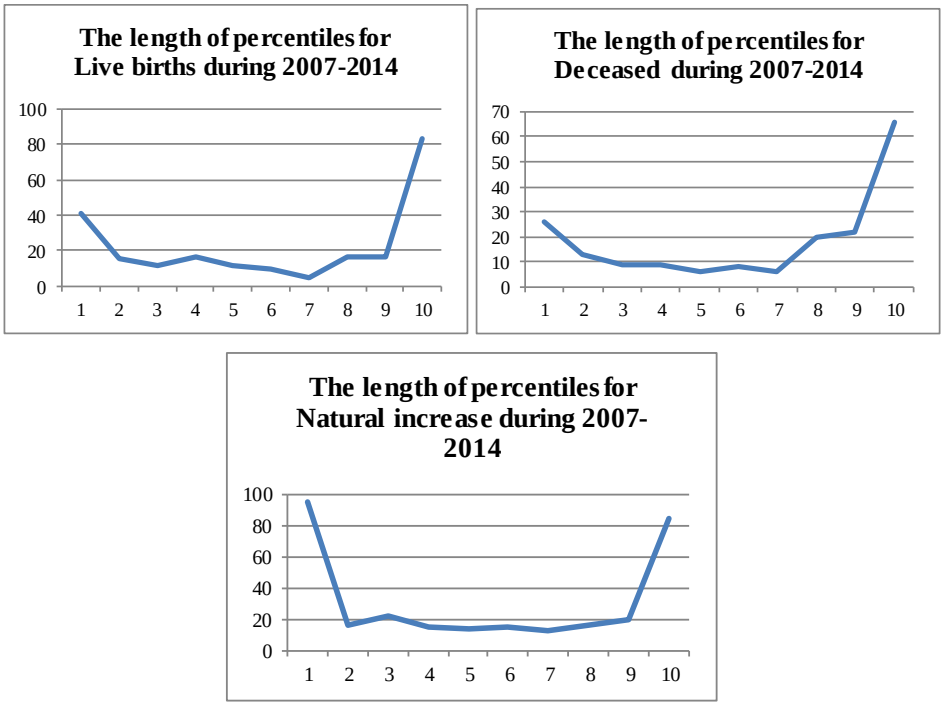


Figure 376

Taking into account the population dynamics during the analyzed period we have the following evolution of the indicators: Live births/10000 inh., Deceased/10000 inh. and Natural increase/10000 inh. as in the figure 377.

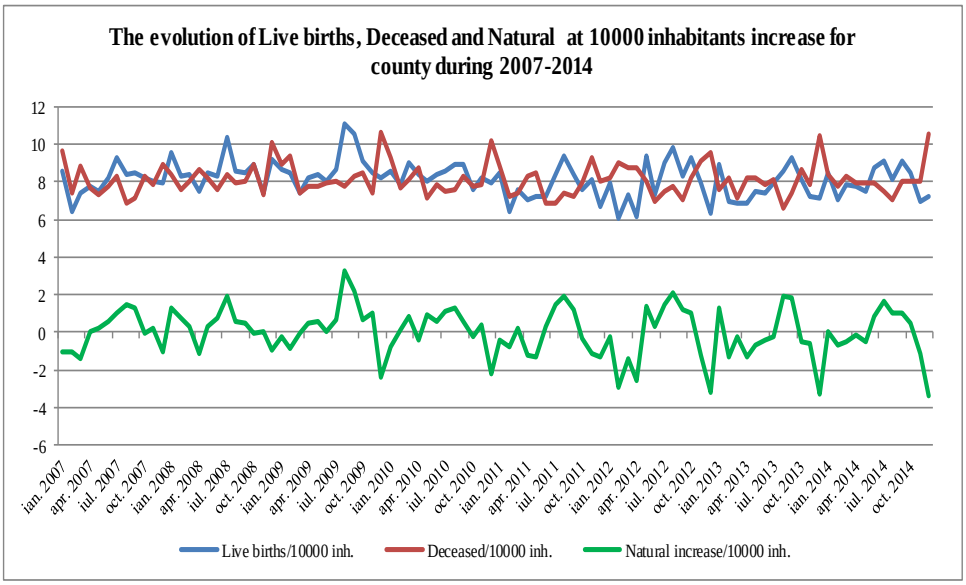


Figure 377

Regression analysis relative to indicator "Live births/10000 inh." gives us an equation: y=-0.007125203x+8.483489035 where x is the number of month (Jan, 2007=1), therefore a very small downward trend.

Regression analysis relative to indicator "Deceased/10000 inh." gives us an equation: y=-0.000327455x+8.137964912 where x is the number of month (Jan, 2007=1), therefore a very small downward trend.

Regression analysis relative to indicator "Natural increase/10000 inh." gives us an equation: y=-0.00684475x+0.347907895 where x is the number of month (Jan, 2007=1), therefore a very small downward trend.

For the set of values above, the median indicator for "Live births/10000 inh." is 8, for "Deceased/10000 inh." is 8 and for "Natural increase/10000 inh.": 0. This means that the probability that the indicator has a value less than the median is equal to the probability that it has a higher value than this.

Also, the distribution of quartiles is for "Live births/10000 inh.": (6.1,7.4925,8.24,8.595,11.05), for "Deceased/10000 inh.": (6.59,7.5775,7.99,8.4275,10.61) and for "Natural increase/10000 inh.": (-3.37,-0.745,0.11,0.915,3.31).

The arithmetic mean and the standard deviation for “Live births/10000 inh.” are: (8,0.92), for “Deceased/10000 inh.”: (8,0.82) and for “Natural increase/10000 inh.”: (0,1.27). This means that with a probability greather than 0.68 “Live births/10000 inh.” are in the range [7,9], for “Deceased/10000 inh.” in [7,9] and for “Natural increase/10000 inh.” in [-1,1].

Percentiles length indicators analysis (Figure 378) show that, indeed the concentration is around the middle of the data.

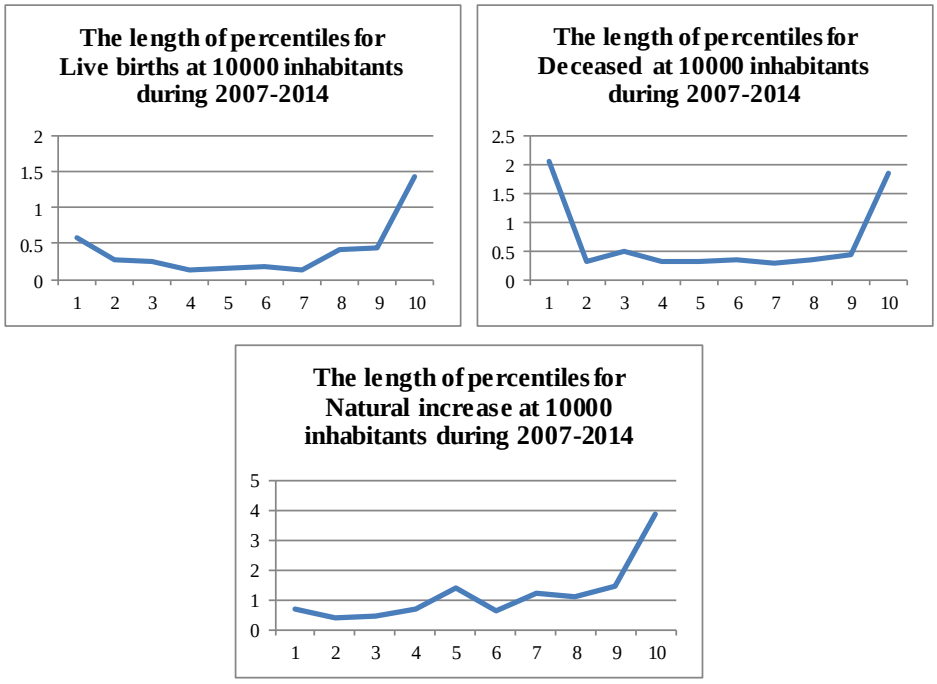


Figure 378

A comparison of the indicator “Live births” with the national level shows that it is better than the national, being better in 78.13% cases. For “Deceased” the indicator is better than the national, being better in 97.92% cases. Finally, for “Natural increase”, the indicator is better than the national, being better in 98.96% cases.

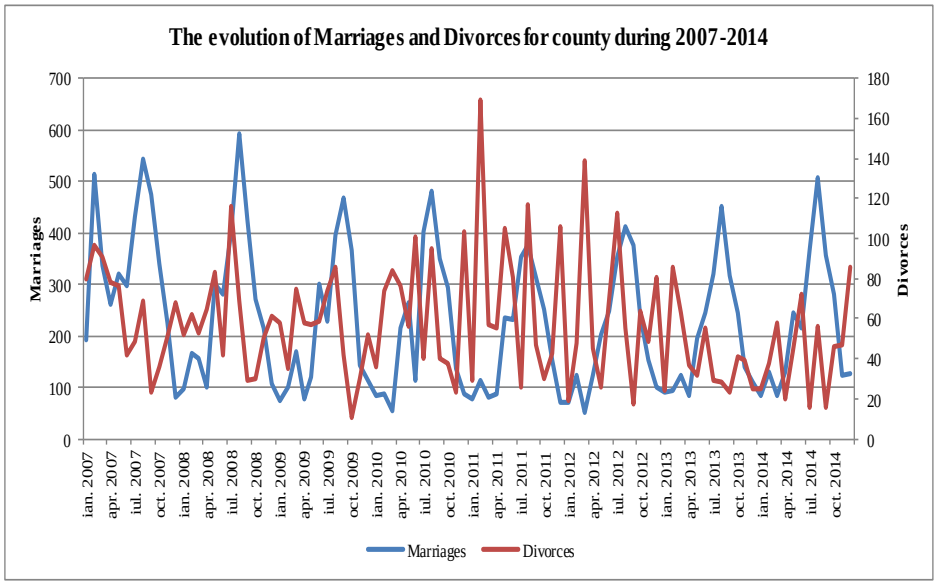


Figure 379

Regression analysis relative to indicator "Marriages" gives us an equation: y=-0.937310092x+275.9699561 where x is the number of month (Jan, 2007=1), therefore a pronounced downward trend.

Regression analysis relative to indicator "Divorces" gives us an equation: y=-0.215809821x+67.47719298 where x is the number of month (Jan, 2007=1), therefore a downward trend.

For the set of values above, the median indicator for "Marriages" is 216 and for "Divorces" is 53. Also, the distribution of quartiles is for "Marriages": (51,111.5,216,325,593) and for "Divorces": (11,36,52.5,74.25,169). The arithmetic mean and the standard deviation for "Marriages" are: (231,134.13) and for "Divorces": (57,29.05). This means that with a probability greather than 0.68 "Marriages" are in the range [97,365] and for "Divorces" in [28,86].

Percentiles length indicators analysis (Figure 380) show that, indeed the concentration is around the middle of the data.

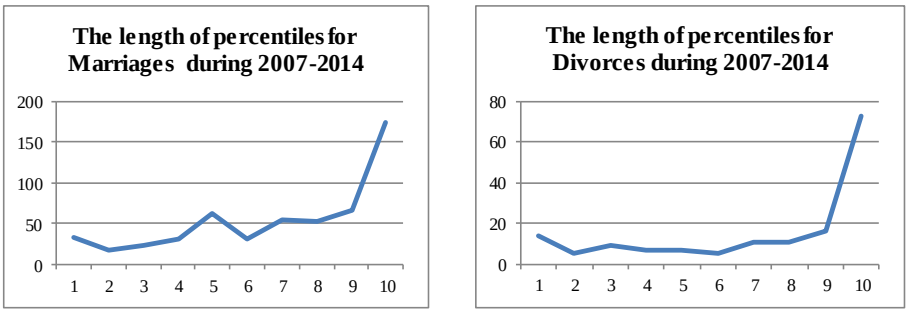


Figure 380

Taking into account the population dynamics during the analyzed period we have the following evolution of the indicators: Marriages/10000 inh. and Divorces/10000 inh. as in the figure 381.

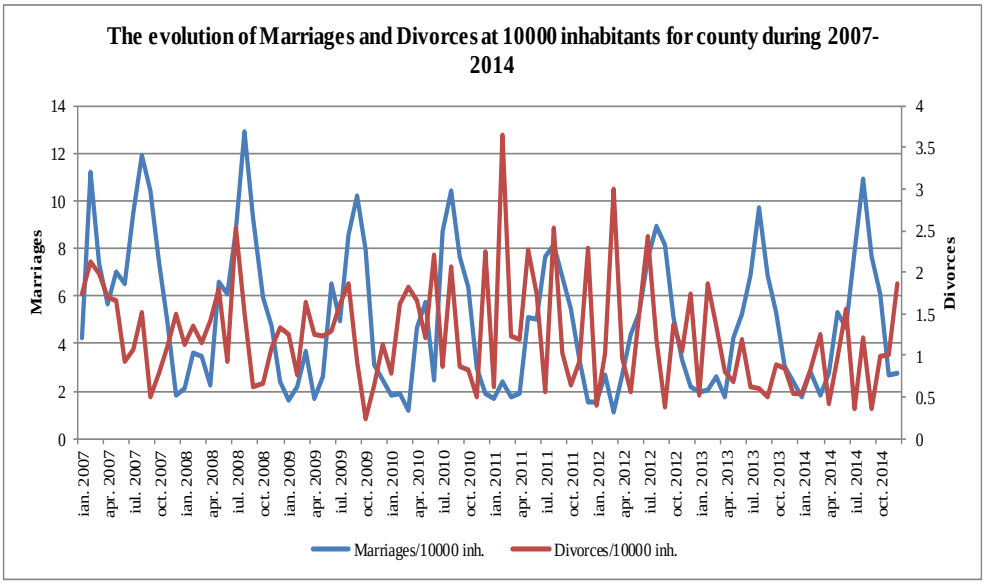


Figure 381

Regression analysis relative to indicator "Marriages/10000 inh." gives us an equation: y=-0.02142207x+6.050324561 where x is the number of month (Jan, 2007=1), therefore a very small downward trend.

Regression analysis relative to indicator "Divorces/10000 inh." gives us an equation: y=-0.004904097x+1.476598684 where x is the number of month (Jan, 2007=1), therefore a very small downward trend.

For the set of values above, the median indicator for "Marriages/10000 inh." is 5 and for "Divorces/10000 inh." is 1. Also, the distribution of quartiles is for

"Marriages/10000 inh.": (1.1,2.4175,4.695,7.1275,12.96) and for "Divorces/10000 inh.": (0.24,0.7875,1.15,1.615,3.66). The arithmetic mean and the standard deviation for "Marriages/10000 inh." are: (5,2.92) and for "Divorces/10000 inh.": (1,0.63). This means that with a probability greather than 0.68 "Marriages/10000 inh." are in the range [2,8] and for "Divorces/10000 inh." in [0,2].

Percentiles length indicators analysis (Figure 382) show that, indeed the concentration is around the middle of the data.

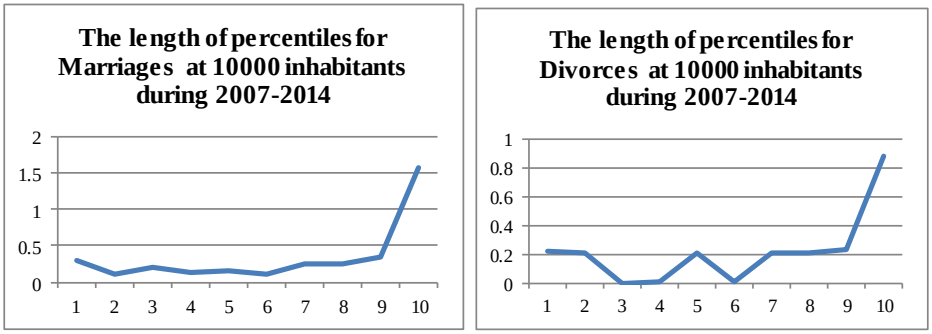


Figure 382

A comparison of the indicator "Marriages" with the national level shows that it is better than the national, being better in 68.75% cases. For "Divorces" the indicator is about the same with the national, being better in 54.17% cases.

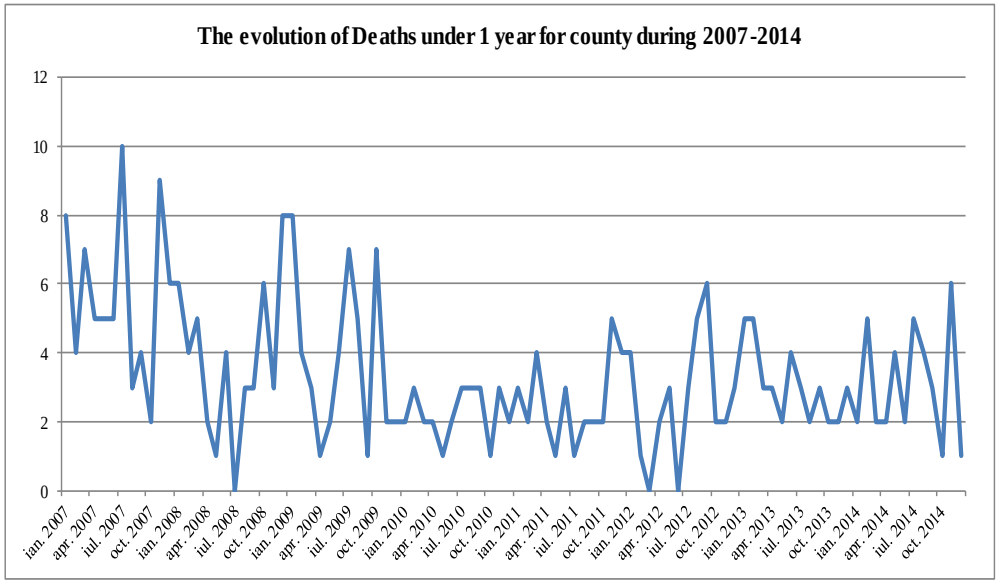


Figure 383

Regression analysis relative to indicator "Deaths under 1 year" gives us an equation: y=-0.024403147x+4.537719298 where x is the number of month (Jan, 2007=1), therefore a very small downward trend.

For the set of values above, the median indicator for "Deaths under 1 year" is 3 and the distribution of quartiles is for "Deaths under 1 year": (0,2,3,4.25,10). The arithmetic mean and the standard deviation for "Deaths under 1 year" are: (3,2.02) which means that with a probability greather than 0.68 "Deaths under 1 year" are in the range [1,5]. Percentiles length indicators analysis (Figure 384) show that, indeed the concentration is around the middle of the data.

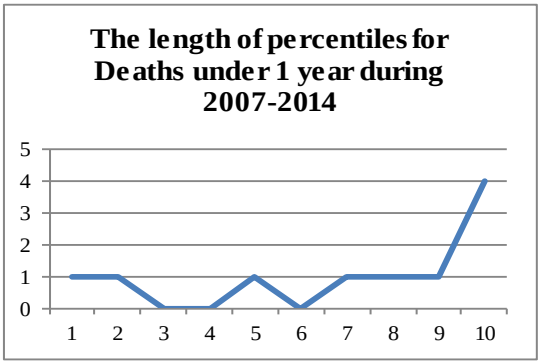


Figure 384

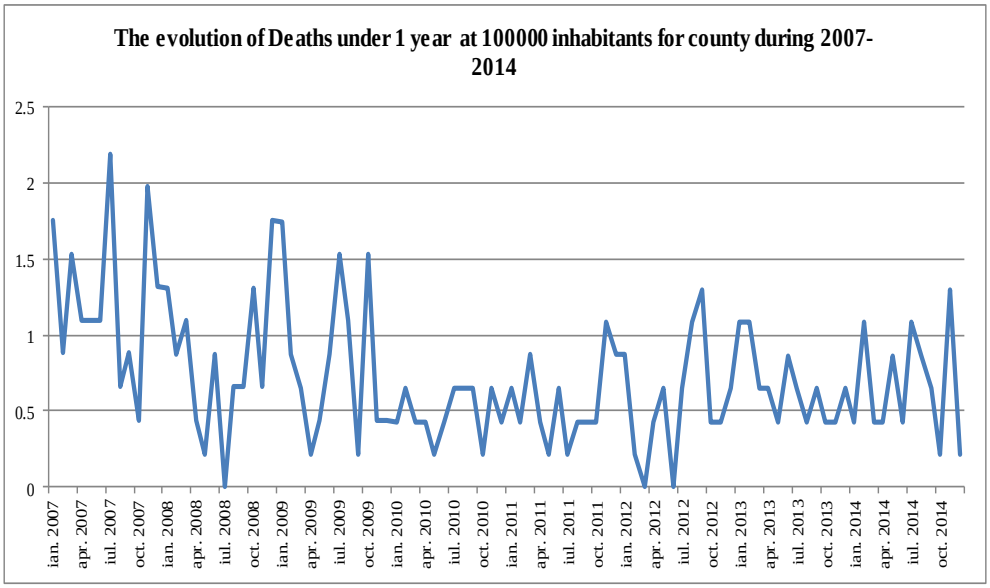


Figure 385

Regression analysis relative to indicator "Deaths under 1 year/100000 inh." gives us an equation: y=-0.005472599x+0.995004386 where x is the number of month (Jan, 2007=1), therefore a very small downward trend.

For the set of values above, the median indicator for "Deaths under 1 year/100000 inh." is 1 and the distribution of quartiles is for "Deaths under 1 year/100000 inh.": (0,0.43,0.65,0.93,2.19). The arithmetic mean and the standard deviation for "Deaths under 1 year/100000 inh." are: (1,0.44) which means that with a probability greather than 0.68 "Deaths under 1 year/100000 inh." are in the range [1,1]. A comparison of the indicator "Deaths under 1 year" with the national level shows that it is better than the national, being better in 60.42% cases. A final analysis examines dependence aforementioned indicators of regional GDP variation.

Table 210. The evolution of Sibiu County GDP during 2007-2014

Year	GDP (in mil. lei 2007)	Variation (%)
2007	9211	-
2008	9931	7.82
2009	9657	-2.76
2010	9197	-4.76
2011	9166	-0.33
2012	9449	3.08
2013	9452	0.03
2014	9457	0.05

Source: INSSE and own calculations

In what follows, we shall investigate if there is a dependency between GDP variation (noted with dGDP) and the aforementioned indicators.

Searching dependence annual variations of "Live births" from GDP, we find that there is a dependence of Live births from GDP in the current year and the regression equation is: 0.8537dGDP+-0.0617. Searching dependence annual variations of "Deceased" from GDP, we find that there is not a dependence of the variation of GDP. Searching dependence annual variations of "Natural increase" from GDP, we find that there is a dependence of Natural increase from GDP in the current year and the regression equation is: 119.7435dGDP+150.5133. Searching dependence annual variations of "Marriages" from GDP, we find that there is not a dependence of the variation of GDP. Searching dependence annual variations of "Divorces" from GDP, we find that there is not a dependence of the variation of GDP. Searching dependence annual variations of "Deaths under 1 year" from GDP, we find that there is a dependence of Deaths under 1 year from GDP offset by 2 years and the regression equation is:-3.6896dGDP+0.8227.

2.36. Analysis of Natural Movement of Suceava County Population

Statistics of natural movement corresponding to Suceava County are the following:

Table 211. The natural movement of Suceava County population during 2007-2008

Month	Live births	Deceased	Natural increase	Marriages	Divorces	Deaths under 1 year	Month	Live births	Deceased	Natural increase	Marriages	Divorces	Deaths under 1 year
ian,07	738	791	-53	415	134	11	ian,08	708	661	47	255	1	4
feb,07	667	581	86	532	139	11	feb,08	708	654	54	256	121	12
mar,07	646	605	41	187	160	7	mar,08	738	646	92	170	132	7
apr,07	647	646	1	403	118	11	apr,08	631	630	1	102	148	4
mai,07	709	614	95	392	123	11	mai,08	663	601	62	436	155	6
iun,07	710	537	173	348	115	6	iun,08	679	561	118	380	104	8
iul,07	763	595	168	740	27	8	iul,08	850	539	311	720	144	11
aug,07	733	545	188	1030	32	7	aug,08	804	569	235	1450	148	6
sept,07	766	573	193	730	69	15	sept,08	774	621	153	558	63	8
oct,07	703	643	60	410	92	4	oct,08	790	594	196	432	124	5
nov,07	608	654	-46	268	138	5	nov,08	620	587	33	247	93	7
dec,07	623	650	-27	209	100	10	dec,08	642	687	-45	164	115	4

Source: INSSE

Table 212. The natural movement of Suceava County population during 2009-2010

Month	Live births	Deceased	Natural increase	Marriages	Divorces	Deaths under 1 year	Month	Live births	Deceased	Natural increase	Marriages	Divorces	Deaths under 1
ian,09	621	723	-102	257	20	8	ian,10	640	657	-17	259	26	13
feb,09	603	607	-4	245	110	5	feb,10	540	637	-97	153	117	5
mar,09	632	706	-74	96	130	8	mar,10	671	665	6	86	123	12
apr,09	629	595	34	154	110	5	apr,10	615	651	-36	273	115	7
mai,09	680	582	98	478	95	11	mai,10	641	594	47	414	138	11
iun,09	700	589	111	243	120	11	iun,10	705	559	146	132	132	4
iul,09	838	577	261	760	66	9	iul,10	716	602	114	807	73	7
aug,09	786	570	216	1219	160	7	aug,10	888	588	300	1118	103	6
sept,09	802	588	214	636	147	11	sept,10	739	615	124	623	82	5
oct,09	724	684	40	435	61	5	oct,10	667	649	18	402	50	7
nov,09	626	620	6	210	48	8	nov,10	592	695	-103	181	70	4
dec,09	596	710	-114	124	105	13	dec,10	565	676	-111	137	66	8

Source: INSSE

Table 213. The natural movement of Suceava County population during 2011-2012

Month	Live births	Deceased	Natural increase	Marriages	Divorces	Deaths under 1 year	Month	Live births	Deceased	Natural increase	Marriages	Divorces	Deaths under 1
ian,11	666	676	-10	196	33	7	ian,12	633	637	-4	203	26	6
feb,11	576	679	-103	179	138	6	feb,12	529	728	-199	168	121	3
mar,11	568	682	-114	81	98	5	mar,12	594	762	-168	70	161	4
apr,11	553	596	-43	121	114	8	apr,12	579	660	-81	179	92	12
mai,11	599	671	-72	424	114	5	mai,12	706	638	68	302	111	3
iun,11	621	591	30	273	80	8	iun,12	691	622	69	295	96	6
iul,11	750	562	188	738	74	4	iul,12	835	564	271	712	101	4
aug,11	1093	568	525	1082	110	7	aug,12	1073	564	509	1059	108	4
sept,11	720	556	164	606	85	3	sept,12	677	542	135	581	80	7
oct,11	589	589	0	344	51	5	oct,12	712	673	39	339	77	5
nov,11	612	633	-21	140	42	6	nov,12	550	595	-45	184	90	4
dec,11	540	680	-140	124	68	6	dec,12	517	652	-135	133	115	4

Source: INSSE

Table 214. The natural movement of Suceava County population during 2013-2014

Month	Live births	Deceased	Natural increase	Marriages	Divorces	Deaths under 1 year	Month	Live births	Deceased	Natural increase	Marriages	Divorces	Deaths under 1 year
ian,13	725	639	86	173	36	9	ian,14	660	689	-29	271	50	5
feb,13	521	593	-72	171	118	4	feb,14	530	634	-104	287	91	8
mar,13	529	723	-194	163	109	6	mar,14	620	660	-40	186	74	9
apr,13	572	690	-118	79	103	8	apr,14	587	675	-88	186	76	4
mai,13	629	627	2	274	75	5	mai,14	639	631	8	477	60	3
iun,13	577	561	16	334	82	6	iun,14	662	615	47	289	96	6
iul,13	835	603	232	639	74	8	iul,14	897	584	313	781	74	5
aug,13	1001	553	448	1124	67	7	aug,14	920	581	339	1170	60	4
sept,13	765	536	229	529	56	3	sept,14	771	557	214	510	85	6
oct,13	708	685	23	368	55	4	oct,14	726	663	63	371	54	6
nov,13	598	569	29	231	81	7	nov,14	573	627	-54	200	63	8
dec,13	550	714	-164	153	55	5	dec,14	529	737	-208	179	95	6

Source: INSSE

Table 215. The population trends of Suceava County during 2007-2014

Year	Population	Year	Population
2007	733242	2011	737737
2008	734036	2012	738868
2009	735171	2013	739991
2010	736324	2014	741314

Source: INSSE

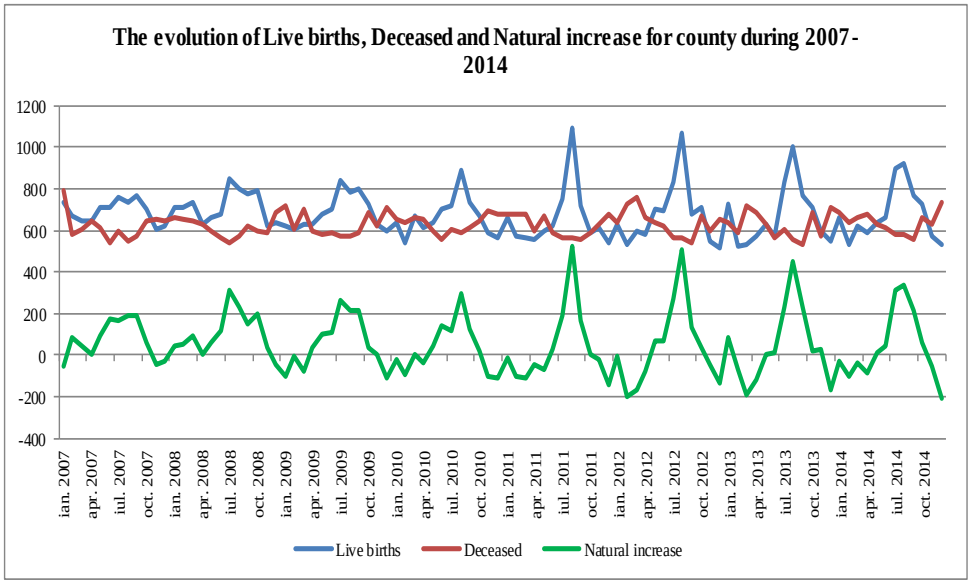


Figure 386

From figure 386 we can see a sinusoidal evolution of the indicator. Except months feb 2007, mar 2007, apr 2007, mai 2007, iun 2007, iul 2007, aug 2007, sept 2007, oct 2007, ian 2008, feb 2008, mar 2008, apr 2008, mai 2008, iun 2008, iul 2008, aug 2008, sept 2008, oct 2008, nov 2008, apr 2009, mai 2009, iun 2009, iul 2009, aug 2009, sept 2009, oct 2009, nov 2009, mar 2010, mai 2010, iun 2010, iul 2010, aug 2010, sept 2010, oct 2010, iun 2011, iul 2011, aug 2011, sept 2011, oct 2011, mai 2012, iun 2012, iul 2012, aug 2012, sept 2012, oct 2012, ian 2013, mai 2013, iun 2013, iul 2013, aug 2013, sept 2013, oct 2013, nov 2013, mai 2014, iun 2014, iul 2014, aug 2014, sept 2014, oct 2014 the natural increase was negative.

Regression analysis relative to indicator "Live births" gives us an equation: y=-0.334393652x+695.8326754 where x is the number of month (Jan, 2007=1), therefore a pronounced downward trend.

Regression analysis relative to indicator "Deceased" gives us an equation: y=0.149559143x+619.7151316 where x is the number of month (Jan, 2007=1), therefore an upward trend.

Regression analysis relative to indicator "Natural increase" gives us an equation: y=-0.483952794x+76.11754386 where x is the number of month (Jan, 2007=1), therefore a pronounced downward trend.

For the set of values above, the median indicator for "Live births" is 663, for "Deceased" is 625 and for "Natural increase": 32. This means that the probability that the indicator has a value less than the median is equal to the probability that it has a higher value than this. Also, the distribution of quartiles is for "Live births": (517,598.75,662.5,727.75,1093), for "Deceased": (536,586.25,624.5,663.5,791) and for "Natural increase": (-208,-45.25,31.5,137.75,525). The arithmetic mean and the standard deviation for "Live births" are: (680,113.28), for "Deceased": (627,54.64) and for "Natural increase": (53,148.19). This means that with a probability greather than 0.68 "Live births" are in the range [567,793], for "Deceased" in [572,682] and for "Natural increase" in [-95,201].

Percentiles length indicators analysis (Figure 387) show that, indeed the concentration is around the middle of the data.

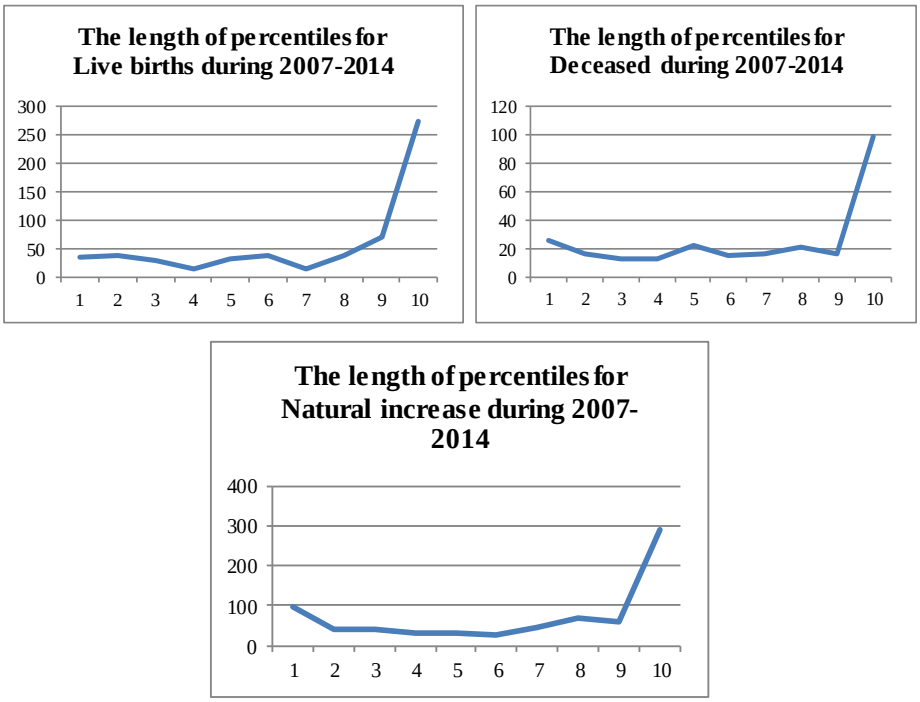


Figure 387

Taking into account the population dynamics during the analyzed period we have the following evolution of the indicators: Live births/10000 inh., Deceased/10000 inh. and Natural increase/10000 inh. as in the figure 388.

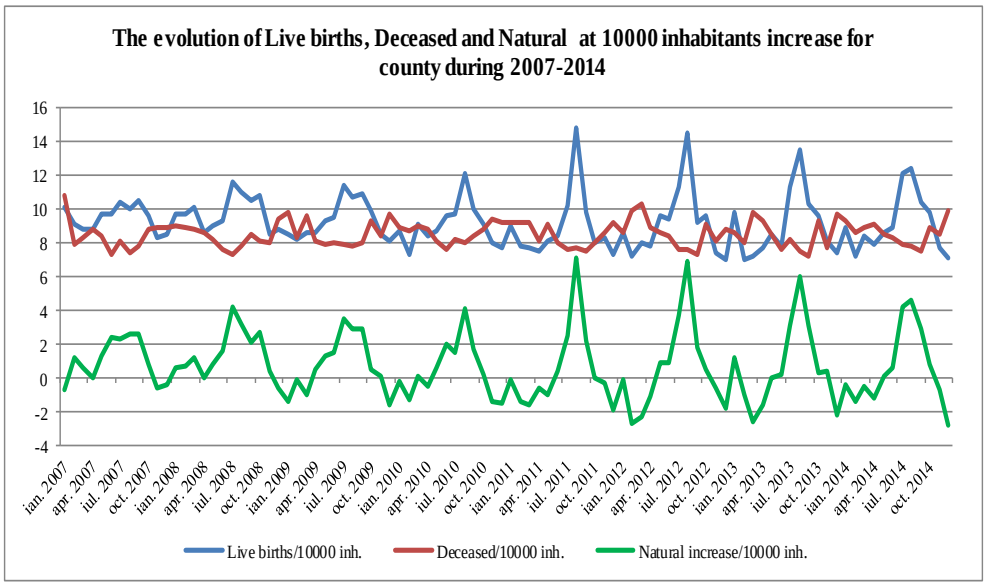


Figure 388

Regression analysis relative to indicator "Live births/10000 inh." gives us an equation: y=-0.005761937x+9.500912281 where x is the number of month (Jan, 2007=1), therefore a very small downward trend.

Regression analysis relative to indicator "Deceased/10000 inh." gives us an equation: y=0.000924783x+8.460252193 where x is the number of month (Jan, 2007=1), therefore a very small upward trend.

Regression analysis relative to indicator "Natural increase/10000 inh." gives us an equation: y=-0.006667661x+1.037964912 where x is the number of month (Jan, 2007=1), therefore a very small downward trend.

For the set of values above, the median indicator for "Live births/10000 inh." is 9, for "Deceased/10000 inh." is 8 and for "Natural increase/10000 inh.": 0. This means that the probability that the indicator has a value less than the median is equal to the probability that it has a higher value than this.

Also, the distribution of quartiles is for "Live births/10000 inh.": (7,8.1175,8.98,9.8875,14.82), for "Deceased/10000 inh.": (7.24,7.965,8.46,9.015,10.79) and for "Natural increase/10000 inh.": (-2.81,-0.615,0.43,1.8675,7.12).

The arithmetic mean and the standard deviation for “Live births/10000 inh.” are: (9,1.54), for “Deceased/10000 inh.”: (9,0.74) and for “Natural increase/10000 inh.”: (1,2.01). This means that with a probability greather than 0.68 “Live births/10000 inh.” are in the range [7,11], for “Deceased/10000 inh.” in [8,10] and for “Natural increase/10000 inh.” in [-1,3].

Percentiles length indicators analysis (Figure 389) show that, indeed the concentration is around the middle of the data.

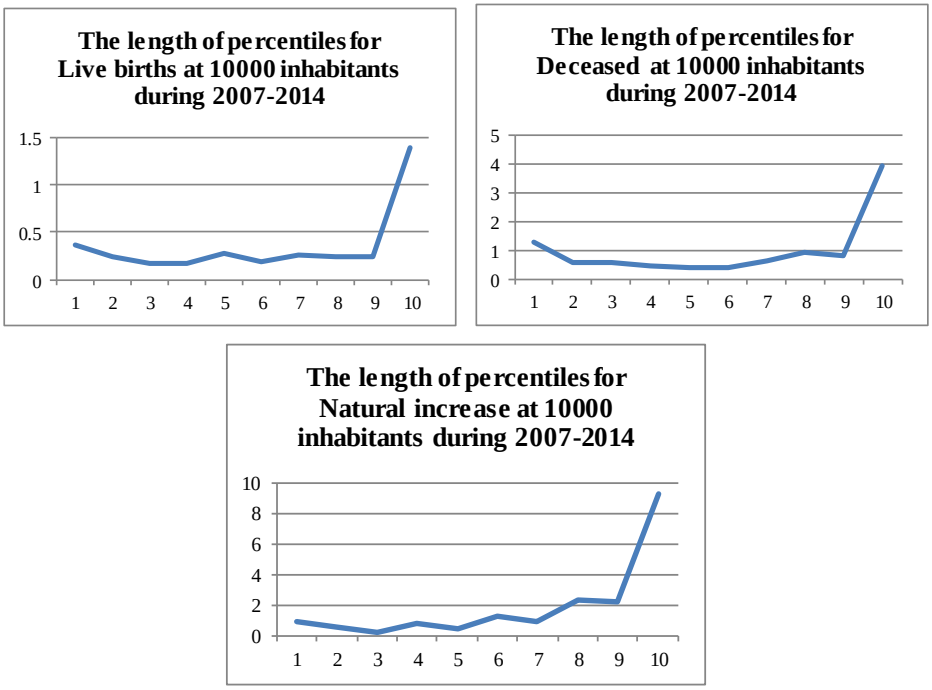


Figure 389

A comparison of the indicator “Live births” with the national level shows that it is better than the national, being better in 100% cases. For “Deceased” the indicator is better than the national, being better in 97.92% cases. Finally, for “Natural increase”, the indicator is better than the national, being better in 100% cases.

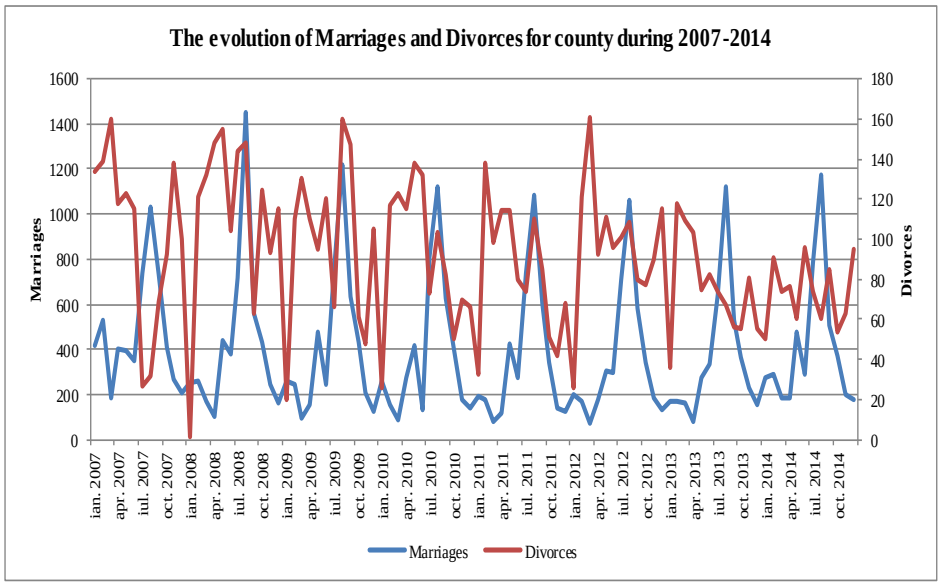


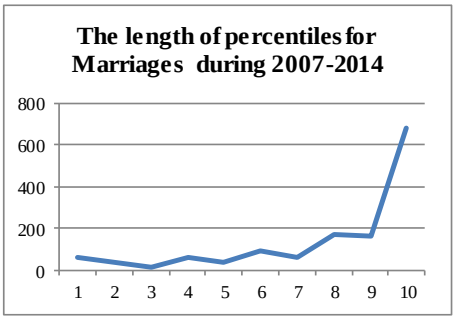
Figure 390

Regression analysis relative to indicator "Marriages" gives us an equation: y=-0.711055345x+429.8403509 where x is the number of month (Jan, 2007=1), therefore a pronounced downward trend.

Regression analysis relative to indicator "Divorces" gives us an equation: y=-0.414744981x+112.1567982 where x is the number of month (Jan, 2007=1), therefore a pronounced downward trend.

For the set of values above, the median indicator for "Marriages" is 281 and for "Divorces" is 94. Also, the distribution of quartiles is for "Marriages": (70,179,280.5,514.75,1450) and for "Divorces": (1,66.75,94,117.25,161). The arithmetic mean and the standard deviation for "Marriages" are: (395,297.76) and for "Divorces": (92,35.53). This means that with a probability greather than 0.68 "Marriages" are in the range [97,693] and for "Divorces" in [56,128].

Percentiles length indicators analysis (Figure 391) show that, indeed the concentration is around the middle of the data.



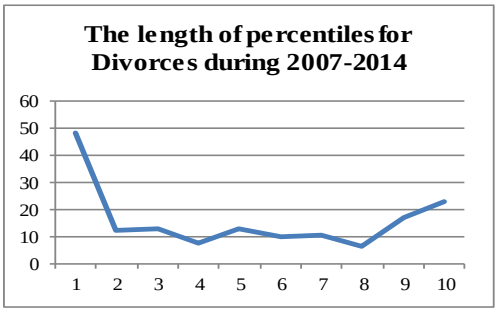


Figure 391

Taking into account the population dynamics during the analyzed period we have the following evolution of the indicators: Marriages/10000 inh. and Divorces/10000 inh. as in the figure 392.

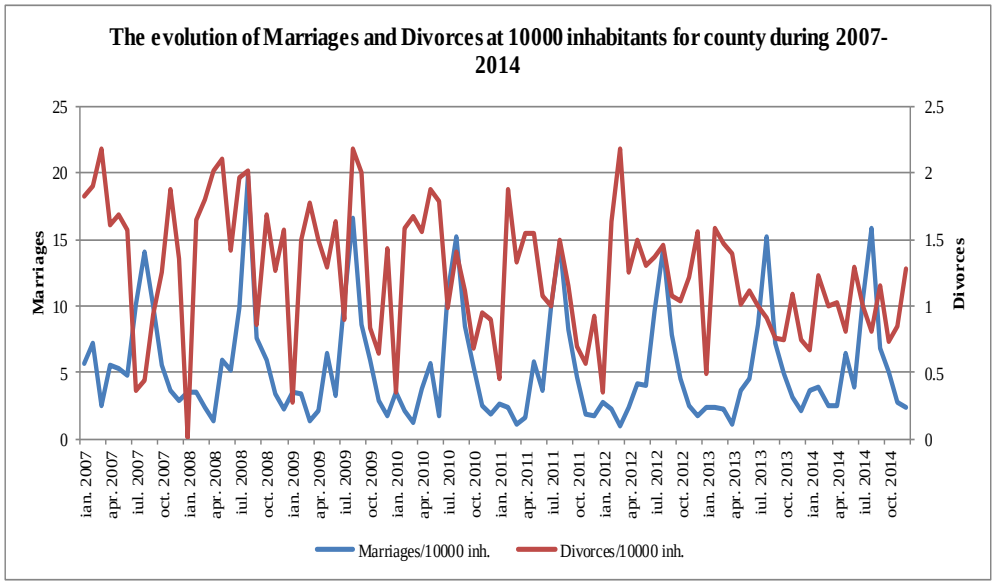


Figure 392

Regression analysis relative to indicator "Marriages/10000 inh." gives us an equation: y=-0.010410404x+5.870425439 where x is the number of month (Jan, 2007=1), therefore a very small downward trend. Regression analysis relative to indicator "Divorces/10000 inh." gives us an equation: y=-0.005798359x+1.530699561 where x is the number of month (Jan, 2007=1), therefore a very small downward trend.

For the set of values above, the median indicator for "Marriages/10000 inh." is 4 and for "Divorces/10000 inh." is 1. Also, the distribution of quartiles is for

"Marriages/10000 inh.": (0.95,2.4275,3.79,6.9475,19.75) and for "Divorces/10000 inh.": (0.01,0.9075,1.275,1.59,2.18). The arithmetic mean and the standard deviation for "Marriages/10000 inh." are: (5,4.04) and for "Divorces/10000 inh.": (1,0.48). This means that with a probability greather than 0.68 "Marriages/10000 inh." are in the range [1,9] and for "Divorces/10000 inh." in [1,1].

Percentiles length indicators analysis (Figure 393) show that, indeed the concentration is around the middle of the data.

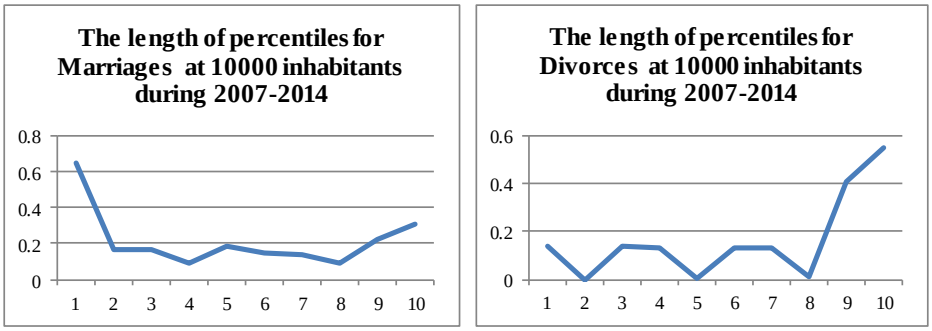


Figure 393

A comparison of the indicator "Marriages" with the national level shows that it is about the same with the national, being better in 55.21% cases. For "Divorces" the indicator is worse than the national, being better only in 39.58% cases.

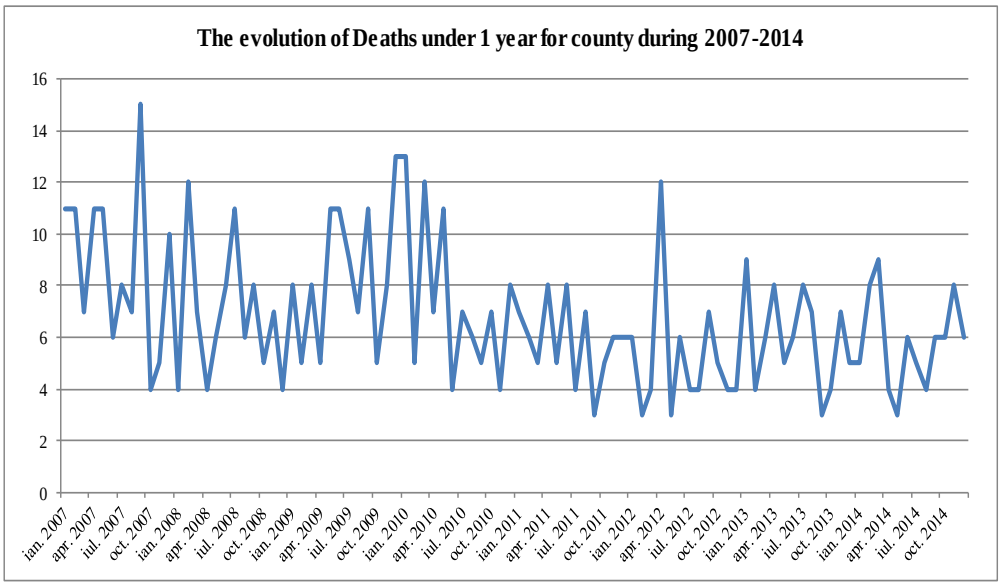


Figure 394

Regression analysis relative to indicator “Deaths under 1 year” gives us an equation: y=-0.037452523x+8.608114035 where x is the number of month (Jan, 2007=1), therefore a very small downward trend. For the set of values above, the median indicator for “Deaths under 1 year” is 6 and the distribution of quartiles is for “Deaths under 1 year”: (3,5,6,8,15). The arithmetic mean and the standard deviation for “Deaths under 1 year” are: (7,2.67) which means that with a probability greather than 0.68 “Deaths under 1 year” are in the range [4,10].

Percentiles length indicators analysis (Figure 395) show that, indeed the concentration is around the middle of the data.

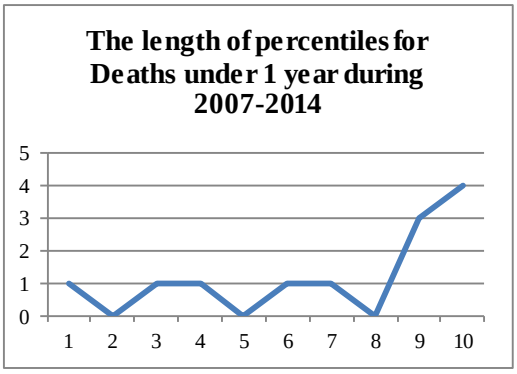


Figure 395

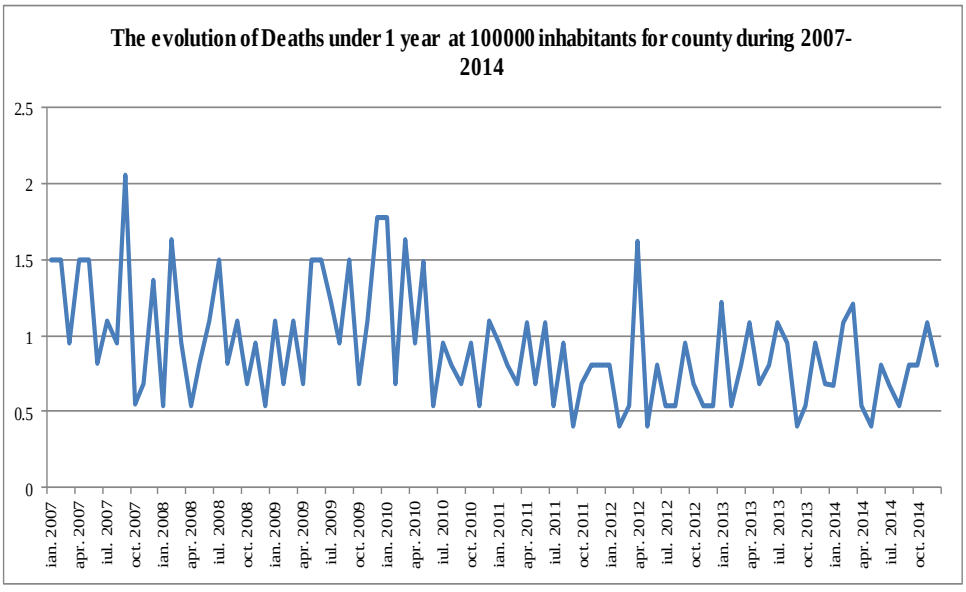


Figure 396

Regression analysis relative to indicator "Deaths under 1 year/100000 inh." gives us an equation: y=-0.005193706x+1.173561404 where x is the number of month (Jan, 2007=1), therefore a very small downward trend.

For the set of values above, the median indicator for "Deaths under 1 year/100000 inh." is 1 and the distribution of quartiles is for "Deaths under 1 year/100000 inh.": (0.4,0.68,0.815,1.09,2.05). The arithmetic mean and the standard deviation for "Deaths under 1 year/100000 inh." are: (1,0.36) which means that with a probability greather than 0.68 "Deaths under 1 year/100000 inh." are in the range [1,1].

A comparison of the indicator "Deaths under 1 year" with the national level shows that it is worse than the national, being better only in 37.5% cases.

A final analysis examines dependence aforementioned indicators of regional GDP variation.

Table 216. The evolution of Suceava County GDP during 2007-2014

Year	GDP (in mil. lei 2007)	Variation (%)
2007	8709	-
2008	8485	-2.57
2009	8430	-0.65
2010	7860	-6.75
2011	7893	0.41
2012	7939	0.58
2013	8216	3.49
2014	8330	1.38

Source: INSSE and own calculations

In what follows, we shall investigate if there is a dependency between GDP variation (noted with dGDP) and the aforementioned indicators.

Searching dependence annual variations of "Live births" from GDP, we find that there is not a dependence of the variation of GDP. Searching dependence annual variations of "Deceased" from GDP, we find that there is not a dependence of the variation of GDP. Searching dependence annual variations of "Natural increase" from GDP, we find that there is not a dependence of the variation of GDP. Searching dependence annual variations of "Marriages" from GDP, we find that there is a dependence of Marriages from GDP offset by 1 year and the regression equation is:1.8462dGDP+1.1026. Searching dependence annual variations of "Divorces" from GDP, we find that there is a dependence of Divorces from GDP offset by 2 years and the regression equation is:-3.9728dGDP+-11.9191. Searching dependence annual variations of "Deaths under 1 year" from GDP, we find that there is not a dependence of the variation of GDP.

2.37. Analysis of Natural Movement of Teleorman County Population

Statistics of natural movement corresponding to Teleorman County are the following:

Table 217. The natural movement of Teleorman County population during 2007-2008

Month	Live births	Deceased	Natural increase	Marriages	Divorces	Deaths under 1 year	Month	Live births	Deceased	Natural increase	Marriages	Divorces	Deaths under 1 year
ian,07	255	732	-477	406	48	7	ian,08	273	761	-488	86	29	2
feb,07	203	562	-359	602	49	7	feb,08	241	616	-375	107	50	3
mar,07	254	589	-335	312	57	3	mar,08	283	593	-310	119	37	7
apr,07	223	554	-331	268	61	0	apr,08	231	576	-345	75	58	1
mai,07	242	537	-295	257	54	4	mai,08	236	539	-303	228	30	4
iun,07	243	484	-241	256	63	3	iun,08	257	503	-246	192	47	7
iul,07	290	567	-277	288	31	3	iul,08	258	463	-205	238	54	1
aug,07	265	478	-213	394	43	4	aug,08	279	499	-220	405	30	3
sept,07	267	419	-152	374	35	5	sept,08	277	474	-197	264	25	7
oct,07	270	586	-316	323	66	1	oct,08	310	616	-306	249	85	1
nov,07	242	609	-367	183	74	2	nov,08	247	575	-328	132	53	1
dec,07	264	676	-412	108	66	6	dec,08	276	670	-394	56	91	8

Source: INSSE

Table 218. The natural movement of Teleorman County population during 2009-2010

Month	Live births	Deceased	Natural increase	Marriages	Divorces	Deaths under 1 year	Month	Live births	Deceased	Natural increase	Marriages	Divorces	Deaths under 1 year
ian,09	225	746	-521	70	40	3	ian,10	227	689	-462	51	36	2
feb,09	229	612	-383	78	55	4	feb,10	269	663	-394	55	32	2
mar,09	302	676	-374	63	75	1	mar,10	280	593	-313	66	69	4
apr,09	255	628	-373	87	53	4	apr,10	227	623	-396	115	54	8
mai,09	237	552	-315	200	72	4	mai,10	213	545	-332	177	45	3
iun,09	283	491	-208	174	41	3	iun,10	252	513	-261	110	57	2
iul,09	372	497	-125	247	39	1	iul,10	274	499	-225	228	38	3
aug,09	320	475	-155	348	58	1	aug,10	294	495	-201	247	43	3
sept,09	281	508	-227	228	22	2	sept,10	289	495	-206	195	36	4
oct,09	302	626	-324	275	17	2	oct,10	236	603	-367	183	43	4
nov,09	251	624	-373	104	16	5	nov,10	274	536	-262	58	26	4
dec,09	285	687	-402	50	47	5	dec,10	261	623	-362	32	71	3

Source: INSSE

Table 219. The natural movement of Teleorman County population during 2011-2012

Month	Live births	Deceased	Natural increase	Marriages	Divorces	Deaths under 1 year	Month	Live births	Deceased	Natural increase	Marriages	Divorces	Deaths under 1 year
ian,11	209	706	-497	39	31	3	ian,12	244	609	-365	39	22	4
feb,11	211	596	-385	38	84	3	feb,12	248	689	-441	38	30	2
mar,11	247	649	-402	42	57	4	mar,12	213	637	-424	39	41	2
apr,11	185	586	-401	62	58	3	apr,12	179	646	-467	93	37	1
mai,11	237	601	-364	133	48	2	mai,12	259	548	-289	106	12	0
iun,11	217	489	-272	129	44	3	iun,12	203	520	-317	137	78	1
iul,11	250	494	-244	163	19	3	iul,12	293	577	-284	174	37	3
aug,11	283	469	-186	255	55	2	aug,12	322	533	-211	247	46	2
sept,11	288	427	-139	197	49	4	sept,12	254	447	-193	243	40	3
oct,11	221	556	-335	157	30	3	oct,12	298	551	-253	168	21	6
nov,11	235	611	-376	62	26	1	nov,12	224	573	-349	60	44	1
dec,11	232	659	-427	33	41	1	dec,12	208	571	-363	33	43	1

Source: INSSE

Table 220. The natural movement of Teleorman County population during 2013-2014

Month	Live births	Deceased	Natural increase	Marriages	Divorces	Deaths under 1 year	Month	Live births	Deceased	Natural increase	Marriages	Divorces	Deaths under 1 year
ian,13	254	570	-316	39	16	3	ian,14	261	614	-353	41	16	4
feb,13	174	545	-371	36	26	2	feb,14	204	599	-395	36	44	2
mar,13	166	542	-376	66	38	4	mar,14	239	657	-418	51	45	0
apr,13	171	560	-389	37	74	3	apr,14	206	620	-414	73	35	1
mai,13	197	488	-291	106	51	3	mai,14	212	592	-380	121	58	2
iun,13	195	486	-291	149	41	4	iun,14	268	518	-250	113	33	5
iul,13	247	474	-227	167	29	0	iul,14	272	470	-198	176	19	3
aug,13	272	500	-228	247	52	1	aug,14	274	456	-182	291	35	3
sept,13	270	451	-181	176	39	0	sept,14	265	496	-231	197	26	5
oct,13	245	541	-296	152	39	1	oct,14	259	567	-308	162	24	1
nov,13	265	537	-272	59	32	3	nov,14	245	537	-292	68	40	2
dec,13	198	670	-472	36	37	1	dec,14	249	615	-366	25	44	5

Source: INSSE

Table 221. The population trends of Teleorman County during 2007-2014

Year	Population	Year	Population
2007	431675	2011	414205
2008	427564	2012	409369
2009	423186	2013	404460
2010	418897	2014	399528

Source: INSSE

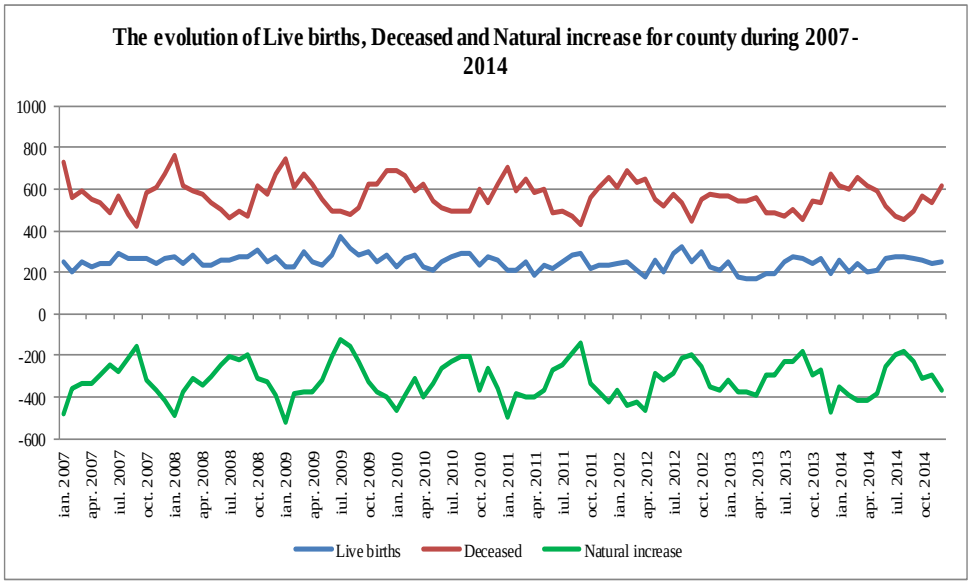


Figure 397

From figure 397 we can see a sinusoidal evolution of the indicator. #VALUE!

Regression analysis relative to indicator "Live births" gives us an equation: y=-0.314256647x+265.158114 where x is the number of month (Jan, 2007=1), therefore a downward trend.

Regression analysis relative to indicator "Deceased" gives us an equation: y=-0.394682583x+587.1212719 where x is the number of month (Jan, 2007=1), therefore a pronounced downward trend.

Regression analysis relative to indicator "Natural increase" gives us an equation: y=0.080425936x+-321.9631579 where x is the number of month (Jan, 2007=1), therefore an upward trend.

For the set of values above, the median indicator for "Live births" is 252, for "Deceased" is 567 and for "Natural increase": -321. This means that the probability

that the indicator has a value less than the median is equal to the probability that it has a higher value than this.

Also, the distribution of quartiles is for “Live births”: (166,227,251.5,273.25,372), for “Deceased”: (419,499.75,567,616,761) and for “Natural increase”: (-521,-377,-320.5,-245.5,-125).

The arithmetic mean and the standard deviation for “Live births” are: (250,35.62), for “Deceased”: (568,74.54) and for “Natural increase”: (-318,88.73). This means that with a probability greather than 0.68 “Live births” are in the range [214,286], for “Deceased” in [493,643] and for “Natural increase” in [-407,-229].

Percentiles length indicators analysis (Figure 398) show that, indeed the concentration is around the middle of the data.

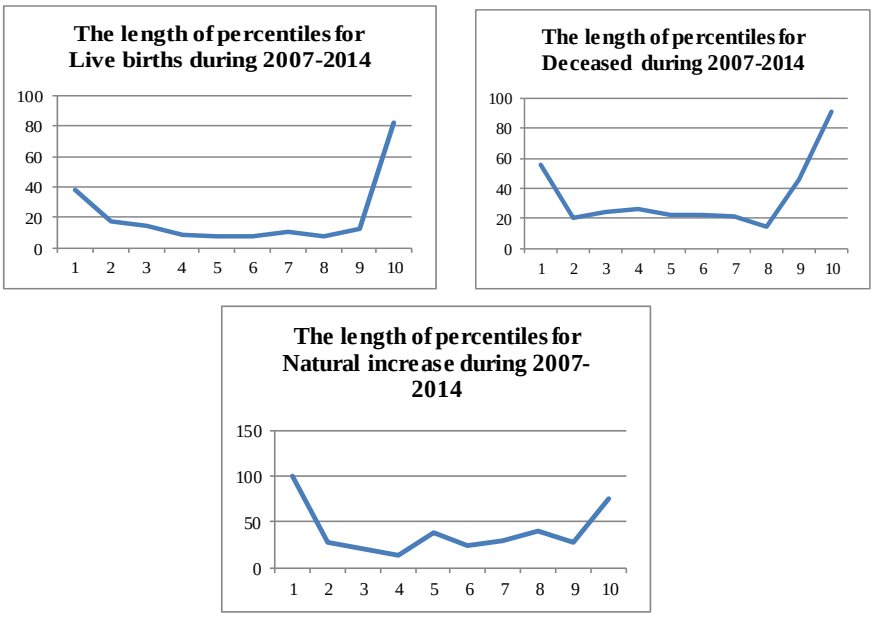


Figure 398

Taking into account the population dynamics during the analyzed period we have the following evolution of the indicators: Live births/10000 inh., Deceased/10000 inh. and Natural increase/10000 inh. as in the figure 399.

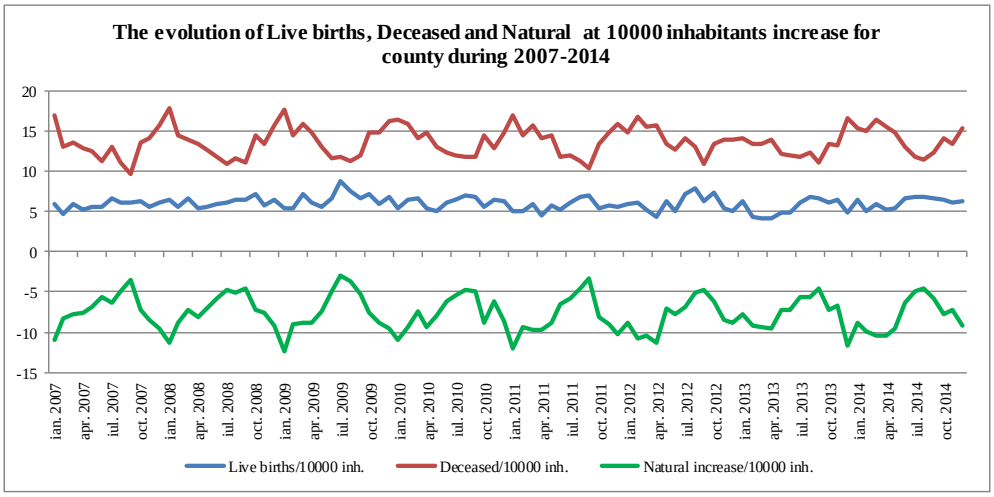


Figure 399

Regression analysis relative to indicator "Live births/10000 inh." gives us an equation: y=-0.002135988x+6.107657895 where x is the number of month (Jan, 2007=1), therefore a very small downward trend.

Regression analysis relative to indicator "Deceased/10000 inh." gives us an equation: y=0.002812873x+13.51680482 where x is the number of month (Jan, 2007=1), therefore a very small upward trend.

Regression analysis relative to indicator "Natural increase/10000 inh." gives us an equation: y=-0.004956932x+-7.409276316 where x is the number of month (Jan, 2007=1), therefore a very small downward trend.

For the set of values above, the median indicator for "Live births/10000 inh." is 6, for "Deceased/10000 inh." is 13 and for "Natural increase/10000 inh.": -8. This means that the probability that the indicator has a value less than the median is equal to the probability that it has a higher value than this.

Also, the distribution of quartiles is for "Live births/10000 inh.": (4.1,5.4175,6.035,6.5675,8.79), for "Deceased/10000 inh.": (9.71,12.0575,13.47,14.8475,17.8) and for "Natural increase/10000 inh.": (-12.31,-9.18,-7.69,-5.8625,-2.95).

The arithmetic mean and the standard deviation for "Live births/10000 inh." are: (6,0.83), for "Deceased/10000 inh.": (14,1.78) and for "Natural increase/10000 inh.": (-8,2.14). This means that with a probability greather than 0.68 "Live births/10000 inh." are in the range [5,7], for "Deceased/10000 inh." in [12,16] and for "Natural increase/10000 inh." in [-10,-6].

Percentiles length indicators analysis (Figure 400) show that, indeed the concentration is around the middle of the data.

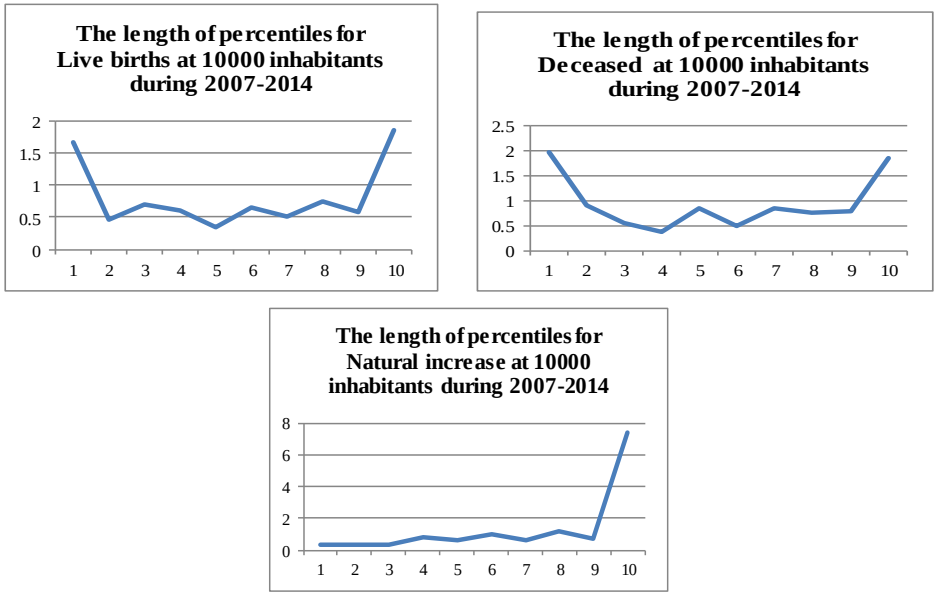


Figure 400

A comparison of the indicator "Live births" with the national level shows that it is worse than the national, being better only in 2.08% cases. For "Deceased" the indicator is worse than the national, being better only in 0% cases. Finally, for "Natural increase", the indicator is worse than the national, being better only in 0% cases.

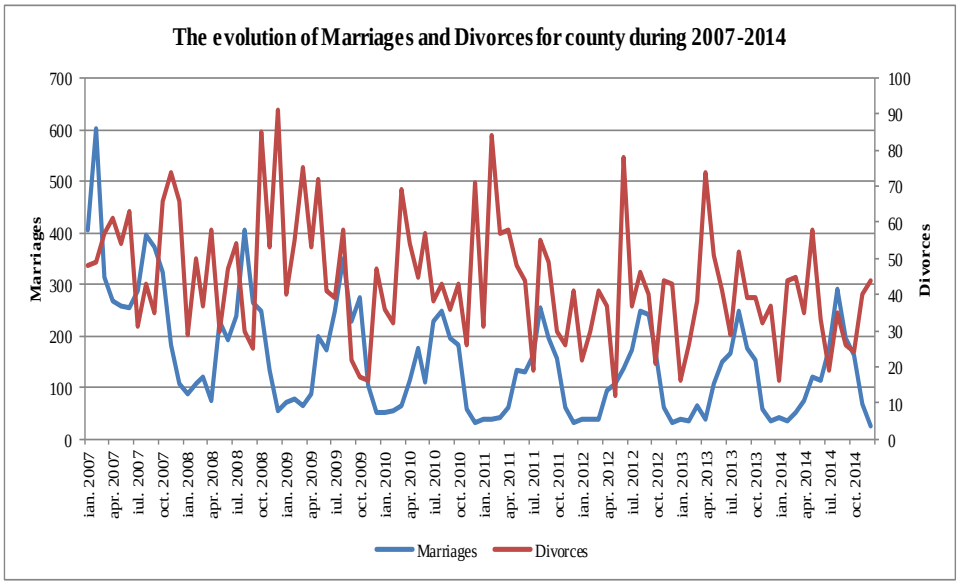


Figure 401

Regression analysis relative to indicator "Marriages" gives us an equation: y=-1.827061856x+241.4666667 where x is the number of month (Jan, 2007=1), therefore a pronounced downward trend.

Regression analysis relative to indicator "Divorces" gives us an equation: y=-0.197307379x+53.39232456 where x is the number of month (Jan, 2007=1), therefore a downward trend.

For the set of values above, the median indicator for "Marriages" is 131 and for "Divorces" is 42. Also, the distribution of quartiles is for "Marriages": (25,61.5,130.5,228,602) and for "Divorces": (12,31.75,42,54,91). The arithmetic mean and the standard deviation for "Marriages" are: (153,108.38) and for "Divorces": (44,16.8). This means that with a probability greather than 0.68 "Marriages" are in the range [45,261] and for "Divorces" in [27,61].

Percentiles length indicators analysis (Figure 402) show that, indeed the concentration is around the middle of the data.

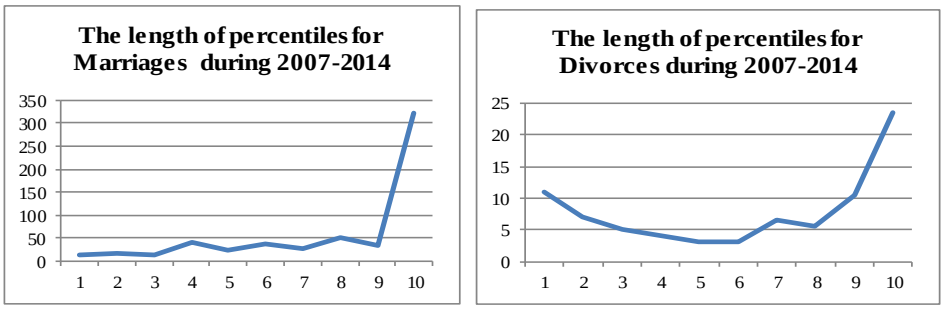


Figure 402

Taking into account the population dynamics during the analyzed period we have the following evolution of the indicators: Marriages/10000 inh. and Divorces/10000 inh. as in the figure 403.

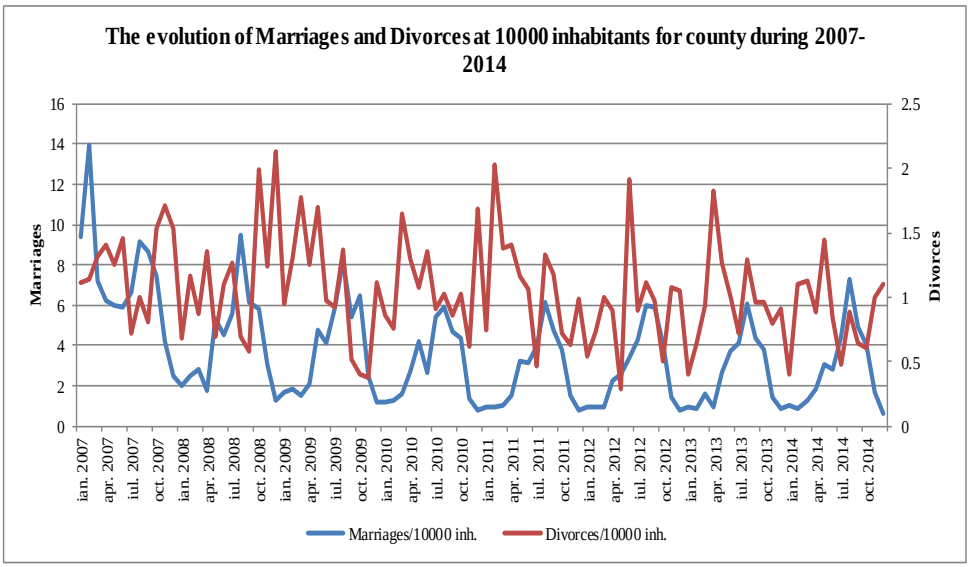


Figure 403

Regression analysis relative to indicator "Marriages/10000 inh." gives us an equation: y=-0.039948182x+5.582486842 where x is the number of month (Jan, 2007=1), therefore a very small downward trend.

Regression analysis relative to indicator "Divorces/10000 inh." gives us an equation: y=-0.003795985x+1.23452193 where x is the number of month (Jan, 2007=1), therefore a very small downward trend.

For the set of values above, the median indicator for "Marriages/10000 inh." is 3 and for "Divorces/10000 inh." is 1. Also, the distribution of quartiles is for

"Marriages/10000 inh.": (0.63,1.485,3.1,5.4025,13.95) and for "Divorces/10000 inh.": (0.29,0.7575,1.005,1.29,2.13). The arithmetic mean and the standard deviation for "Marriages/10000 inh." are: (4,2.53) and for "Divorces/10000 inh.": (1,0.39). This means that with a probability greather than 0.68 "Marriages/10000 inh." are in the range [1,7] and for "Divorces/10000 inh." in [1,1].

Percentiles length indicators analysis (Figure 404) show that, indeed the concentration is around the middle of the data.

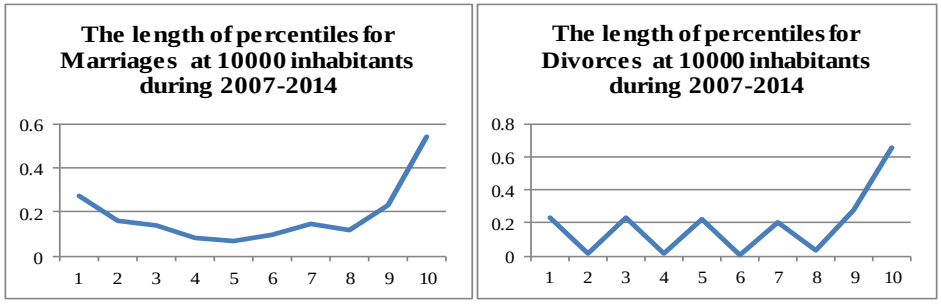


Figure 404

A comparison of the indicator "Marriages" with the national level shows that it is worse than the national, being better only in 7.29% cases. For "Divorces" the indicator is about the same with the national, being better in 59.38% cases.

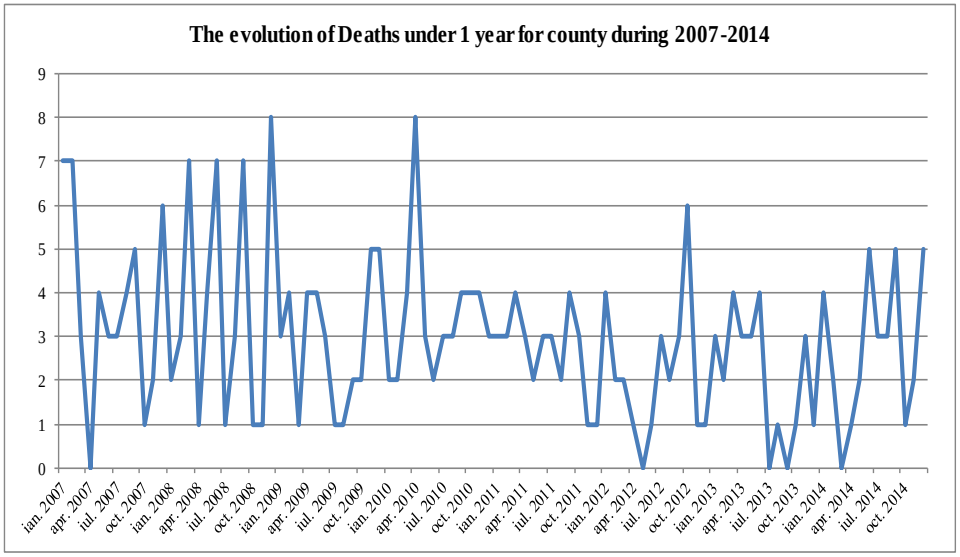


Figure 405

Regression analysis relative to indicator "Deaths under 1 year" gives us an equation: y=-0.018319316x+3.836403509 where x is the number of month (Jan, 2007=1), therefore a very small downward trend.

For the set of values above, the median indicator for "Deaths under 1 year" is 3 and the distribution of quartiles is for "Deaths under 1 year": (0,1.75,3,4,8). The arithmetic mean and the standard deviation for "Deaths under 1 year" are: (3,1.84) which means that with a probability greather than 0.68 "Deaths under 1 year" are in the range [1,5].

Percentiles length indicators analysis (Figure 406) show that, indeed the concentration is around the middle of the data.

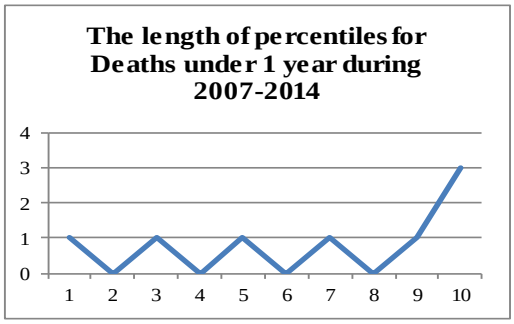


Figure 406

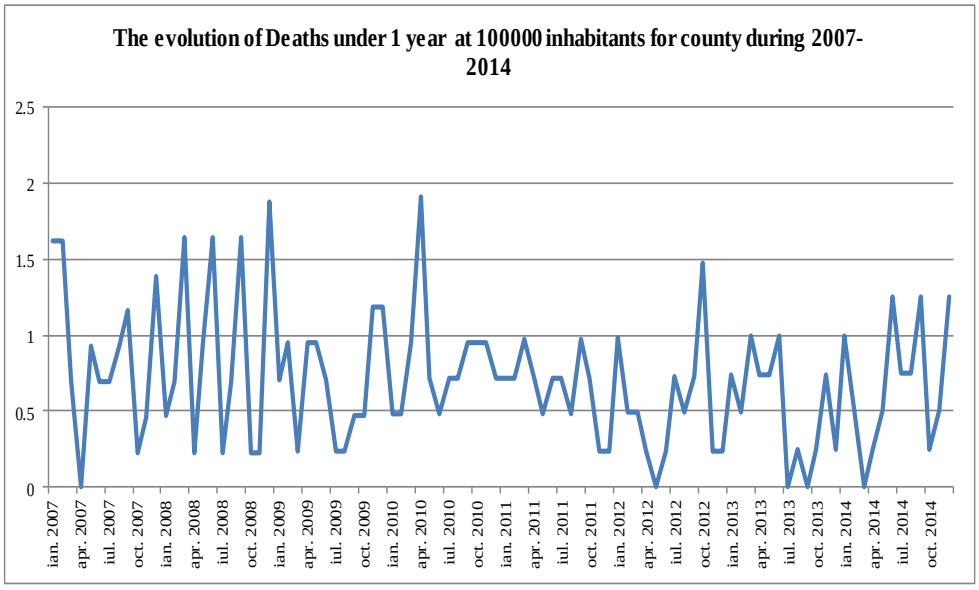


Figure 407

Regression analysis relative to indicator "Deaths under 1 year/100000 inh." gives us an equation: y=-0.003743625x+0.886982456 where x is the number of month (Jan, 2007=1), therefore a very small downward trend.

For the set of values above, the median indicator for "Deaths under 1 year/100000 inh." is 1 and the distribution of quartiles is for "Deaths under 1 year/100000 inh.": (0,0.4075,0.72,0.95,1.91). The arithmetic mean and the standard deviation for "Deaths under 1 year/100000 inh." are: (1,0.43) which means that with a probability greather than 0.68 "Deaths under 1 year/100000 inh." are in the range [1,1].

A comparison of the indicator "Deaths under 1 year" with the national level shows that it is about the same with the national, being better in 55.21% cases.

A final analysis examines dependence aforementioned indicators of regional GDP variation.

Table 222. The evolution of Teleorman County GDP during 2007-2014

Year	GDP (in mil. lei 2007)	Variation (%)
2007	4718	-
2008	5030	6.62
2009	4808	-4.4
2010	4405	-8.38
2011	4377	-0.65
2012	4527	3.42
2013	4609	1.82
2014	4559	-1.08

Source: INSSE and own calculations

In what follows, we shall investigate if there is a dependency between GDP variation (noted with dGDP) and the aforementioned indicators.

Searching dependence annual variations of "Live births" from GDP, we find that there is not a dependence of the variation of GDP. Searching dependence annual variations of "Deceased" from GDP, we find that there is not a dependence of the variation of GDP. Searching dependence annual variations of "Natural increase" from GDP, we find that there is not a dependence of the variation of GDP. Searching dependence annual variations of "Marriages" from GDP, we find that there is not a dependence of the variation of GDP. Searching dependence annual variations of "Divorces" from GDP, we find that there is not a dependence of the variation of GDP. Searching dependence annual variations of "Deaths under 1 year" from GDP, we find that there is not a dependence of the variation of GDP.

2.38. Analysis of Natural Movement of Timis County Population

Statistics of natural movement corresponding to Timis County are the following:

Table 223. The natural movement of Timis County population during 2007-2008

Month	Live births	Deceased	Natural increase	Marriages	Divorces	Deaths under 1	Month	Live births	Deceased	Natural increase	Marriages	Divorces	Deaths under 1 year
ian,07	528	798	-270	288	55	10	ian,08	655	715	-60	186	17	7
feb,07	505	591	-86	561	86	4	feb,08	586	583	3	284	36	4
mar,07	512	658	-146	384	398	6	mar,08	596	643	-47	331	26	7
apr,07	459	621	-162	398	80	7	apr,08	514	645	-131	181	61	9
mai,07	561	594	-33	256	133	12	mai,08	591	601	-10	497	46	1
iun,07	555	568	-13	606	198	3	iun,08	565	576	-11	470	22	6
iul,07	582	687	-105	663	19	4	iul,08	611	583	28	620	67	5
aug,07	589	550	39	756	6	9	aug,08	610	566	44	904	17	11
sept,07	574	541	33	381	147	7	sept,08	608	518	90	586	14	5
oct,07	559	615	-56	464	63	4	oct,08	682	593	89	468	47	2
nov,07	510	621	-111	325	84	5	nov,08	499	595	-96	335	69	3
dec,07	557	684	-127	187	61	10	dec,08	614	795	-181	291	68	7

Source: INSSE

Table 224. The Natural Movement of Timis County Population during 2009-2010

Month	Live births	Deceased	Natural increase	Marriages	Divorces	Deaths under 1 year	Month	Live births	Deceased	Natural increase	Marriages	Divorces	Deaths under 1 year
ian,09	608	657	-49	176	38	7	ian,10	620	674	-54	152	11	6
feb,09	527	590	-63	287	57	8	feb,10	489	659	-170	209	63	9
mar,09	550	707	-157	184	70	1	mar,10	582	653	-71	169	59	9
apr,09	519	611	-92	240	67	9	apr,10	517	630	-113	308	60	2
mai,09	569	589	-20	456	59	8	mai,10	501	555	-54	427	49	4
iun,09	586	585	1	439	41	6	iun,10	624	591	33	318	62	5
iul,09	674	602	72	580	13	13	iul,10	599	583	16	598	46	5
aug,09	624	569	55	713	23	6	aug,10	612	605	7	651	8	6
sept,09	675	561	114	587	35	4	sept,10	641	572	69	559	64	7
oct,09	639	685	-46	509	50	5	oct,10	558	645	-87	449	70	5
nov,09	557	669	-112	302	42	6	nov,10	597	913	-316	349	16	11
dec,09	490	911	-421	257	35	8	dec,10	520	768	-248	188	41	5

Source: INSSE

Table 225. The natural movement of Timis County population during 2011-2012

Month	Live births	Deceased	Natural increase	Marriages	Divorces	Deaths under 1 year	Month	Live births	Deceased	Natural increase	Marriages	Divorces	Deaths under 1 year
ian,11	592	734	-142	126	47	7	ian,12	505	607	-102	141	35	3
feb,11	498	587	-89	187	65	2	feb,12	487	645	-158	206	59	4
mar,11	493	698	-205	95	78	6	mar,12	466	598	-132	143	59	5
apr,11	451	552	-101	186	43	6	apr,12	469	721	-252	250	66	3
mai,11	569	641	-72	406	88	4	mai,12	555	538	17	356	90	3
iun,11	528	549	-21	438	90	3	iun,12	547	557	-10	468	82	14
iul,11	559	543	16	562	61	1	iul,12	631	712	-81	513	39	6
aug,11	674	631	43	679	30	5	aug,12	623	545	78	694	32	4
sept,11	570	463	107	465	57	4	sept,12	553	459	94	553	37	3
oct,11	537	638	-101	403	42	3	oct,12	630	628	2	433	100	7
nov,11	531	760	-229	283	83	7	nov,12	529	532	-3	211	74	7
dec,11	515	896	-381	256	114	4	dec,12	436	984	-548	452	83	2

Source: INSSE

Table 226. The natural movement of Timis County population during 2013-2014

Month	Live births	Deceased	Natural increase	Marriages	Divorces	Deaths under 1 year	Month	Live births	Deceased	Natural increase	Marriages	Divorces	Deaths under 1
ian,13	666	581	85	127	37	4	ian,14	585	638	-53	155	12	2
feb,13	443	576	-133	172	49	4	feb,14	489	591	-102	229	67	4
mar,13	472	667	-195	264	69	1	mar,14	536	604	-68	226	52	3
apr,13	504	651	-147	225	94	5	apr,14	525	567	-42	232	34	6
mai,13	506	599	-93	337	66	3	mai,14	572	529	43	397	103	5
iun,13	490	612	-122	497	77	4	iun,14	542	555	-13	421	42	1
iul,13	620	521	99	482	38	2	iul,14	666	451	215	436	36	5
aug,13	623	506	117	546	51	1	aug,14	622	550	72	657	93	2
sept,13	587	554	33	421	65	6	sept,14	688	506	182	427	79	11
oct,13	645	555	90	543	107	5	oct,14	615	716	-101	542	115	4
nov,13	471	719	-248	450	32	3	nov,14	493	804	-311	537	50	7
dec,13	509	900	-391	406	142	5	dec,14	520	101	419	458	60	1

Source: INSSE

Table 227. The population trends of Timis County during 2007-2014

Year	Population	Year	Population
2007	716420	2011	731044
2008	720785	2012	733094
2009	724277	2013	735539
2010	727041	2014	737881

Source: INSSE

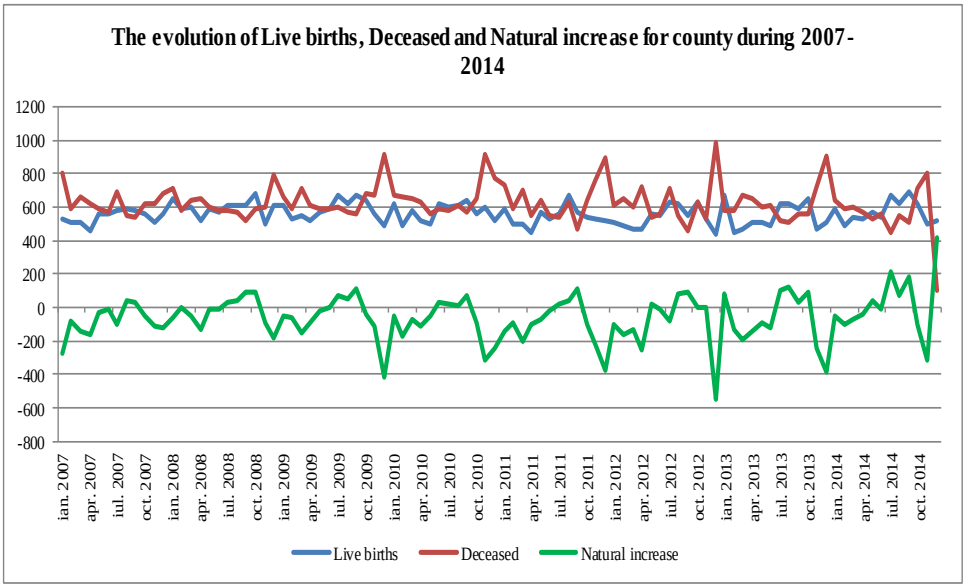


Figure 408

From figure 408 we can see a sinusoidal evolution of the indicator. Except months aug 2007, sept 2007, feb 2008, iul 2008, aug 2008, sept 2008, oct 2008, iun 2009, iul 2009, aug 2009, sept 2009, iun 2010, iul 2010, aug 2010, sept 2010, iul 2011, aug 2011, sept 2011, mai 2012, aug 2012, sept 2012, oct 2012, ian 2013, iul 2013, aug 2013, sept 2013, oct 2013, mai 2014, iul 2014, aug 2014, sept 2014, dec 201 the natural increase was negative.

Regression analysis relative to indicator "Live births" gives us an equation: y=-0.164073521x+568.7596491 where x is the number of month (Jan, 2007=1), therefore a downward trend.

Regression analysis relative to indicator "Deceased" gives us an equation: y=-0.515911557x+647.8967105 where x is the number of month (Jan, 2007=1), therefore a pronounced downward trend.

Regression analysis relative to indicator “Natural increase” gives us an equation: y=0.351838036x+-79.1370614 where x is the number of month (Jan, 2007=1), therefore a pronounced upward trend.

For the set of values above, the median indicator for “Live births” is 559, for “Deceased” is 602 and for “Natural increase”: -55. This means that the probability that the indicator has a value less than the median is equal to the probability that it has a higher value than this.

Also, the distribution of quartiles is for “Live births”: (436,511.5,558.5,610.25,688), for “Deceased”: (101,564.75,601.5,661,984) and for “Natural increase”: (-548,-128,-55,29.25,419).

The arithmetic mean and the standard deviation for “Live births” are: (561,60.92), for “Deceased”: (623,112.34) and for “Natural increase”: (-62,139.14). This means that with a probability greather than 0.68 “Live births” are in the range [500,622], for “Deceased” in [511,735] and for “Natural increase” in [-201,77].

Percentiles length indicators analysis (Figure 409) show that, indeed the concentration is around the middle of the data.

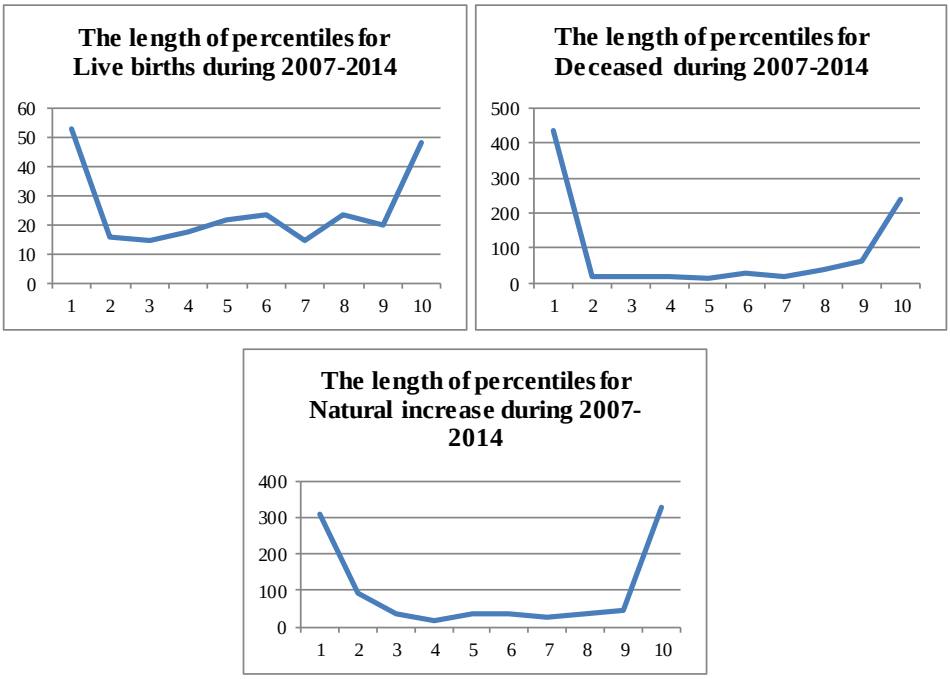


Figure 409

Taking into account the population dynamics during the analyzed period we have the following evolution of the indicators: Live births/10000 inh., Deceased/10000 inh. and Natural increase/10000 inh. as in the figure 410.

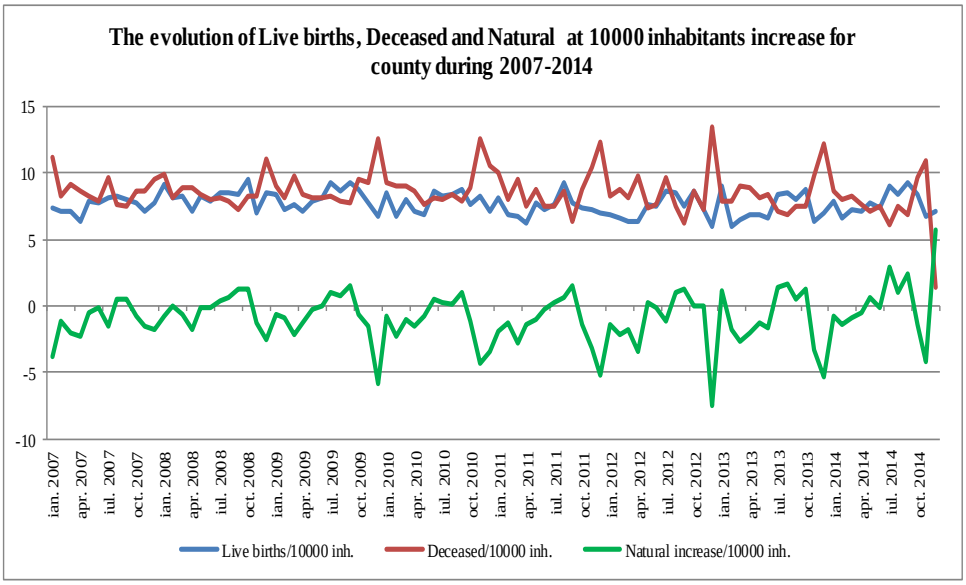


Figure 410

Regression analysis relative to indicator "Live births/10000 inh." gives us an equation: y=-0.004889718x+7.939234649 where x is the number of month (Jan, 2007=1), therefore a very small downward trend.

Regression analysis relative to indicator "Deceased/10000 inh." gives us an equation: y=-0.009930277x+9.037660088 where x is the number of month (Jan, 2007=1), therefore a very small downward trend.

Regression analysis relative to indicator "Natural increase/10000 inh." gives us an equation: y=0.005062398x+-1.099276316 where x is the number of month (Jan, 2007=1), therefore an upward trend.

For the set of values above, the median indicator for "Live births/10000 inh." is 8, for "Deceased/10000 inh." is 8 and for "Natural increase/10000 inh.": -1. This means that the probability that the indicator has a value less than the median is equal to the probability that it has a higher value than this.

Also, the distribution of quartiles is for "Live births/10000 inh.": (5.95,7.05,7.75,8.4225,9.46), for "Deceased/10000 inh.": (1.37,7.7325,8.285,9.0975,13.42) and for "Natural increase/10000 inh.": (-7.48,-1.7775,-0.76,0.405,5.68).

The arithmetic mean and the standard deviation for “Live births/10000 inh.” are: (8,0.84), for “Deceased/10000 inh.”: (9,1.55) and for “Natural increase/10000 inh.”: (-1,1.9). This means that with a probability greather than 0.68 “Live births/10000 inh.” are in the range [7,9], for “Deceased/10000 inh.” in [7,11] and for “Natural increase/10000 inh.” in [-3,1].

Percentiles length indicators analysis (Figure 411) show that, indeed the concentration is around the middle of the data.

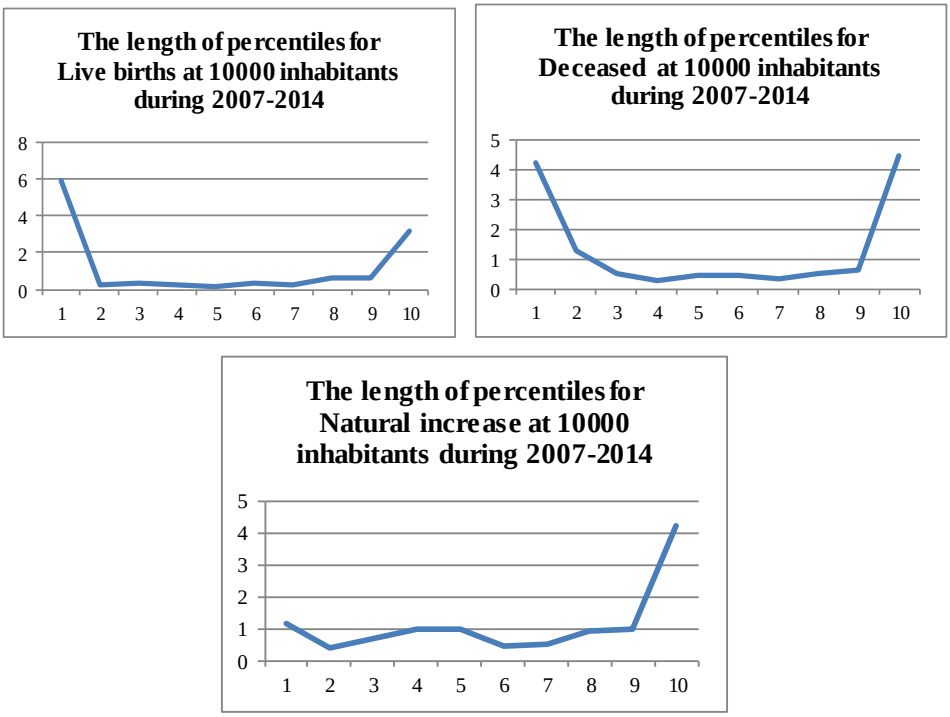


Figure 411

A comparison of the indicator “Live births” with the national level shows that it is about the same with the national, being better in 46.88% cases. For “Deceased” the indicator is better than the national, being better in 86.46% cases. Finally, for “Natural increase”, the indicator is better than the national, being better in 82.29% cases.

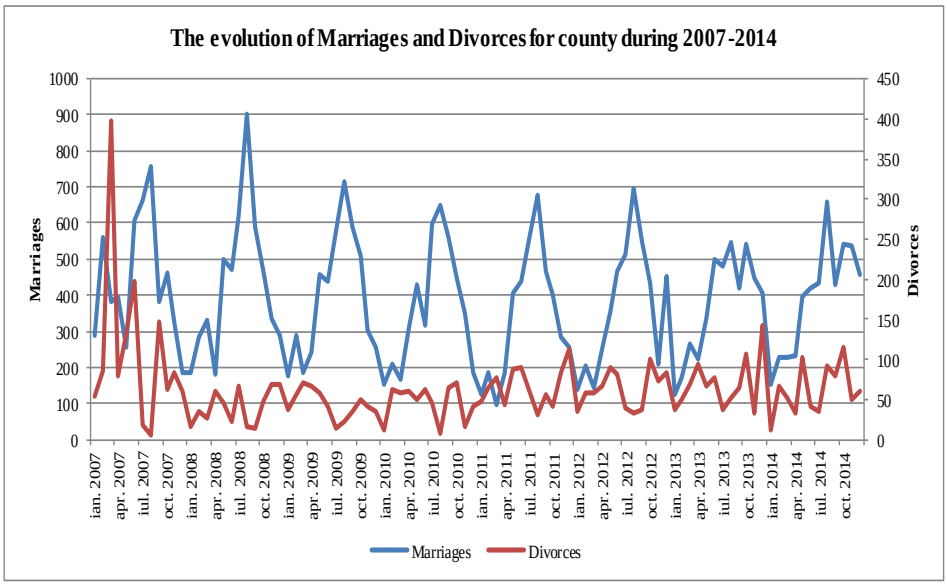


Figure 412

Regression analysis relative to indicator "Marriages" gives us an equation: y=-0.348629951x+404.6377193 where x is the number of month (Jan, 2007=1), therefore a pronounced downward trend.

Regression analysis relative to indicator "Divorces" gives us an equation: y=-0.117681769x+68.44714912 where x is the number of month (Jan, 2007=1), therefore a downward trend.

For the set of values above, the median indicator for "Marriages" is 401 and for "Divorces" is 59. Also, the distribution of quartiles is for "Marriages": (95,238,400.5,500,904) and for "Divorces": (6,37.75,59,74.75,398). The arithmetic mean and the standard deviation for "Marriages" are: (388,170.15) and for "Divorces": (63,46.95). This means that with a probability greather than 0.68 "Marriages" are in the range [218,558] and for "Divorces" in [16,110].

Percentiles length indicators analysis (Figure 413) show that, indeed the concentration is around the middle of the data.

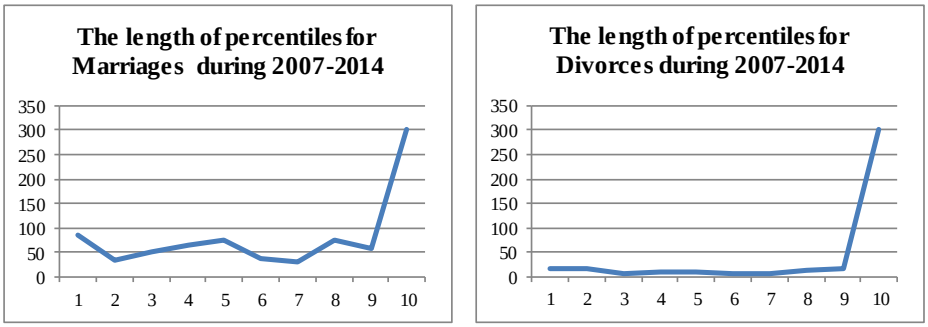


Figure 413

Taking into account the population dynamics during the analyzed period we have the following evolution of the indicators: Marriages/10000 inh. and Divorces/10000 inh. as in the figure 414.

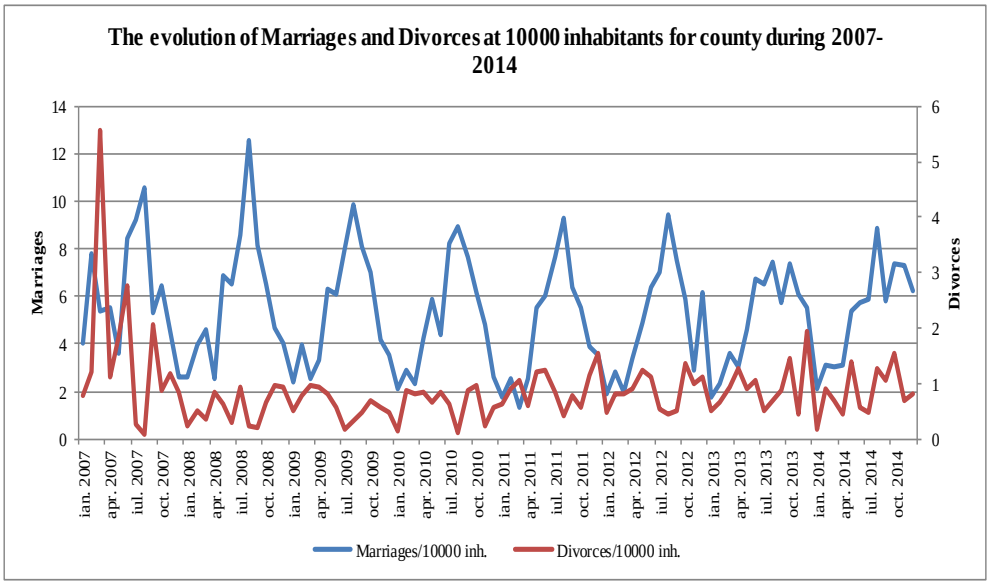


Figure 414

Regression analysis relative to indicator "Marriages/10000 inh." gives us an equation: y=-0.006720293x+5.653225877 where x is the number of month (Jan, 2007=1), therefore a very small downward trend.

Regression analysis relative to indicator "Divorces/10000 inh." gives us an equation: y=-0.001985825x+0.9585 where x is the number of month (Jan, 2007=1), therefore a very small downward trend.

For the set of values above, the median indicator for "Marriages/10000 inh." is 6 and for "Divorces/10000 inh." is 1. Also, the distribution of quartiles is for "Marriages/10000 inh.": (1.3,3.2675,5.515,6.925,12.54) and for "Divorces/10000 inh.": (0.08,0.515,0.805,1.02,5.56). The arithmetic mean and the standard deviation for "Marriages/10000 inh." are: (5,2.35) and for "Divorces/10000 inh.": (1,0.65). This means that with a probability greather than 0.68 "Marriages/10000 inh." are in the range [3,7] and for "Divorces/10000 inh." in [0,2]. Percentiles length indicators analysis (Figure 415) show that, indeed the concentration is around the middle of the data.

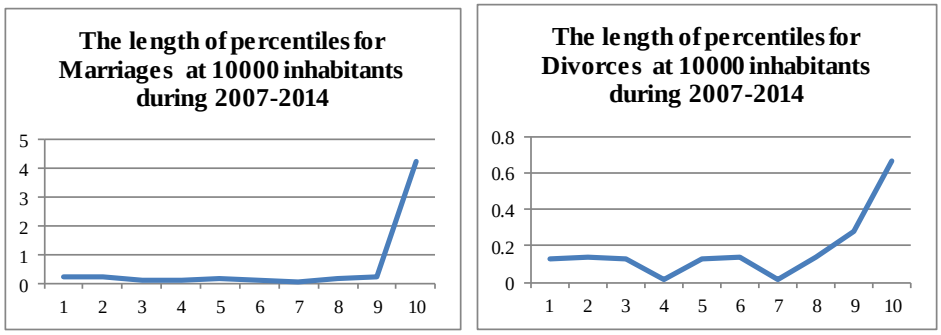


Figure 415

A comparison of the indicator "Marriages" with the national level shows that it is better than the national, being better in 73.96% cases. For "Divorces" the indicator is better than the national, being better in 82.29% cases.

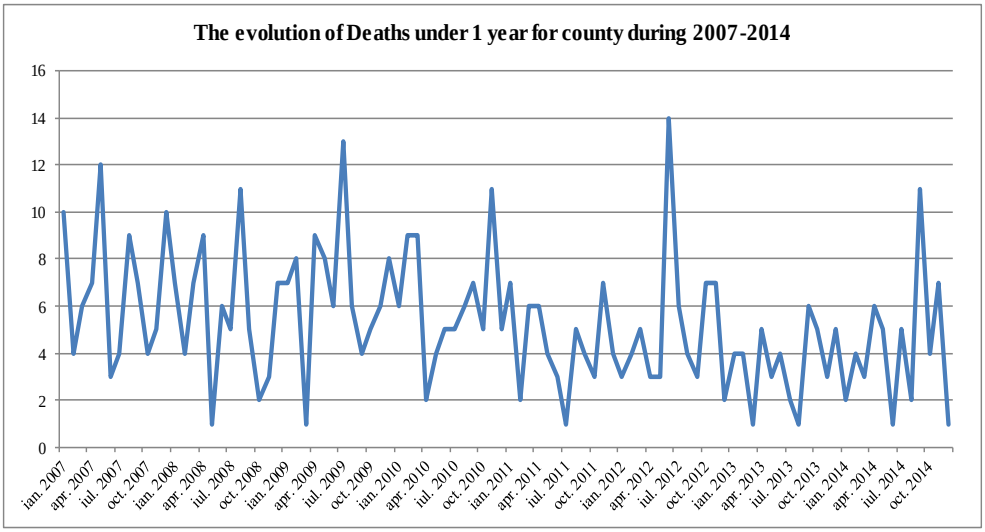


Figure 416

Regression analysis relative to indicator "Deaths under 1 year" gives us an equation: y=-0.033288117x+6.926973684 where x is the number of month (Jan, 2007=1), therefore a very small downward trend.

For the set of values above, the median indicator for "Deaths under 1 year" is 5 and the distribution of quartiles is for "Deaths under 1 year": (1,3,5,7,14). The arithmetic mean and the standard deviation for "Deaths under 1 year" are: (5,2.79) which means that with a probability greather than 0.68 "Deaths under 1 year" are in the range [2,8].

Percentiles length indicators analysis (Figure 417) show that, indeed the concentration is around the middle of the data.

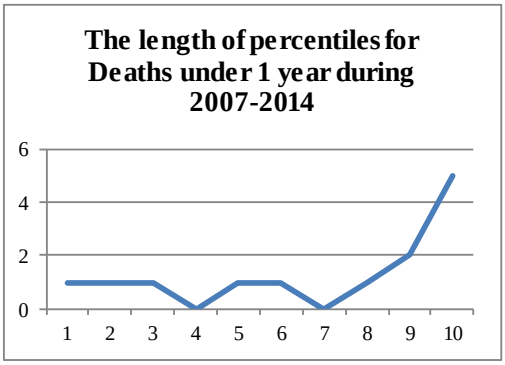


Figure 417

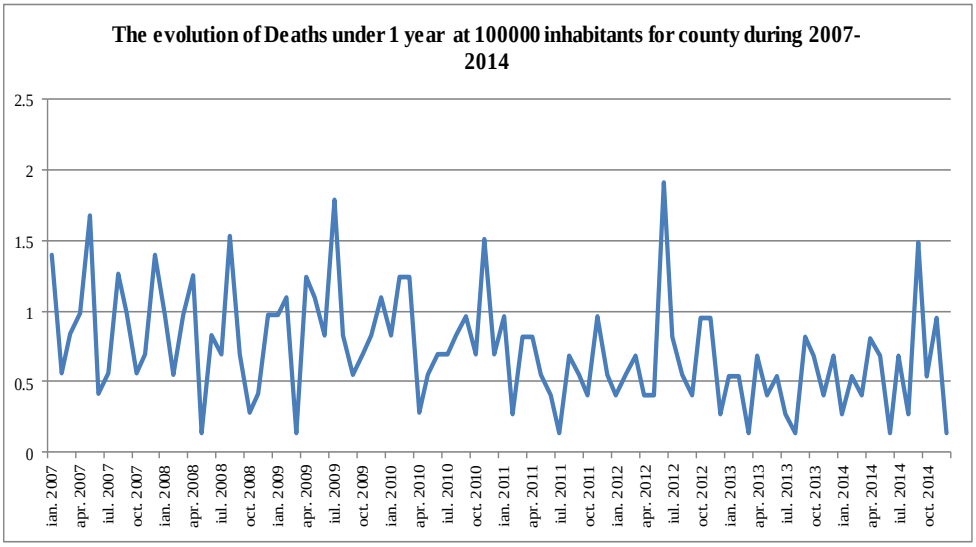


Figure 418

Regression analysis relative to indicator "Deaths under 1 year/100000 inh." gives us an equation: y=-0.00482637x+0.965328947 where x is the number of month (Jan, 2007=1), therefore a very small downward trend.

For the set of values above, the median indicator for "Deaths under 1 year/100000 inh." is 1 and the distribution of quartiles is for "Deaths under 1 year/100000 inh.": (0.14,0.42,0.685,0.96,1.91). The arithmetic mean and the standard deviation for "Deaths under 1 year/100000 inh." are: (1,0.38) which means that with a probability greather than 0.68 "Deaths under 1 year/100000 inh." are in the range [1,1].

A comparison of the indicator "Deaths under 1 year" with the national level shows that it is about the same with the national, being better in 58.33% cases.

A final analysis examines dependence aforementioned indicators of regional GDP variation.

Table 228.The evolution of Timis County GDP during 2007-2014

Year	GDP (in mil. lei 2007)	Variation (%)
2007	18489	-
2008	21501	16.29
2009	19510	-9.26
2010	20324	4.17
2011	20514	0.94
2012	19345	-5.7
2013	20474	5.84
2014	20244	-1.13

Source: INSSE and own calculations

In what follows, we shall investigate if there is a dependency between GDP variation (noted with dGDP) and the aforementioned indicators.

Searching dependence annual variations of "Live births" from GDP, we find that there is a dependence of Live births from GDP in the current year and the regression equation is: 0.3883dGDP+0.2659. Searching dependence annual variations of "Deceased" from GDP, we find that there is not a dependence of the variation of GDP. Searching dependence annual variations of "Natural increase" from GDP, we find that there is not a dependence of the variation of GDP. Searching dependence annual variations of "Marriages" from GDP, we find that there is not a dependence of the variation of GDP. Searching dependence annual variations of "Divorces" from GDP, we find that there is not a dependence of the variation of GDP. Searching dependence annual variations of "Deaths under 1 year" from GDP, we find that there is a dependence of Deaths under 1 year from GDP in the current year and the regression equation is: -1.8734dGDP+-1.066.

2.39. Analysis of Natural Movement of Tulcea County Population

Statistics of natural movement corresponding to Tulcea County are the following:

Table 229. The natural movement of Tulcea County population during 2007-2008

Month	Live births	Deceased	Natural increase	Marriages	Divorces	Deaths under 1 year	Month	Live births	Deceased	Natural increase	Marriages	Divorces	Deaths under 1 year
ian,07	198	263	-65	125	14	0	ian,08	213	281	-68	63	73	3
feb,07	180	232	-52	217	30	1	feb,08	204	228	-24	82	60	1
mar,07	199	233	-34	115	97	0	mar,08	186	250	-64	68	39	2
apr,07	197	237	-40	150	19	2	apr,08	178	254	-76	38	46	3
mai,07	214	264	-50	123	56	3	mai,08	150	213	-63	149	26	4
iun,07	201	216	-15	116	34	2	iun,08	179	236	-57	111	40	5
iul,07	231	286	-55	150	43	4	iul,08	257	217	40	134	19	2
aug,07	206	200	6	279	27	2	aug,08	217	221	-4	350	77	2
sept,07	214	188	26	228	28	2	sept,08	210	202	8	192	30	2
oct,07	217	245	-28	269	35	4	oct,08	210	258	-48	211	41	6
nov,07	191	294	-103	147	28	5	nov,08	189	245	-56	117	39	3
dec,07	183	237	-54	61	81	3	dec,08	171	310	-139	63	43	3

Source: INSSE

Table 230. The natural movement of Tulcea County population during 2009-2010

Month	Live births	Deceased	Natural increase	Marriages	Divorces	Deaths under 1 year	Month	Live births	Deceased	Natural increase	Marriages	Divorces	Deaths under 1 year
ian,09	167	317	-150	48	5	3	ian,10	171	282	-111	45	3	2
feb,09	157	219	-62	65	8	3	feb,10	166	263	-97	41	47	5
mar,09	189	274	-85	32	54	4	mar,10	169	278	-109	37	63	3
apr,09	199	275	-76	42	18	1	apr,10	167	280	-113	86	28	1
mai,09	176	246	-70	128	20	1	mai,10	177	254	-77	98	55	1
iun,09	193	242	-49	83	46	0	iun,10	192	238	-46	47	22	3
iul,09	198	242	-44	140	10	1	iul,10	192	238	-46	133	8	0
aug,09	244	207	37	251	23	1	aug,10	220	290	-70	228	33	3
sept,09	207	225	-18	173	18	2	sept,10	182	213	-31	152	22	4
oct,09	191	259	-68	199	34	1	oct,10	154	245	-91	166	14	3
nov,09	169	250	-81	77	1	1	nov,10	175	296	-121	70	28	4
dec,09	176	272	-96	46	11	0	dec,10	216	270	-54	30	33	3

Source: INSSE

Table 231. The natural movement of Tulcea County population during 2011-2012

Month	Live births	Deceased	Natural increase	Marriages	Divorces	Deaths under 1 year	Month	Live births	Deceased	Natural increase	Marriages	Divorces	Deaths under 1 year
ian,11	143	236	-93	42	9	1	ian,12	174	261	-87	33	4	3
feb,11	159	254	-95	44	43	1	feb,12	135	255	-120	29	27	2
mar,11	178	276	-98	31	25	4	mar,12	140	291	-151	28	35	1
apr,11	139	268	-129	41	34	1	apr,12	139	270	-131	52	42	1
mai,11	129	275	-146	71	28	2	mai,12	192	269	-77	83	32	3
iun,11	157	212	-55	80	29	4	iun,12	171	217	-46	95	22	2
iul,11	197	219	-22	116	26	3	iul,12	186	251	-65	105	22	0
aug,11	201	229	-28	188	45	5	aug,12	218	253	-35	250	26	1
sept,11	190	192	-2	141	45	4	sept,12	167	202	-35	184	23	2
oct,11	198	271	-73	163	66	0	oct,12	184	228	-48	134	27	1
nov,11	171	272	-101	66	36	3	nov,12	179	230	-51	63	28	3
dec,11	147	297	150	38	39	3	dec,12	146	308	-162	41	47	2

Source: INSSE

Table 232. The natural movement of Tulcea County population during 2013-2014

Month	Live births	Deceased	Natural increase	Marriages	Divorces	Deaths under 1 year	Month	Live births	Deceased	Natural increase	Marriages	Divorces	Deaths under 1 year
ian,13	165	261	-96	42	1	5	ian,14	169	274	-105	37	3	2
feb,13	136	229	-93	32	23	2	feb,14	151	284	-133	50	35	3
mar,13	143	254	-111	59	19	0	mar,14	162	284	-122	26	11	2
apr,13	131	249	-118	27	41	2	apr,14	167	247	-80	33	19	2
mai,13	135	238	-103	62	32	1	mai,14	132	268	-136	91	19	1
iun,13	144	226	-82	106	38	1	iun,14	170	213	-43	87	22	1
iul,13	192	214	-22	116	22	3	iul,14	184	257	-73	132	8	4
aug,13	209	206	3	248	43	3	aug,14	209	206	3	248	43	3
sept,13	197	207	-12	133	5	0	sept,14	189	223	-34	149	5	3
oct,13	156	267	-111	129	28	1	oct,14	163	238	-75	134	13	2
nov,13	124	242	-118	76	13	1	nov,14	159	248	-89	81	19	2
dec,13	160	308	-148	38	30	1	dec,14	162	298	-136	32	14	0

Source: INSSE

Table 233. The population trends of Tulcea County during 2007-2014

Year	Population	Year	Population
2007	258172	2011	252936
2008	257108	2012	251436
2009	256021	2013	249845
2010	254894	2014	248139

Source: INSSE

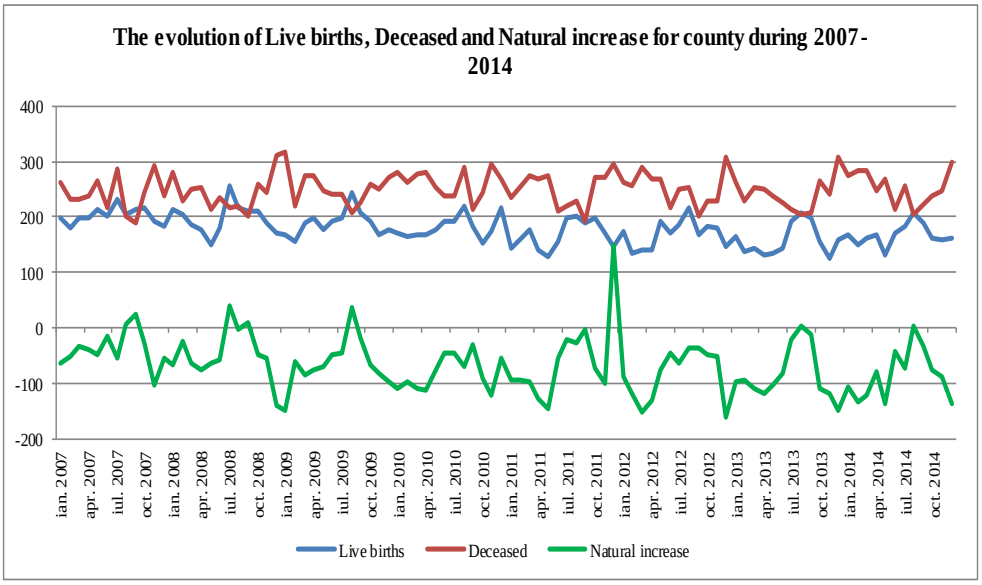


Figure 419

From figure 419 we can see a sinusoidal evolution of the indicator. Except months aug 2007, sept 2007, iul 2008, sept 2008, aug 2009, dec 2011, aug 2013, aug 2014 the natural increase was negative.

Regression analysis relative to indicator "Live births" gives us an equation: y=-0.47474905x+202.0982456 where x is the number of month (Jan, 2007=1), therefore a pronounced downward trend.

Regression analysis relative to indicator "Deceased" gives us an equation: y=0.058790016x+246.7528509 where x is the number of month (Jan, 2007=1), therefore an upward trend.

Regression analysis relative to indicator "Natural increase" gives us an equation: y=-0.48878866x+-43.7625 where x is the number of month (Jan, 2007=1), therefore a pronounced downward trend.

For the set of values above, the median indicator for "Live births" is 179, for "Deceased" is 250 and for "Natural increase": -69. This means that the probability that the indicator has a value less than the median is equal to the probability that it has a higher value than this.

Also, the distribution of quartiles is for "Live births": (124,161.5,178.5,198,257), for "Deceased": (188,228,249.5,271.25,317) and for "Natural increase": (-162,-101.5,-69,-42.25,150).

The arithmetic mean and the standard deviation for "Live births" are: (179,26.87), for "Deceased": (250,29.37) and for "Natural increase": (-67,49.54). This means that with a probability greather than 0.68 "Live births" are in the range [152,206], for "Deceased" in [221,279] and for "Natural increase" in [-117,-17].

Percentiles length indicators analysis (Figure 420) show that, indeed the concentration is around the middle of the data.

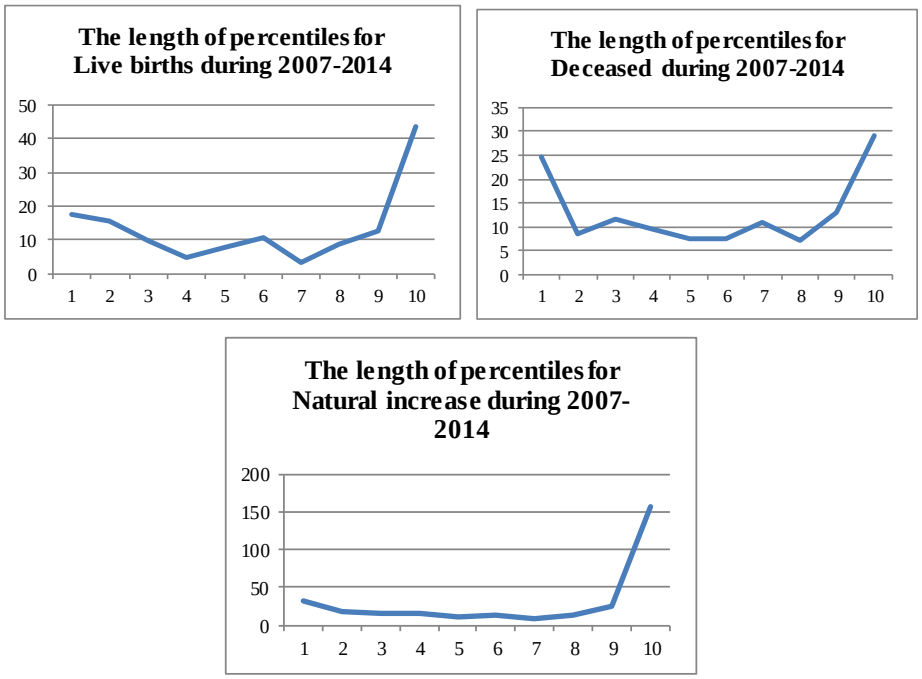


Figure 420

Taking into account the population dynamics during the analyzed period we have the following evolution of the indicators: Live births/10000 inh., Deceased/10000 inh. and Natural increase/10000 inh. as in the figure 421.

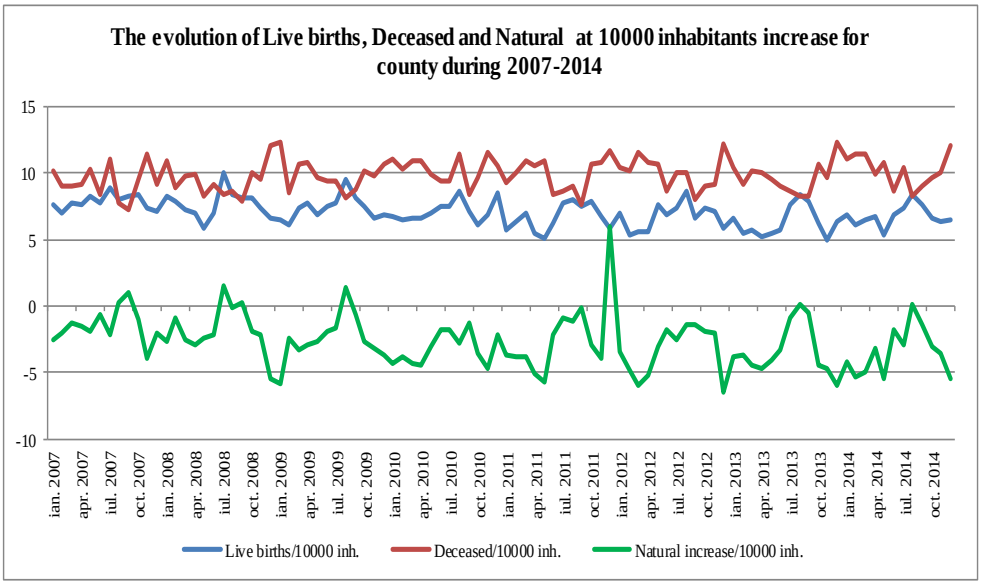


Figure 421

Regression analysis relative to indicator "Live births/10000 inh." gives us an equation: y=-0.015349905x+7.800407895 where x is the number of month (Jan, 2007=1), therefore a very small downward trend.

Regression analysis relative to indicator "Deceased/10000 inh." gives us an equation: y=0.006920578x+9.51070614 where x is the number of month (Jan, 2007=1), therefore an upward trend.

Regression analysis relative to indicator "Natural increase/10000 inh." gives us an equation: y=-0.020483383x+-1.674993421 where x is the number of month (Jan, 2007=1), therefore a very small downward trend.

For the set of values above, the median indicator for "Live births/10000 inh." is 7, for "Deceased/10000 inh." is 10 and for "Natural increase/10000 inh.": -3. This means that the probability that the indicator has a value less than the median is equal to the probability that it has a higher value than this.

Also, the distribution of quartiles is for "Live births/10000 inh.": (4.96,6.485,6.965,7.74,10), for "Deceased/10000 inh.": (7.28,9.0125,9.915,10.7175,12.38) and for "Natural increase/10000 inh.": (-6.44,-3.99,-2.695,-1.6775,5.93).

The arithmetic mean and the standard deviation for "Live births/10000 inh." are: (7,1.02), for "Deceased/10000 inh.": (10,1.17) and for "Natural increase/10000 inh.": (-3,1.97). This means that with a probability greather than 0.68 "Live

births/10000 inh." are in the range [6,8], for "Deceased/10000 inh." in [9,11] and for "Natural increase/10000 inh." in [-5,-1].

Percentiles length indicators analysis (Figure 422) show that, indeed the concentration is around the middle of the data.

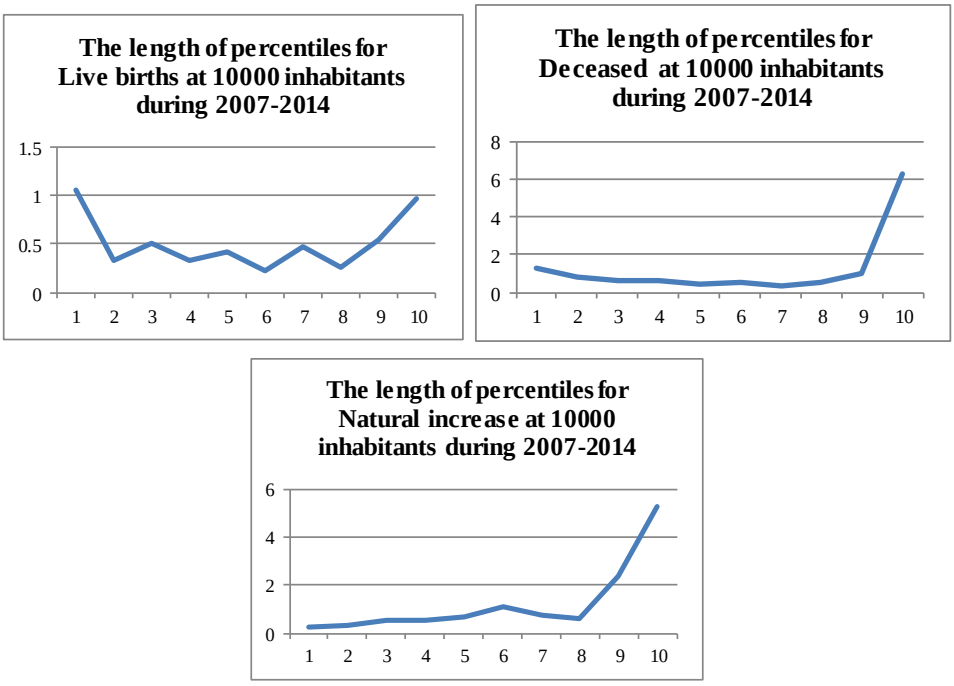


Figure 422

A comparison of the indicator "Live births" with the national level shows that it is worse than the national, being better only in 21.88% cases. For "Deceased" the indicator is worse than the national, being better only in 20.83% cases. Finally, for "Natural increase", the indicator is worse than the national, being better only in 12.5% cases.

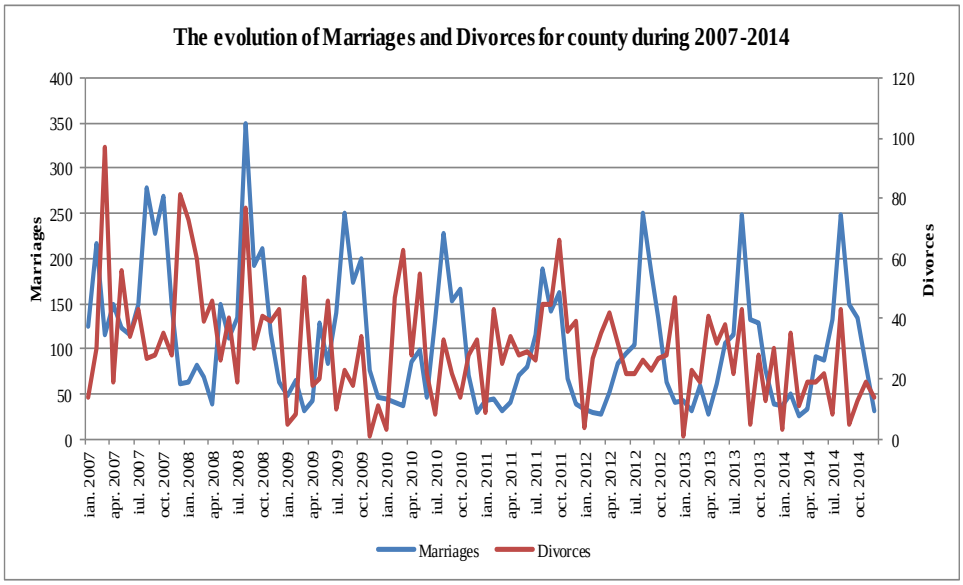


Figure 423

Regression analysis relative to indicator "Marriages" gives us an equation: y=-0.656667119x+138.7337719 where x is the number of month (Jan, 2007=1), therefore a pronounced downward trend.

Regression analysis relative to indicator "Divorces" gives us an equation: y=-0.227244981x+41.17763158 where x is the number of month (Jan, 2007=1), therefore a downward trend.

For the set of values above, the median indicator for "Marriages" is 87 and for "Divorces" is 28. Also, the distribution of quartiles is for "Marriages": (26,45.75,86.5,142.5,350) and for "Divorces": (1,19,28,40.25,97). The arithmetic mean and the standard deviation for "Marriages" are: (107,70.13) and for "Divorces": (30,18.11). This means that with a probability greather than 0.68 "Marriages" are in the range [37,177] and for "Divorces" in [12,48].

Percentiles length indicators analysis (Figure 424) show that, indeed the concentration is around the middle of the data.

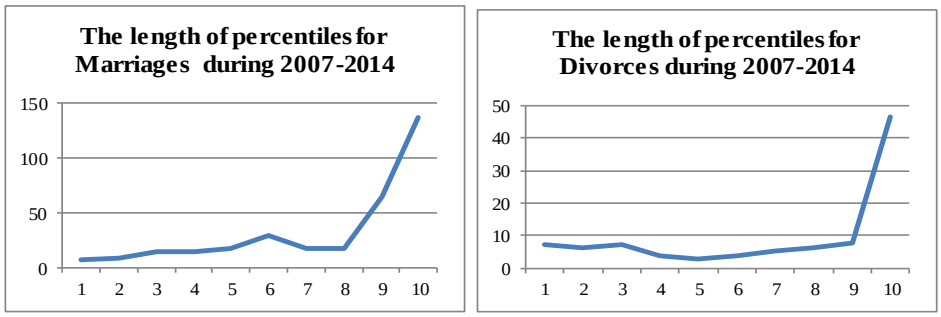


Figure 424

Taking into account the population dynamics during the analyzed period we have the following evolution of the indicators: Marriages/10000 inh. and Divorces/10000 inh. as in the figure 425.

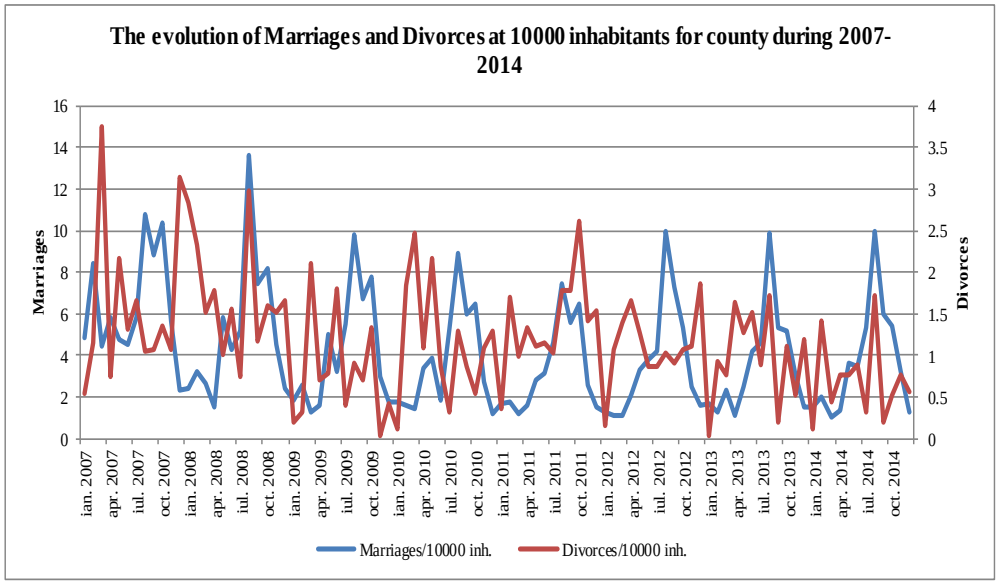


Figure 425

Regression analysis relative to indicator "Marriages/10000 inh." gives us an equation: y=-0.023724702x+5.355752193 where x is the number of month (Jan, 2007=1), therefore a very small downward trend.

Regression analysis relative to indicator "Divorces/10000 inh." gives us an equation: y=-0.008431091x+1.594741228 where x is the number of month (Jan, 2007=1), therefore a very small downward trend.

For the set of values above, the median indicator for "Marriages/10000 inh." is 3 and for "Divorces/10000 inh." is 1. Also, the distribution of quartiles is for

"Marriages/10000 inh.": (1.05,1.7925,3.44,5.6,13.61) and for "Divorces/10000 inh.": (0.04,0.755,1.1,1.5675,3.76). The arithmetic mean and the standard deviation for "Marriages/10000 inh." are: (4,2.74) and for "Divorces/10000 inh.": (1,0.71). This means that with a probability greather than 0.68 "Marriages/10000 inh." are in the range [1,7] and for "Divorces/10000 inh." in [0,2].

Percentiles length indicators analysis (Figure 426) show that, indeed the concentration is around the middle of the data.

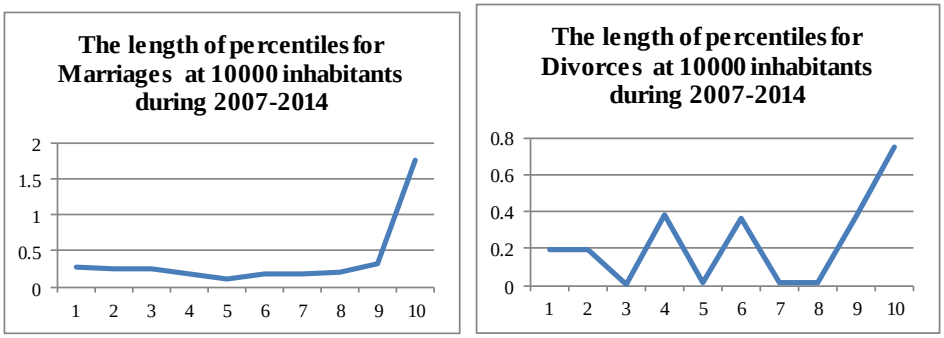


Figure 426

A comparison of the indicator "Marriages" with the national level shows that it is worse than the national, being better only in 22.92% cases. For "Divorces" the indicator is about the same with the national, being better in 52.08% cases.

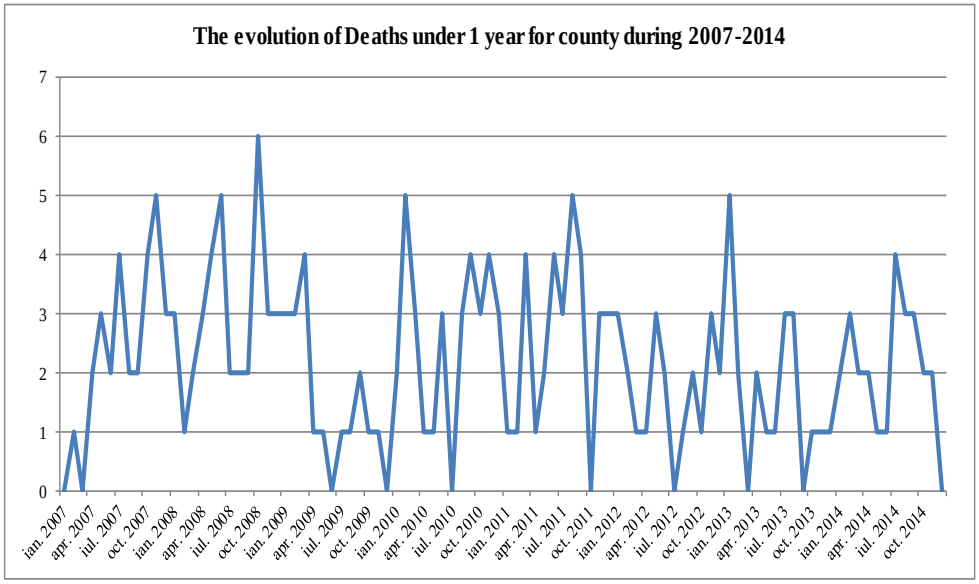


Figure 427

Regression analysis relative to indicator "Deaths under 1 year" gives us an equation: y=-0.007250407x+2.549561404 where x is the number of month (Jan, 2007=1), therefore a very small downward trend.

For the set of values above, the median indicator for "Deaths under 1 year" is 2 and the distribution of quartiles is for "Deaths under 1 year": (0,1,2,3,6). The arithmetic mean and the standard deviation for "Deaths under 1 year" are: (2,1.39) which means that with a probability greather than 0.68 "Deaths under 1 year" are in the range [1,3]. Percentiles length indicators analysis (Figure 428) show that, indeed the concentration is around the middle of the data.

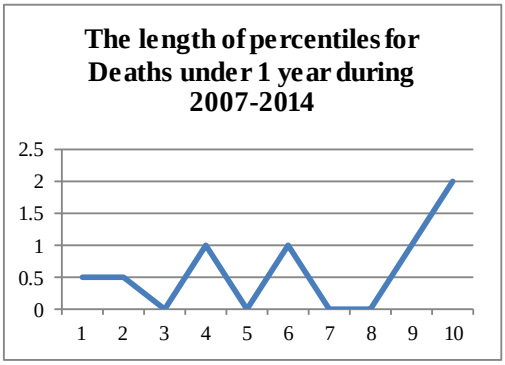


Figure 428

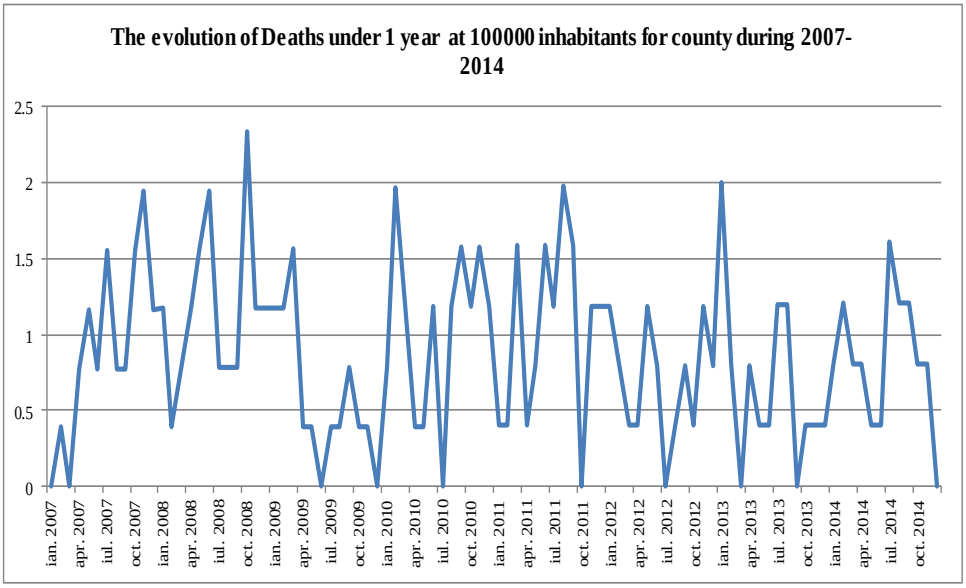


Figure 429

Regression analysis relative to indicator "Deaths under 1 year/100000 inh." gives us an equation: y=-0.002444995x+0.984936404 where x is the number of month (Jan, 2007=1), therefore a very small downward trend.

For the set of values above, the median indicator for "Deaths under 1 year/100000 inh." is 1 and the distribution of quartiles is for "Deaths under 1 year/100000 inh.": (0,0.4,0.8,1.19,2.33). The arithmetic mean and the standard deviation for "Deaths under 1 year/100000 inh." are: (1,0.54) which means that with a probability greather than 0.68 "Deaths under 1 year/100000 inh." are in the range [0,2].

A comparison of the indicator "Deaths under 1 year" with the national level shows that it is about the same with the national, being better in 44.79% cases.

A final analysis examines dependence aforementioned indicators of regional GDP variation.

Table 234. The evolution of Tulcea County GDP during 2007-2014

Year	GDP (in mil. lei 2007)	Variation (%)
2007	3226	-
2008	3571	10.72
2009	3314	-7.21
2010	3548	7.07
2011	3899	9.88
2012	3503	-10.15
2013	3654	4.3
2014	3503	-4.13

Source: INSSE and own calculations

In what follows, we shall investigate if there is a dependency between GDP variation (noted with dGDP) and the aforementioned indicators.

Searching dependence annual variations of "Live births" from GDP, we find that there is not a dependence of the variation of GDP. Searching dependence annual variations of "Deceased" from GDP, we find that there is not a dependence of the variation of GDP. Searching dependence annual variations of "Natural increase" from GDP, we find that there is not a dependence of the variation of GDP. Searching dependence annual variations of "Marriages" from GDP, we find that there is not a dependence of the variation of GDP. Searching dependence annual variations of "Divorces" from GDP, we find that there is not a dependence of the variation of GDP. Searching dependence annual variations of "Deaths under 1 year" from GDP, we find that there is a dependence of Deaths under 1 year from GDP offset by 1 year and the regression equation is:-3.2779dGDP+10.0866.

2.40. Analysis of Natural Movement of Valcea County Population

Statistics of natural movement corresponding to Valcea County are the following:

Table 235. The natural movement of Valcea County population during 2007-2008

Month	Live births	Deceased	Natural increase	Marriages	Divorces	Deaths under 1 year	Month	Live births	Deceased	Natural increase	Marriages	Divorces	Deaths under 1
ian,07	322	452	-130	226	56	2	ian,08	291	452	-161	83	1	2
feb,07	239	373	-134	340	56	1	feb,08	248	414	-166	124	66	2
mar,07	305	440	-135	155	57	4	mar,08	274	415	-141	101	52	2
apr,07	287	388	-101	273	58	4	apr,08	250	421	-171	61	30	4
mai,07	306	409	-103	157	40	6	mai,08	277	390	-113	217	60	5
iun,07	302	381	-79	216	74	4	iun,08	303	331	-28	231	62	2
iul,07	298	376	-78	344	37	1	iul,08	362	350	12	290	43	2
aug,07	304	297	7	465	54	1	aug,08	324	330	-6	527	121	5
sept,07	326	320	6	401	27	3	sept,08	328	356	-28	324	78	2
oct,07	313	414	-101	277	26	6	oct,08	322	411	-89	253	48	2
nov,07	282	417	-135	158	35	5	nov,08	249	411	-162	147	47	3
dec,07	271	451	-180	105	41	3	dec,08	275	418	-143	90	83	3

Source: INSSE

Table 236. The natural movement of Valcea County population during 2009-2010

Month	Live births	Deceased	Natural increase	Marriages	Divorces	Deaths under 1 year	Month	Live births	Deceased	Natural increase	Marriages	Divorces	Deaths under 1 year
ian,09	283	458	-175	91	26	1	ian,10	291	427	-136	81	1	4
feb,09	260	400	-140	97	38	5	feb,10	245	430	-185	76	18	2
mar,09	258	450	-192	57	36	1	mar,10	301	437	-136	42	5	2
apr,09	254	390	-136	126	24	2	apr,10	254	425	-171	181	27	4
mai,09	240	416	-176	172	35	1	mai,10	268	435	-167	143	16	6
iun,09	333	370	-37	160	36	0	iun,10	268	357	-89	82	32	1
iul,09	315	351	-36	327	79	3	iul,10	320	313	7	335	19	4
aug,09	362	282	80	474	14	3	aug,10	311	344	-33	374	14	4
sept,09	326	372	-46	300	10	2	sept,10	295	343	-48	265	23	4
oct,09	278	375	-97	257	20	3	oct,10	283	380	-97	209	5	1
nov,09	298	367	-69	123	44	2	nov,10	283	377	-94	78	34	3
dec,09	289	463	-174	80	17	2	dec,10	270	430	-160	69	42	8

Source: INSSE

Table 237. The natural movement of Valcea County population during 2011-2012

Month	Live births	Deceased	Natural increase	Marriages	Divorces	Deaths under 1 year	Month	Live births	Deceased	Natural increase	Marriages	Divorces	Deaths under 1 year
ian,11	263	395	-132	65	0	3	ian,12	294	398	-104	50	13	1
feb,11	241	383	-142	58	50	5	feb,12	222	370	-148	35	1	1
mar,11	225	392	-167	37	82	0	mar,12	242	420	-178	39	18	2
apr,11	227	414	-187	84	46	2	apr,12	189	407	-218	95	26	1
mai,11	242	331	-89	110	27	2	mai,12	250	338	-88	73	43	2
iun,11	241	305	-64	110	20	3	iun,12	239	329	-90	137	55	2
iul,11	287	342	-55	258	40	1	iul,12	263	306	-43	210	18	2
aug,11	310	306	4	330	31	1	aug,12	299	304	-5	353	61	1
sept,11	286	310	-24	239	39	3	sept,12	253	320	-67	266	20	1
oct,11	243	343	-100	179	71	2	oct,12	309	324	-15	162	39	3
nov,11	223	367	-144	70	31	2	nov,12	217	316	-99	63	59	3
dec,11	227	400	-173	53	32	3	dec,12	211	333	-122	63	70	4

Source: INSSE

Table 238. The natural movement of Valcea County population during 2013-2014

Month	Live births	Deceased	Natural increase	Marriages	Divorces	Deaths under 1 year	Month	Live births	Deceased	Natural increase	Marriages	Divorces	Deaths under 1 year
ian,13	282	278	4	43	1	1	ian,14	259	374	-115	53	6	2
feb,13	195	433	-238	50	58	5	feb,14	206	345	-139	55	25	0
mar,13	236	357	-121	49	49	5	mar,14	233	344	-111	42	28	1
apr,13	246	366	-120	37	34	3	apr,14	230	299	-69	83	49	2
mai,13	247	279	-32	97	37	2	mai,14	248	348	-100	125	28	2
iun,13	206	249	-43	153	57	1	iun,14	233	288	-55	102	28	2
iul,13	301	387	-86	202	46	1	iul,14	272	326	-54	171	19	3
aug,13	289	297	-8	356	26	5	aug,14	279	308	-29	260	24	2
sept,13	291	354	-63	239	27	3	sept,14	281	327	-46	165	55	7
oct,13	297	345	-48	185	30	1	oct,14	283	398	-115	210	50	2
nov,13	231	353	-122	83	20	2	nov,14	207	384	-177	120	25	2
dec,13	218	383	-165	56	41	3	dec,14	272	352	-80	43	35	4

Source: INSSE

Table 239. The population trends of Valcea County during 2007-2014

Year	Population	Year	Population
2007	417737	2011	411976
2008	416295	2012	410427
2009	414893	2013	408690
2010	413687	2014	407291

Source: INSSE

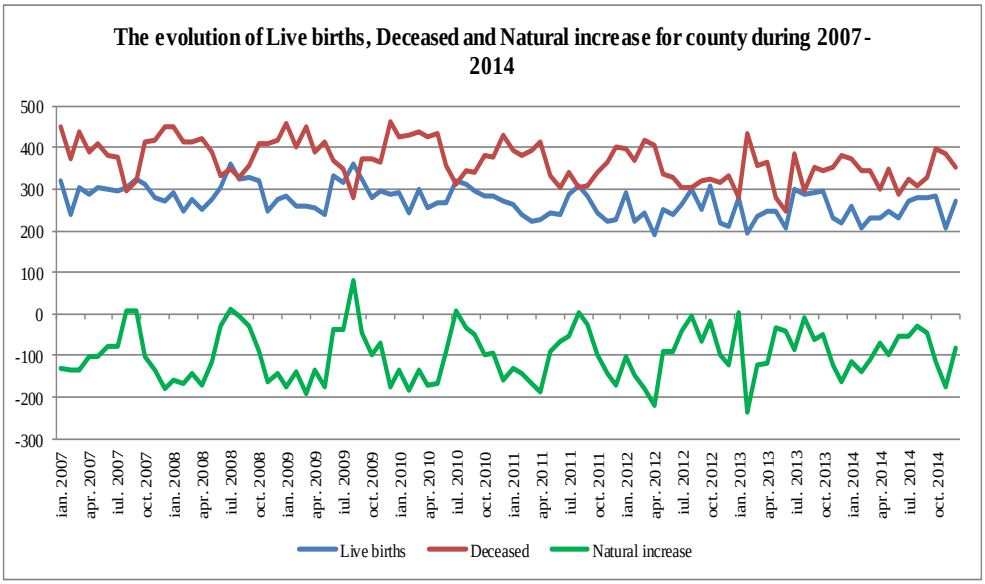


Figure 430

From figure 430 we can see a sinusoidal evolution of the indicator. Except months aug 2007, sept 2007, iul 2008, aug 2009, iul 2010, aug 2011, ian 2013 the natural increase was negative.

Regression analysis relative to indicator "Live births" gives us an equation: y=-0.630995659x+301.3116228 where x is the number of month (Jan, 2007=1), therefore a pronounced downward trend.

Regression analysis relative to indicator "Deceased" gives us an equation: y=-0.815111232x+408.6578947 where x is the number of month (Jan, 2007=1), therefore a pronounced downward trend.

Regression analysis relative to indicator "Natural increase" gives us an equation: y=0.184115572x+-107.3462719 where x is the number of month (Jan, 2007=1), therefore an upward trend.

For the set of values above, the median indicator for "Live births" is 273, for "Deceased" is 371 and for "Natural increase": -101. This means that the probability that the indicator has a value less than the median is equal to the probability that it has a higher value than this.

Also, the distribution of quartiles is for "Live births": (189,242,273,298,362), for "Deceased": (249,331,371,411,463) and for "Natural increase": (-238,-142.25,-100.5,-48,80).

The arithmetic mean and the standard deviation for "Live births" are: (271,36.64), for "Deceased": (369,48.46) and for "Natural increase": (-98,61.61). This means that with a probability greather than 0.68 "Live births" are in the range [234,308], for "Deceased" in [321,417] and for "Natural increase" in [-160,-36].

Percentiles length indicators analysis (Figure 431) show that, indeed the concentration is around the middle of the data.

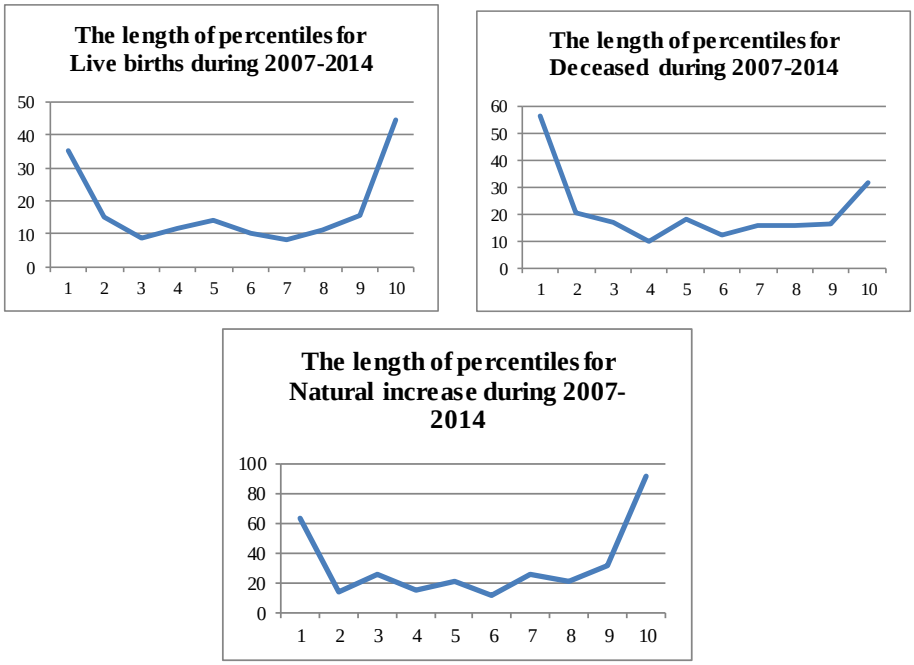


Figure 431

Taking into account the population dynamics during the analyzed period we have the following evolution of the indicators: Live births/10000 inh., Deceased/10000 inh. and Natural increase/10000 inh. as in the figure 432.

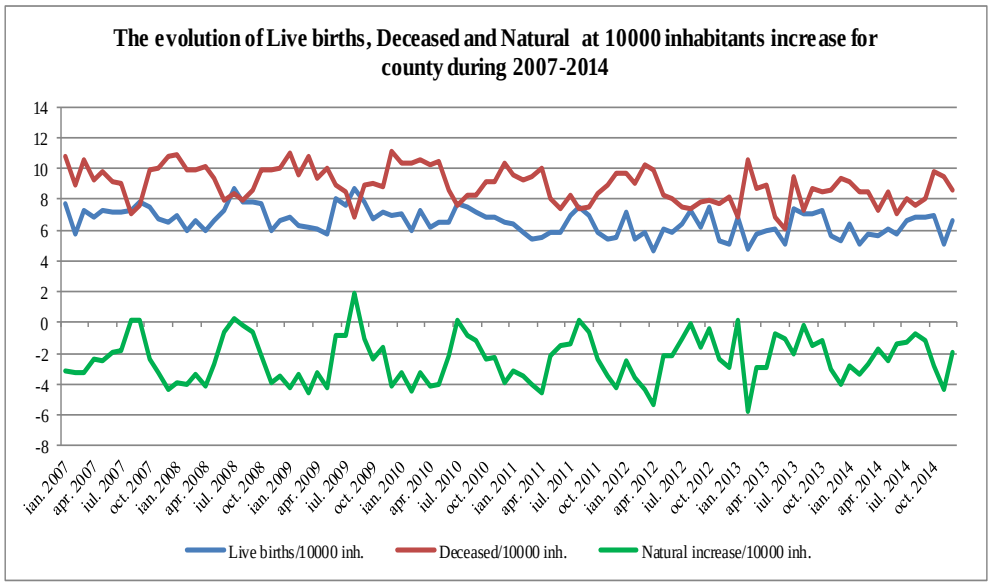


Figure 432

Regression analysis relative to indicator "Live births/10000 inh." gives us an equation: y=-0.013327591x+7.203679825 where x is the number of month (Jan, 2007=1), therefore a very small downward trend.

Regression analysis relative to indicator "Deceased/10000 inh." gives us an equation: y=-0.017098481x+9.771567982 where x is the number of month (Jan, 2007=1), therefore a very small downward trend.

Regression analysis relative to indicator "Natural increase/10000 inh." gives us an equation: y=0.003784794x+-2.568041667 where x is the number of month (Jan, 2007=1), therefore an upward trend.

For the set of values above, the median indicator for "Live births/10000 inh." is 7, for "Deceased/10000 inh." is 9 and for "Natural increase/10000 inh.": -2. This means that the probability that the indicator has a value less than the median is equal to the probability that it has a higher value than this.

Also, the distribution of quartiles is for "Live births/10000 inh.": (4.6,5.8925,6.63,7.1925,8.73), for "Deceased/10000 inh.": (6.09,8.03,8.965,9.88,11.16) and for "Natural increase/10000 inh.": (-5.82,-3.4425,-2.425,-1.1675,1.93).

The arithmetic mean and the standard deviation for "Live births/10000 inh." are: (7,0.86), for "Deceased/10000 inh.": (9,1.14) and for "Natural increase/10000 inh.": (-2,1.49). This means that with a probability greather than 0.68 "Live

births/10000 inh." are in the range [6,8], for "Deceased/10000 inh." in [8,10] and for "Natural increase/10000 inh." in [-3,-1].

Percentiles length indicators analysis (Figure 433) show that, indeed the concentration is around the middle of the data.

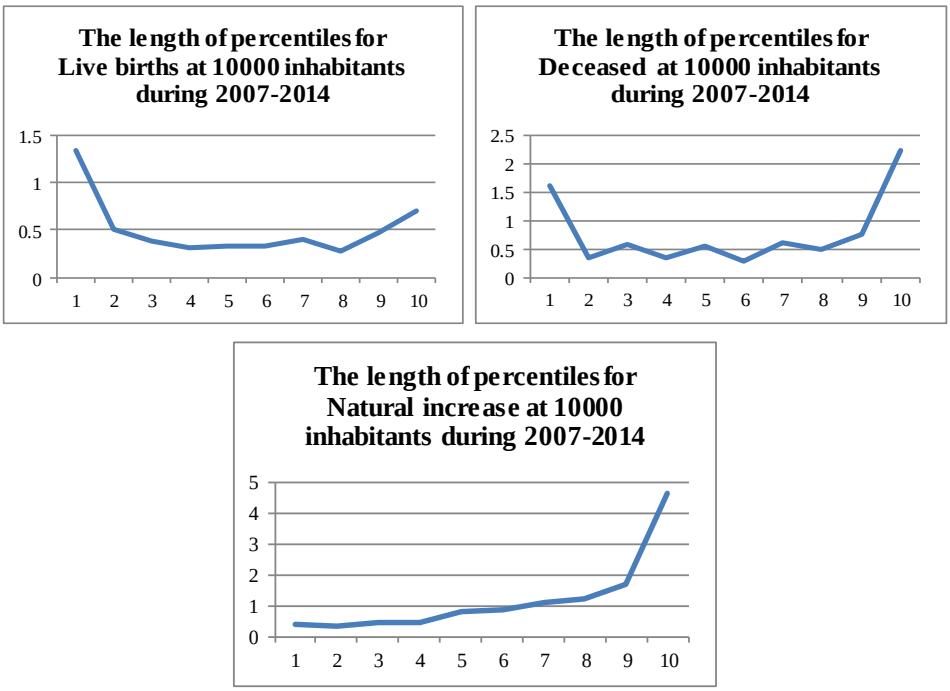


Figure 433

A comparison of the indicator "Live births" with the national level shows that it is worse than the national, being better only in 4.17% cases. For "Deceased" the indicator is better than the national, being better in 62.5% cases. Finally, for "Natural increase", the indicator is worse than the national, being better only in 23.96% cases.

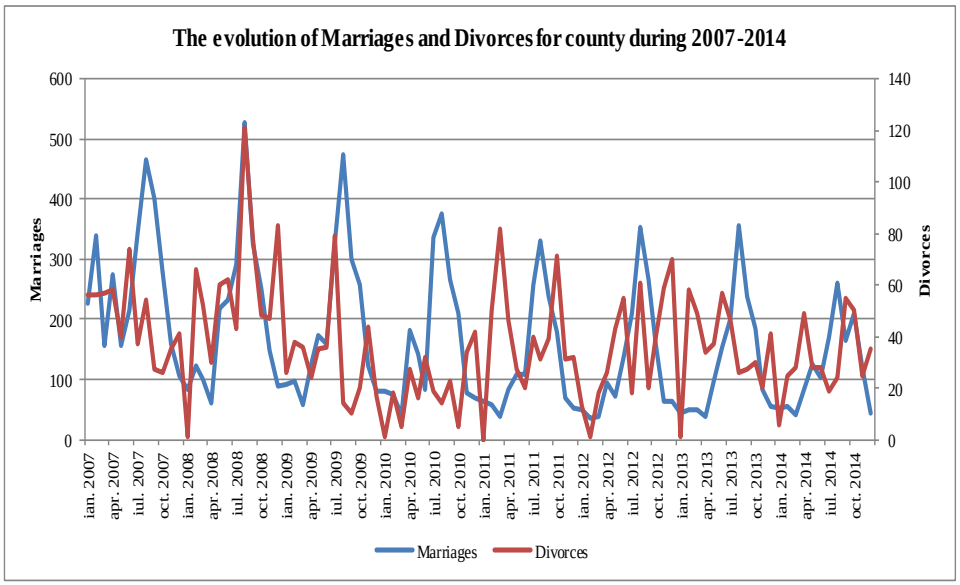


Figure 434

Regression analysis relative to indicator "Marriages" gives us an equation: y=-1.391603364x+232.9302632 where x is the number of month (Jan, 2007=1), therefore a pronounced downward trend.

Regression analysis relative to indicator "Divorces" gives us an equation: y=-0.169214596x+45.25899123 where x is the number of month (Jan, 2007=1), therefore a downward trend.

For the set of values above, the median indicator for "Marriages" is 132 and for "Divorces" is 35. Also, the distribution of quartiles is for "Marriages": (35,75.25,131.5,239,527) and for "Divorces": (0,23.75,35,50,121). The arithmetic mean and the standard deviation for "Marriages" are: (165,112.99) and for "Divorces": (37,21.4). This means that with a probability greather than 0.68 "Marriages" are in the range [52,278] and for "Divorces" in [16,58].

Percentiles length indicators analysis (Figure 435) show that, indeed the concentration is around the middle of the data.

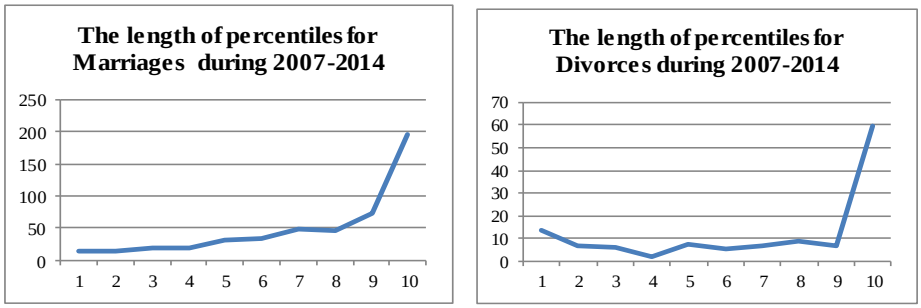


Figure 435

Taking into account the population dynamics during the analyzed period we have the following evolution of the indicators: Marriages/10000 inh. and Divorces/10000 inh. as in the figure 436.

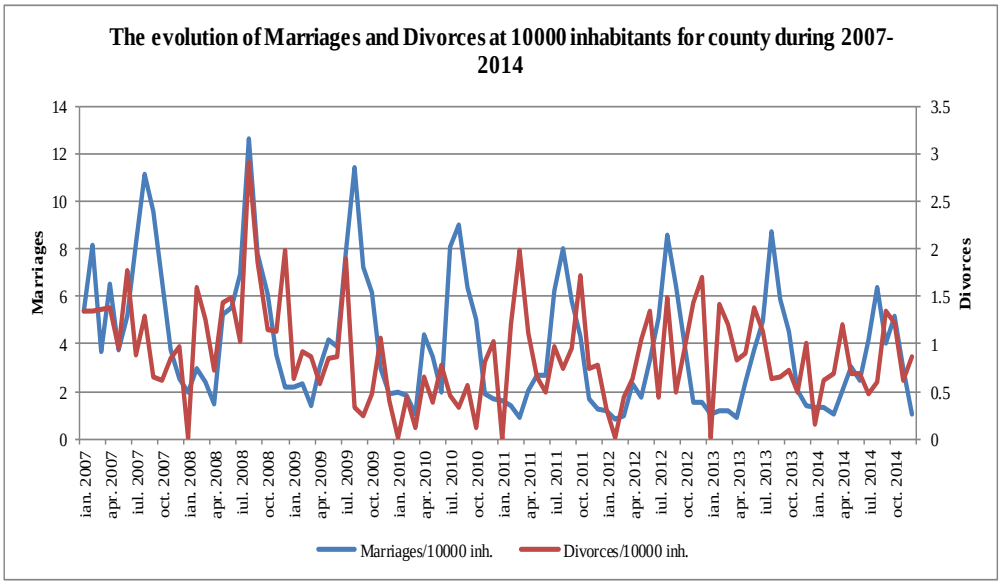


Figure 436

Regression analysis relative to indicator "Marriages/10000 inh." gives us an equation: y=-0.032439908x+5.574585526 where x is the number of month (Jan, 2007=1), therefore a very small downward trend.

Regression analysis relative to indicator "Divorces/10000 inh." gives us an equation: y=-0.003800461x+1.081614035 where x is the number of month (Jan, 2007=1), therefore a very small downward trend.

For the set of values above, the median indicator for "Marriages/10000 inh." is 3 and for "Divorces/10000 inh." is 1. Also, the distribution of quartiles is for

"Marriages/10000 inh.": (0.85,1.825,3.205,5.8125,12.66) and for "Divorces/10000 inh.": (0,0.575,0.84,1.215,2.91). The arithmetic mean and the standard deviation for "Marriages/10000 inh." are: (4,2.72) and for "Divorces/10000 inh.": (1,0.52). This means that with a probability greather than 0.68 "Marriages/10000 inh." are in the range [1,7] and for "Divorces/10000 inh." in [0,2].

Percentiles length indicators analysis (Figure 437) show that, indeed the concentration is around the middle of the data.

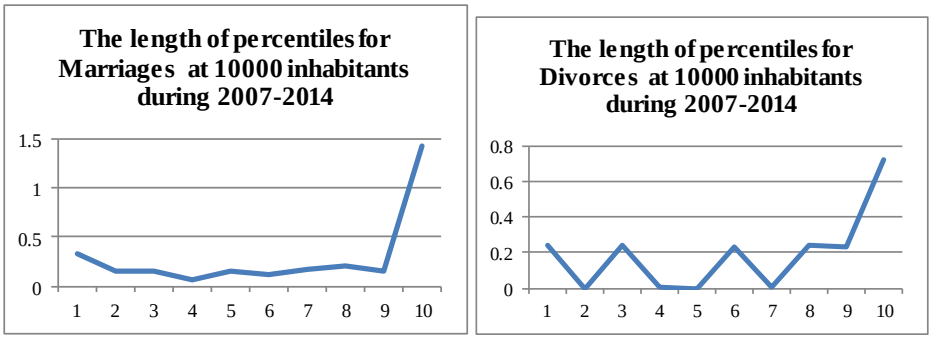


Figure 437

A comparison of the indicator "Marriages" with the national level shows that it is worse than the national, being better only in 8.33% cases. For "Divorces" the indicator is better than the national, being better in 75% cases.

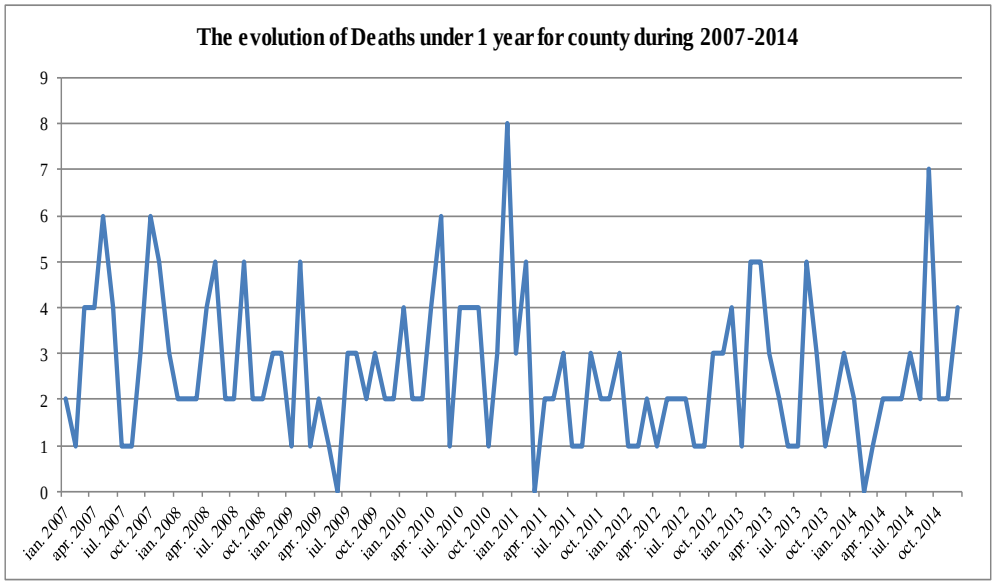


Figure 438

Regression analysis relative to indicator "Deaths under 1 year" gives us an equation: y=-0.007589528x+3.003508772 where x is the number of month (Jan, 2007=1), therefore a very small downward trend.

For the set of values above, the median indicator for "Deaths under 1 year" is 2 and the distribution of quartiles is for "Deaths under 1 year": (0,2,2,3.25,8). The arithmetic mean and the standard deviation for "Deaths under 1 year" are: (3,1.57) which means that with a probability greather than 0.68 "Deaths under 1 year" are in the range [1,5].

Percentiles length indicators analysis (Figure 439) show that, indeed the concentration is around the middle of the data.

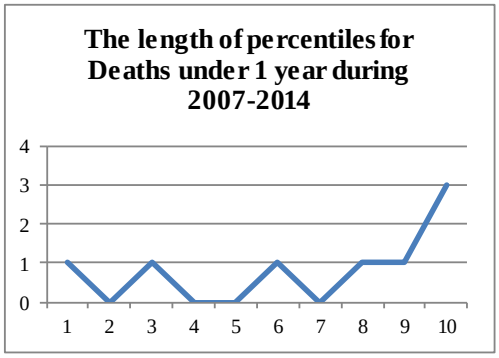


Figure 439

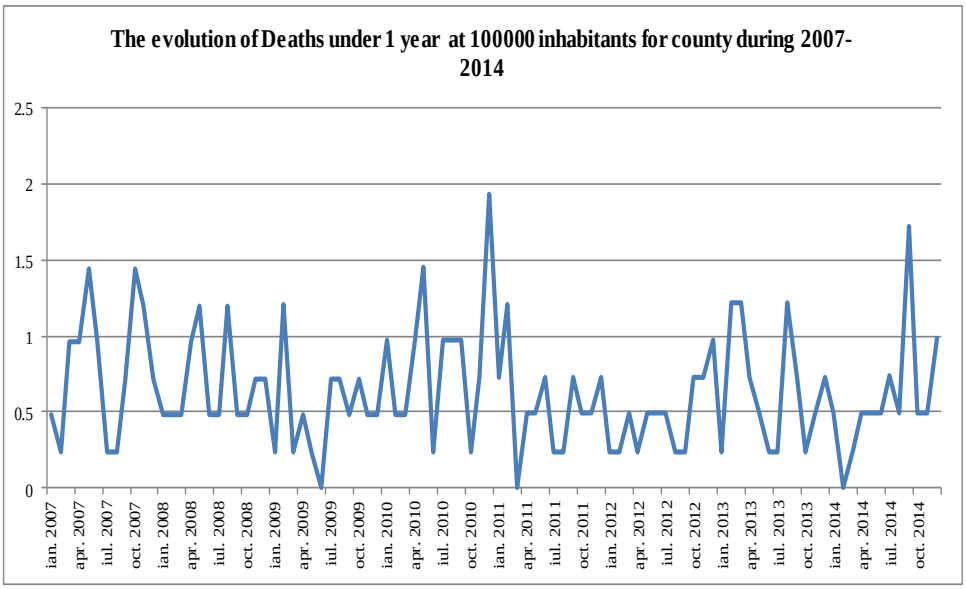


Figure 440

Regression analysis relative to indicator "Deaths under 1 year/100000 inh." gives us an equation: y=-0.001666848x+0.718758772 where x is the number of month (Jan, 2007=1), therefore a very small downward trend.

For the set of values above, the median indicator for "Deaths under 1 year/100000 inh." is 0 and the distribution of quartiles is for "Deaths under 1 year/100000 inh.": (0,0.48,0.49,0.795,1.93). The arithmetic mean and the standard deviation for "Deaths under 1 year/100000 inh." are: (1,0.38) which means that with a probability greather than 0.68 "Deaths under 1 year/100000 inh." are in the range [1,1].

A comparison of the indicator "Deaths under 1 year" with the national level shows that it is better than the national, being better in 67.71% cases.

A final analysis examines dependence aforementioned indicators of regional GDP variation.

Table 240. The evolution of Valcea County GDP during 2007-2014

Year	GDP (in mil. lei 2007)	Variation (%)
2007	6594	-
2008	6860	4.03
2009	6169	-10.08
2010	5888	-4.54
2011	6211	5.48
2012	6105	-1.7
2013	6090	-0.26
2014	5840	-4.1

Source: INSSE and own calculations

In what follows, we shall investigate if there is a dependency between GDP variation (noted with dGDP) and the aforementioned indicators. Searching dependence annual variations of "Live births" from GDP, we find that there is a dependence of Live births from GDP offset by 2 years and the regression equation is:0.5842dGDP+-2.0983. Searching dependence annual variations of "Deceased" from GDP, we find that there is a dependence of Deceased from GDP in the current year and the regression equation is: -0.3901dGDP+-2.5867. Searching dependence annual variations of "Natural increase" from GDP, we find that there is not a dependence of the variation of GDP. Searching dependence annual variations of "Marriages" from GDP, we find that there is a dependence of Marriages from GDP offset by 1 year and the regression equation is:0.7518dGDP+-7.4842. Searching dependence annual variations of "Divorces" from GDP, we find that there is a dependence of Divorces from GDP offset by 2 years and the regression equation is:-6.316dGDP+-0.7584. Searching dependence annual variations of "Deaths under

1 year" from GDP, we find that there is a dependence of Deaths under 1 year from GDP offset by 1 year and the regression equation is:-4.79dGDP+-1.7676.

2.41. Analysis of Natural Movement of Vaslui County Population

Statistics of natural movement corresponding to Vaslui County are the following:

Table 241. The natural movement of Vaslui County population during 2007-2008

Month	Live births	Deceased	Natural increase	Marriages	Divorces	Deaths under 1 year	Month	Live births	Deceased	Natural increase	Marriages	Divorces	Deaths under 1
ian,07	478	575	-97	398	98	12	ian,08	488	573	-85	130	43	3
feb,07	412	418	-6	588	72	3	feb,08	458	467	-9	146	83	4
mar,07	458	419	39	346	104	4	mar,08	399	422	-23	112	79	3
apr,07	390	374	16	321	87	4	apr,08	387	486	-99	131	70	9
mai,07	483	407	76	286	90	13	mai,08	415	443	-28	203	71	13
iun,07	476	375	101	253	79	11	iun,08	324	413	-89	183	90	6
iul,07	524	456	68	374	79	6	iul,08	532	377	155	294	84	7
aug,07	450	329	121	490	72	7	aug,08	450	346	104	581	70	4
sept,07	474	376	98	347	44	8	sept,08	415	369	46	272	33	6
oct,07	455	476	-21	321	54	10	oct,08	544	443	101	277	28	10
nov,07	434	458	-24	236	79	7	nov,08	392	407	-15	154	65	2
dec,07	447	467	-20	207	61	3	dec,08	343	458	-115	142	79	3

Source: INSSE

Table 242. The natural movement of Vaslui County population during 2009-2010

Month	Live births	Deceased	Natural increase	Marriages	Divorces	Deaths under 1 year	Month	Live births	Deceased	Natural increase	Marriages	Divorces	Deaths under 1 year
ian,09	425	476	-51	124	41	5	ian,10	389	576	-187	114	46	5
feb,09	414	435	-21	136	97	6	feb,10	365	528	-163	83	79	5
mar,09	433	532	-99	78	67	14	mar,10	367	513	-146	74	100	8
apr,09	412	490	-78	123	100	6	apr,10	386	513	-127	156	88	5
mai,09	405	411	-6	197	95	5	mai,10	311	528	-217	200	78	4
iun,09	454	398	56	168	79	1	iun,10	394	453	-59	70	66	3
iul,09	468	426	42	314	76	7	iul,10	379	408	-29	292	85	8
aug,09	464	394	70	504	61	9	aug,10	411	421	-10	435	103	4
sept,09	576	381	195	260	34	6	sept,10	410	401	9	206	36	5
oct,09	495	466	29	237	42	1	oct,10	346	458	-112	200	30	3
nov,09	387	518	-131	131	59	5	nov,10	396	472	-76	91	88	3
dec,09	380	566	-186	130	64	6	dec,10	326	497	-171	108	96	4

Source: INSSE

Table 243. The natural movement of Vaslui County population during 2011-2012

Month	Live births	Deceased	Natural increase	Marriages	Divorces	Deaths under 1 year	Month	Live births	Deceased	Natural increase	Marriages	Divorces	Deaths under 1 year
ian,11	363	501	-138	70	31	11	ian,12	343	531	-188	102	44	2
feb,11	365	475	-110	78	65	2	feb,12	329	601	-272	52	76	4
mar,11	300	569	-269	51	89	4	mar,12	316	527	-211	45	46	2
apr,11	297	468	-171	79	84	3	apr,12	324	495	-171	112	51	7
mai,11	340	433	-93	132	86	6	mai,12	389	401	-12	144	67	5
iun,11	312	357	-45	128	87	6	iun,12	389	442	-53	127	71	3
iul,11	427	382	45	230	62	2	iul,12	360	380	-20	247	61	2
aug,11	471	329	142	442	70	0	aug,12	534	383	151	461	57	5
sept,11	389	347	42	222	36	3	sept,12	391	318	73	236	34	2
oct,11	418	423	-5	161	42	2	oct,12	438	437	1	170	44	10
nov,11	325	478	-153	97	64	3	nov,12	345	465	-120	74	68	5
dec,11	336	500	-164	103	77	7	dec,12	298	542	-244	146	67	1

Source: INSSE

Table 244. The natural movement of Vaslui County population during 2013-2014

Month	Live births	Deceased	Natural increase	Marriages	Divorces	Deaths under 1 year	Month	Live births	Deceased	Natural increase	Marriages	Divorces	Deaths under 1 year
ian,13	410	487	-77	88	37	2	ian,14	377	511	-134	107	18	1
feb,13	305	450	-145	94	70	1	feb,14	345	456	-111	128	65	4
mar,13	305	495	-190	121	54	3	mar,14	343	474	-131	88	39	1
apr,13	304	521	-217	85	68	6	apr,14	384	433	-49	134	60	2
mai,13	342	444	-102	201	58	6	mai,14	367	440	-73	165	57	5
iun,13	326	406	-80	182	59	2	iun,14	342	370	-28	154	54	3
iul,13	425	361	64	274	46	6	iul,14	418	378	40	275	51	3
aug,13	473	356	117	487	48	3	aug,14	457	376	81	516	33	7
sept,13	403	385	18	249	32	5	sept,14	421	416	5	256	51	4
oct,13	449	458	-9	211	33	5	oct,14	411	500	-89	184	38	5
nov,13	331	425	-94	133	50	4	nov,14	325	454	-129	98	58	2
dec,13	317	519	-202	132	60	3	dec,14	342	503	-161	121	70	3

Source: INSSE

Table 245. The population trends of Vaslui County during 2007-2014

Year	Population	Year	Population
2007	476098	2011	468251
2008	474483	2012	466931
2009	472704	2013	467974
2010	470922	2014	472987

Source: INSSE

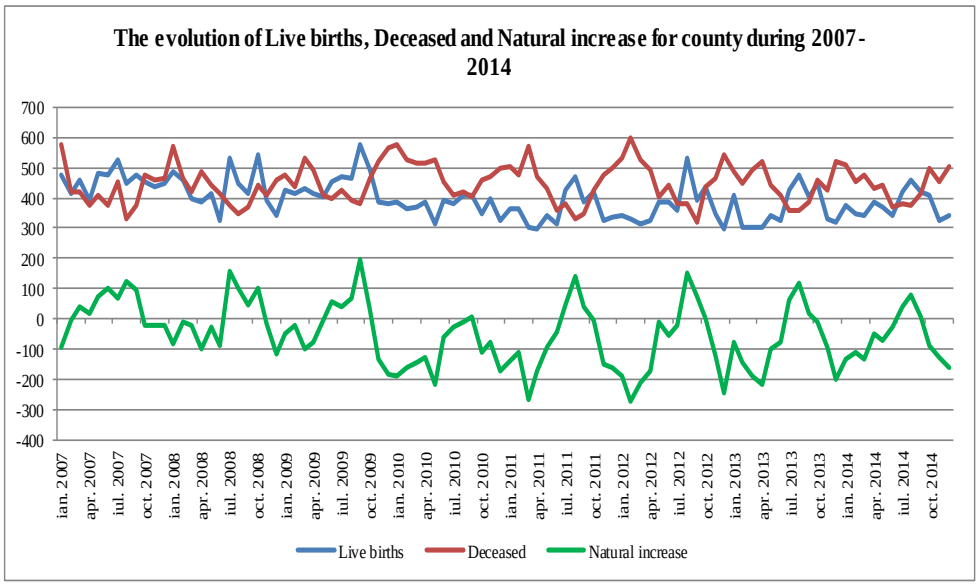


Figure 441

From figure 441 we can see a sinusoidal evolution of the indicator. Except months mar 2007, apr 2007, mai 2007, iun 2007, iul 2007, aug 2007, sept 2007, iul 2008, aug 2008, sept 2008, oct 2008, iun 2009, iul 2009, aug 2009, sept 2009, oct 2009, sept 2010, iul 2011, aug 2011, sept 2011, aug 2012, sept 2012, oct 2012, iul 2013, aug 2013, sept 2013, iul 2014, aug 2014, sept 2014 the natural increase was negative.

Regression analysis relative to indicator "Live births" gives us an equation: y=-1.04156267x+447.8282895 where x is the number of month (Jan, 2007=1), therefore a pronounced downward trend.

Regression analysis relative to indicator "Deceased" gives us an equation: y=0.035885784x+446.1449561 where x is the number of month (Jan, 2007=1), therefore an upward trend.

Regression analysis relative to indicator “Natural increase” gives us an equation: y=-1.077448454x+1.683333333 where x is the number of month (Jan, 2007=1), therefore a pronounced downward trend.

For the set of values above, the median indicator for “Live births” is 392, for “Deceased” is 447 and for “Natural increase”: -50. This means that the probability that the indicator has a value less than the median is equal to the probability that it has a higher value than this.

Also, the distribution of quartiles is for “Live births”: (297,343,391.5,440.25,576), for “Deceased”: (318,401,447,495,601) and for “Natural increase”: (-272,-129.5,-50,20.75,195).

The arithmetic mean and the standard deviation for “Live births” are: (397,62.42), for “Deceased”: (448,62.94) and for “Natural increase”: (-51,103.68). This means that with a probability greather than 0.68 “Live births” are in the range [335,459], for “Deceased” in [385,511] and for “Natural increase” in [-155,53].

Percentiles length indicators analysis (Figure 442) show that, indeed the concentration is around the middle of the data.

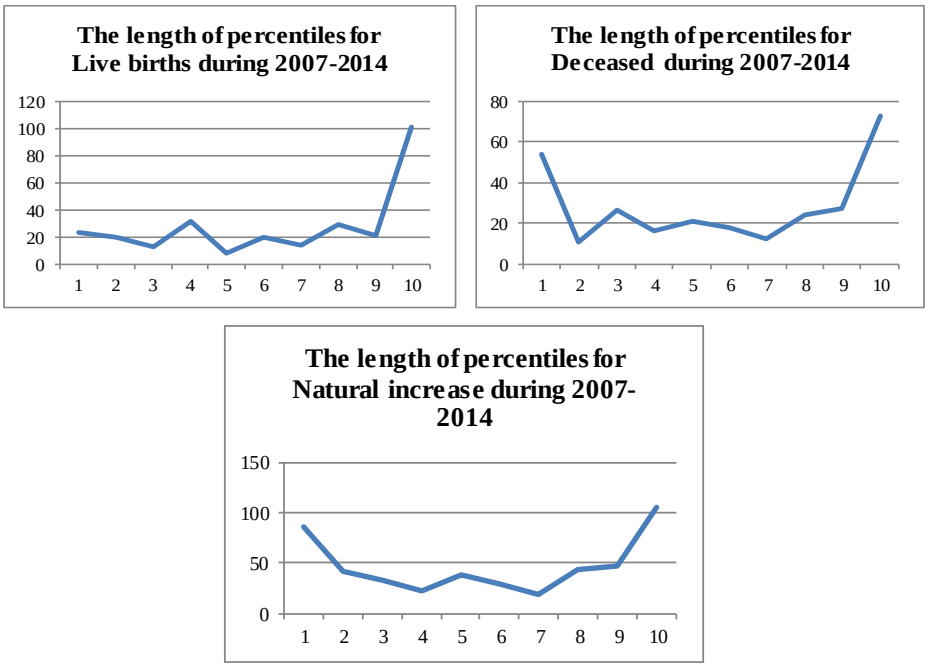


Figure 442

Taking into account the population dynamics during the analyzed period we have the following evolution of the indicators: Live births/10000 inh., Deceased/10000 inh. and Natural increase/10000 inh. as in the figure 443.

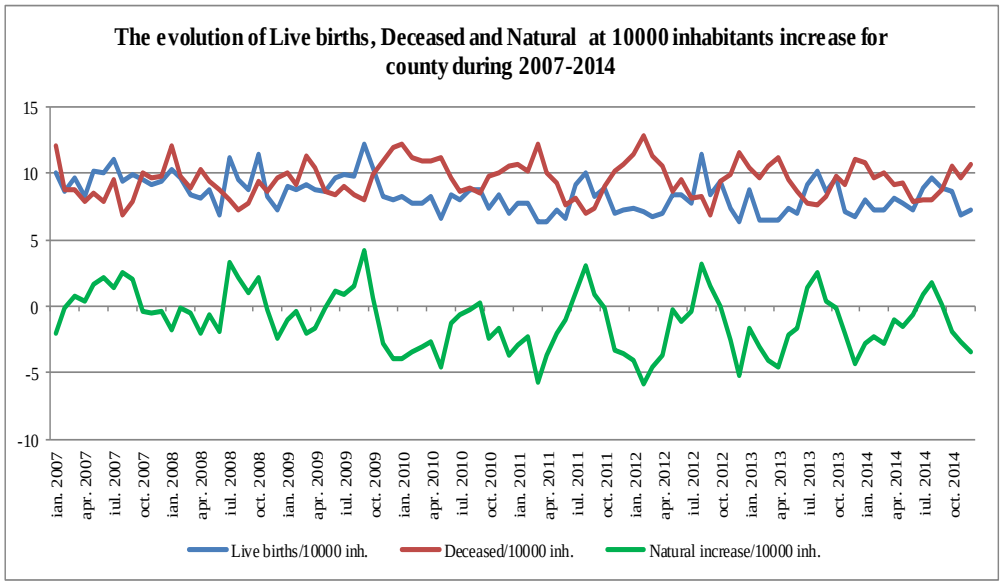


Figure 443

Regression analysis relative to indicator "Live births/10000 inh." gives us an equation: y=-0.020724973x+9.431932018 where x is the number of month (Jan, 2007=1), therefore a very small downward trend.

Regression analysis relative to indicator "Deceased/10000 inh." gives us an equation: y=0.002174783x+9.399210526 where x is the number of month (Jan, 2007=1), therefore a very small upward trend.

Regression analysis relative to indicator "Natural increase/10000 inh." gives us an equation: y=-0.022913388x+0.032861842 where x is the number of month (Jan, 2007=1), therefore a very small downward trend.

For the set of values above, the median indicator for "Live births/10000 inh." is 8, for "Deceased/10000 inh." is 10 and for "Natural increase/10000 inh.": -1. This means that the probability that the indicator has a value less than the median is equal to the probability that it has a higher value than this.

Also, the distribution of quartiles is for "Live births/10000 inh.": (6.34,7.2825,8.35,9.3825,12.19), for "Deceased/10000 inh.": (6.81,8.5425,9.535,10.555,12.87) and for "Natural increase/10000 inh.": (-5.83,-2.74,-1.06,0.4375,4.13).

The arithmetic mean and the standard deviation for "Live births/10000 inh." are: (8,1.3), for "Deceased/10000 inh.": (10,1.34) and for "Natural increase/10000 inh.": (-1,2.21). This means that with a probability greather than 0.68 "Live births/10000 inh." are in the range [7,9], for "Deceased/10000 inh." in [9,11] and for "Natural increase/10000 inh." in [-3,1].

Percentiles length indicators analysis (Figure 444) show that, indeed the concentration is around the middle of the data.

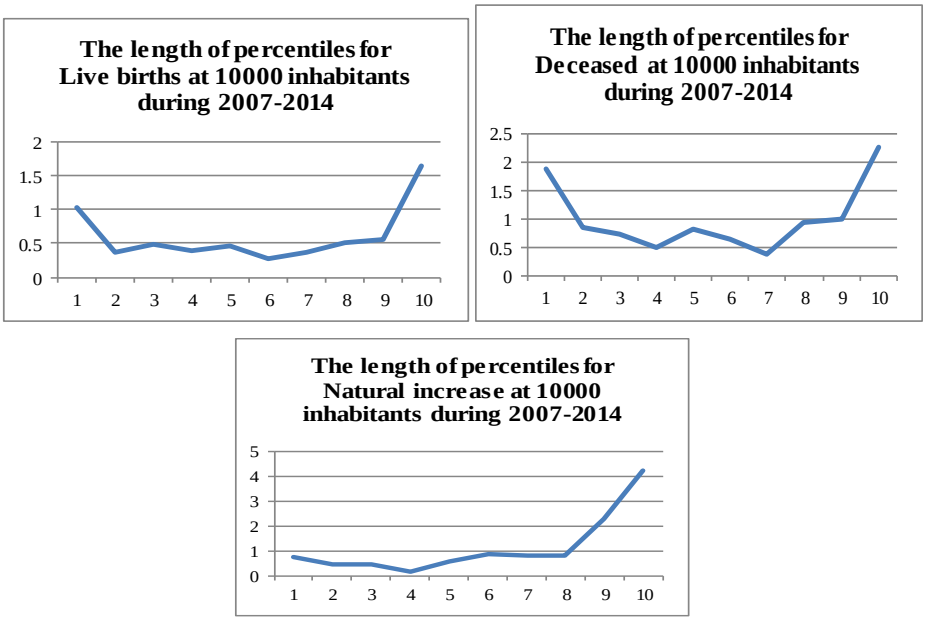


Figure 444

A comparison of the indicator "Live births" with the national level shows that it is better than the national, being better in 86.46% cases. For "Deceased" the indicator is about the same with the national, being better in 43.75% cases. Finally, for "Natural increase", the indicator is better than the national, being better in 69.79% cases.

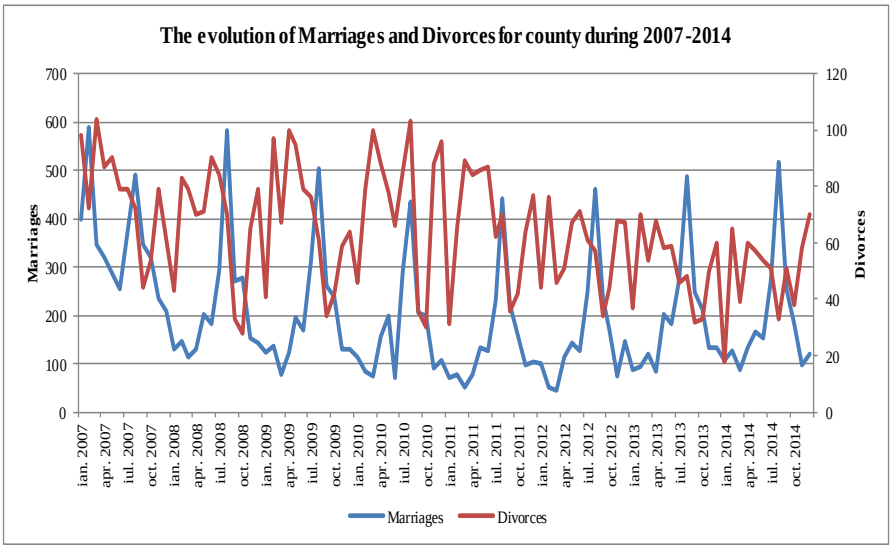


Figure 445

Regression analysis relative to indicator "Marriages" gives us an equation: y=-1.287974769x+264.7063596 where x is the number of month (Jan, 2007=1), therefore a pronounced downward trend.

Regression analysis relative to indicator "Divorces" gives us an equation: y=-0.311923494x+78.79495614 where x is the number of month (Jan, 2007=1), therefore a downward trend.

For the set of values above, the median indicator for "Marriages" is 159 and for "Divorces" is 65. Also, the distribution of quartiles is for "Marriages": (45,113.5,158.5,257,588) and for "Divorces": (18,46,65,79,104). The arithmetic mean and the standard deviation for "Marriages" are: (202,124.83) and for "Divorces": (64,20.29). This means that with a probability greather than 0.68 "Marriages" are in the range [77,327] and for "Divorces" in [44,84].

Percentiles length indicators analysis (Figure 446) show that, indeed the concentration is around the middle of the data.

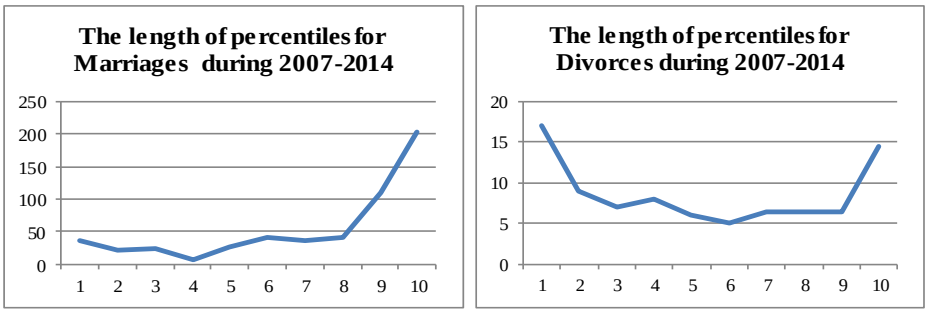


Figure 446

Taking into account the population dynamics during the analyzed period we have the following evolution of the indicators: Marriages/10000 inh. and Divorces/10000 inh. as in the figure 447.

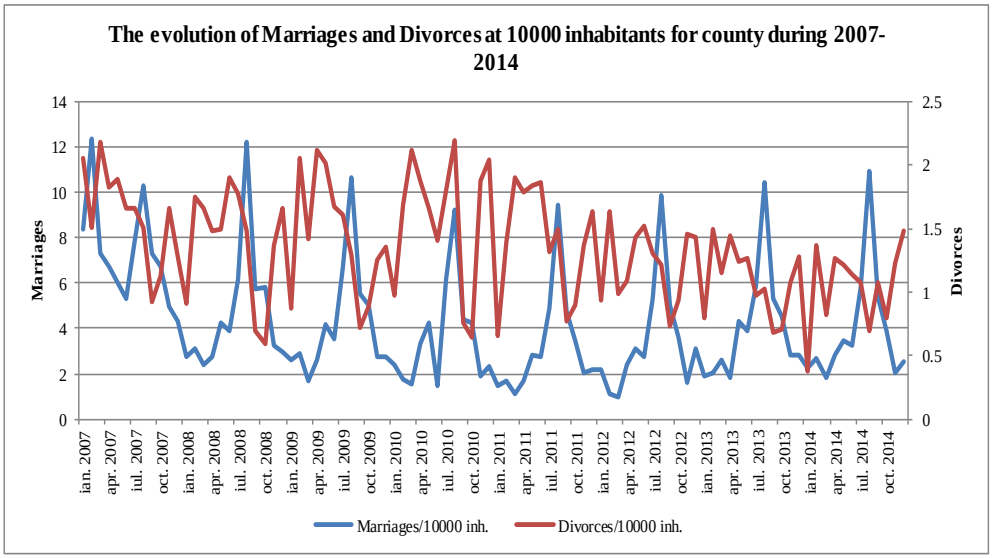


Figure 447

Regression analysis relative to indicator "Marriages/10000 inh." gives us an equation: y=-0.026468597x+5.568622807 where x is the number of month (Jan, 2007=1), therefore a very small downward trend.

Regression analysis relative to indicator "Divorces/10000 inh." gives us an equation: y=-0.006396093x+1.660627193 where x is the number of month (Jan, 2007=1), therefore a very small downward trend.

For the set of values above, the median indicator for "Marriages/10000 inh." is 3 and for "Divorces/10000 inh." is 1. Also, the distribution of quartiles is for

"Marriages/10000 inh.": (0.96,2.415,3.375,5.4325,12.35) and for "Divorces/10000 inh.": (0.38,0.9875,1.37,1.66,2.19). The arithmetic mean and the standard deviation for "Marriages/10000 inh." are: (4,2.63) and for "Divorces/10000 inh.": (1,0.43). This means that with a probability greather than 0.68 "Marriages/10000 inh." are in the range [1,7] and for "Divorces/10000 inh." in [1,1].

Percentiles length indicators analysis (Figure 448) show that, indeed the concentration is around the middle of the data.

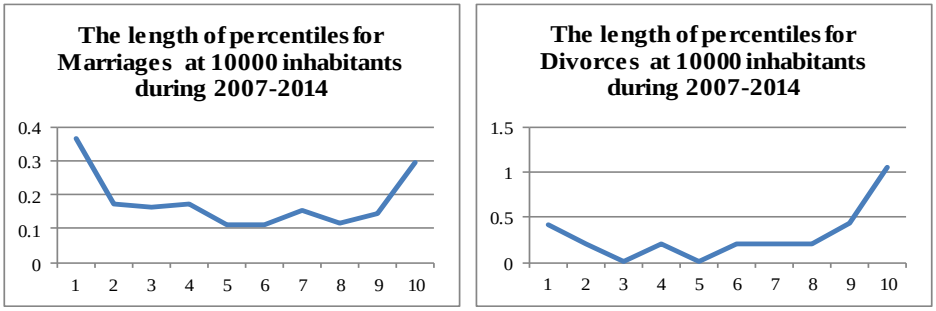


Figure 448

A comparison of the indicator "Marriages" with the national level shows that it is worse than the national, being better only in 34.38% cases. For "Divorces" the indicator is worse than the national, being better only in 23.96% cases.

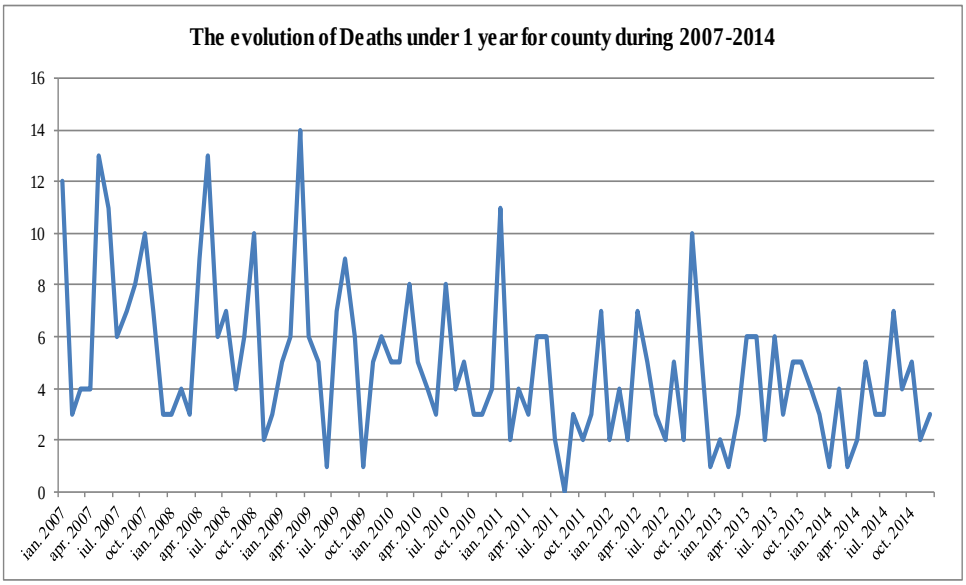


Figure 449

Regression analysis relative to indicator "Deaths under 1 year" gives us an equation: y=-0.044173901x+7.027850877 where x is the number of month (Jan, 2007=1), therefore a very small downward trend.

For the set of values above, the median indicator for "Deaths under 1 year" is 4 and the distribution of quartiles is for "Deaths under 1 year": (0,3,4,6,14). The arithmetic mean and the standard deviation for "Deaths under 1 year" are: (5,2.92) which means that with a probability greather than 0.68 "Deaths under 1 year" are in the range [2,8].

Percentiles length indicators analysis (Figure 450) show that, indeed the concentration is around the middle of the data.

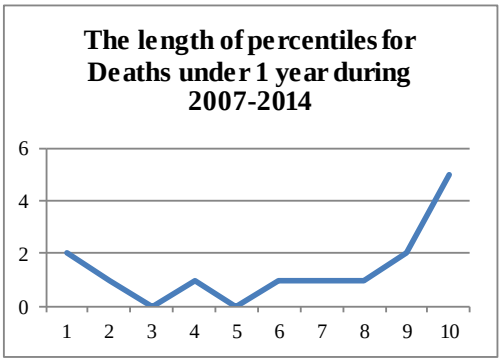


Figure 450

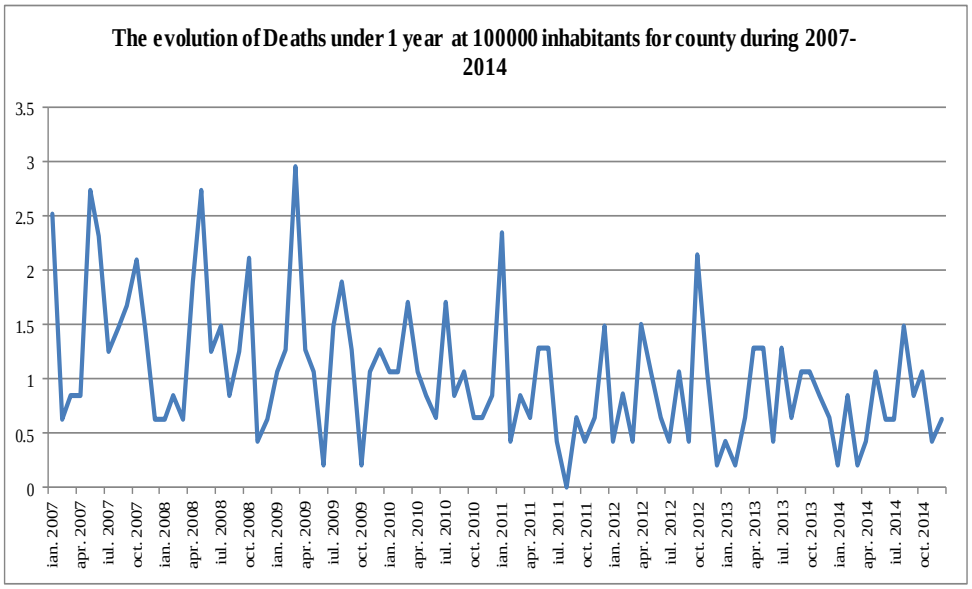


Figure 451

Regression analysis relative to indicator "Deaths under 1 year/100000 inh." gives us an equation: y=-0.009176886x+1.480078947 where x is the number of month (Jan, 2007=1), therefore a very small downward trend.

For the set of values above, the median indicator for "Deaths under 1 year/100000 inh." is 1 and the distribution of quartiles is for "Deaths under 1 year/100000 inh.": (0,0.63,0.855,1.28,2.96). The arithmetic mean and the standard deviation for "Deaths under 1 year/100000 inh." are: (1,0.62) which means that with a probability greather than 0.68 "Deaths under 1 year/100000 inh." are in the range [0,2].

A comparison of the indicator "Deaths under 1 year" with the national level shows that it is worse than the national, being better only in 39.58% cases.

A final analysis examines dependence aforementioned indicators of regional GDP variation.

Table 246. The evolution of Vaslui County GDP during 2007-2014

Year	GDP (in mil. lei 2007)	Variation (%)
2007	3699	-
2008	4363	17.96
2009	4008	-8.15
2010	3801	-5.16
2011	3739	-1.63
2012	4165	11.39
2013	4033	-3.17
2014	4084	1.28

Source: INSSE and own calculations

In what follows, we shall investigate if there is a dependency between GDP variation (noted with dGDP) and the aforementioned indicators.

Searching dependence annual variations of "Live births" from GDP, we find that there is not a dependence of the variation of GDP. Searching dependence annual variations of "Deceased" from GDP, we find that there is not a dependence of the variation of GDP. Searching dependence annual variations of "Natural increase" from GDP, we find that there is a dependence of Natural increase from GDP offset by 2 years and the regression equation is:18.5675dGDP+61.2646. Searching dependence annual variations of "Marriages" from GDP, we find that there is not a dependence of the variation of GDP. Searching dependence annual variations of "Divorces" from GDP, we find that there is a dependence of Divorces from GDP in the current year and the regression equation is: -0.6494dGDP+-4.5242. Searching dependence annual variations of "Deaths under 1 year" from GDP, we find that there is a dependence of Deaths under 1 year from GDP offset by 2 years and the regression equation is:-0.4308dGDP+-9.3605.

2.42. Analysis of natural movement of Vrancea County population

Statistics of natural movement corresponding to Vrancea County are the following:

Table 247. The natural movement of Vrancea County population during 2007-2008

Month	Live births	Deceased	Natural increase	Marriages	Divorces	Deaths under 1 year	Month	Live births	Deceased	Natural increase	Marriages	Divorces	Deaths under 1 year
ian,07	332	485	-153	250	67	8	ian,08	399	438	-39	113	0	60
feb,07	333	383	-50	420	67	4	feb,08	308	413	-105	100	68	7
mar,07	348	372	-24	269	71	5	mar,08	300	410	-110	86	57	4
apr,07	320	360	-40	218	58	1	apr,08	294	397	-103	81	71	4
mai,07	337	374	-37	178	71	6	mai,08	308	355	-47	135	70	5
iun,07	331	322	9	209	68	5	iun,08	294	346	-52	176	34	3
iul,07	389	384	5	297	9	9	iul,08	375	346	29	277	58	9
aug,07	349	300	49	690	4	3	aug,08	373	305	68	774	64	5
sept,07	384	319	65	363	82	9	sept,08	365	328	37	263	5	3
oct,07	366	406	-40	228	101	3	oct,08	392	424	-32	197	30	9
nov,07	304	355	-51	137	114	3	nov,08	325	393	-68	118	74	6
dec,07	331	399	-68	151	72	4	dec,08	325	446	-121	91	70	3

Source: INSSE

Table 248. The natural movement of Vrancea County population during 2009-2010

Month	Live births	Deceased	Natural increase	Marriages	Divorces	Deaths under 1 year	Month	Live births	Deceased	Natural increase	Marriages	Divorces	Deaths under 1 year
ian,09	312	450	-138	77	1	5	ian,10	298	455	-157	75	1	1
feb,09	293	404	-111	112	80	4	feb,10	264	411	-147	63	61	4
mar,09	295	453	-158	52	51	3	mar,10	306	441	-135	59	44	7
apr,09	281	398	-117	101	53	3	apr,10	259	415	-156	100	48	3
mai,09	275	373	-98	129	51	4	mai,10	272	372	-100	106	45	3
iun,09	317	365	-48	123	68	4	iun,10	308	371	-63	54	24	2
iul,09	371	352	19	232	43	3	iul,10	385	381	4	232	42	4
aug,09	505	349	156	687	5	4	aug,10	496	378	118	619	37	8
sept,09	372	260	112	245	54	4	sept,10	364	332	32	209	0	2
oct,09	347	397	-50	175	2	2	oct,10	280	363	-83	144	38	2
nov,09	287	382	-95	97	28	5	nov,10	319	422	-103	59	29	2
dec,09	291	518	-227	75	30	3	dec,10	282	453	-171	73	43	5

Source: INSSE

Table 249. The natural movement of Vrancea County population during 2011-2012

Month	Live births	Deceased	Natural increase	Marriages	Divorces	Deaths under 1 year	Month	Live births	Deceased	Natural increase	Marriages	Divorces	Deaths under 1 year
ian,11	306	430	-124	72	5	4	ian,12	275	452	-177	67	4	3
feb,11	238	431	-193	72	35	1	feb,12	260	514	-254	34	46	2
mar,11	261	434	-173	47	32	1	mar,12	259	423	-164	35	42	2
apr,11	256	403	-147	76	47	4	apr,12	254	369	-115	80	5	1
mai,11	253	384	-131	81	57	1	mai,12	281	368	-87	69	34	3
iun,11	301	340	-39	114	55	2	iun,12	293	360	-67	98	58	3
iul,11	312	345	-33	234	17	1	iul,12	366	393	-27	215	64	4
aug,11	488	339	149	584	61	1	aug,12	555	320	235	530	22	3
sept,11	313	317	-4	228	9	4	sept,12	322	310	12	239	25	2
oct,11	357	406	-49	132	24	4	oct,12	312	384	-72	137	20	3
nov,11	260	378	-118	77	35	2	nov,12	250	388	-138	72	43	4
dec,11	250	430	-180	67	49	5	dec,12	196	424	-228	47	2	3

Source: INSSE

Table 250. The natural movement of Vrancea County population during 2013-2014

Month	Live births	Deceased	Natural increase	Marriages	Divorces	Deaths under 1 year	Month	Live births	Deceased	Natural increase	Marriages	Divorces	Deaths under 1 year
ian,13	323	400	-77	55	3	5	ian,14	265	429	-164	57	8	1
feb,13	243	404	-161	37	27	2	feb,14	220	399	-179	60	21	3
mar,13	249	409	-160	57	58	3	mar,14	287	446	-159	54	44	6
apr,13	252	419	-167	41	30	3	apr,14	283	432	-149	68	36	5
mai,13	267	345	-78	80	33	4	mai,14	279	383	-104	122	26	3
iun,13	255	349	-94	145	30	2	iun,14	271	335	-64	107	38	2
iul,13	405	366	39	190	2	5	iul,14	387	386	1	190	5	2
aug,13	469	330	139	555	26	2	aug,14	459	344	115	580	29	4
sept,13	312	344	-32	188	14	2	sept,14	328	346	-18	206	51	3
oct,13	339	391	-52	143	39	3	oct,14	313	415	-102	143	18	6
nov,13	285	380	-95	90	30	3	nov,14	252	372	-120	94	42	2
dec,13	237	426	-189	53	28	1	dec,14	229	411	-182	56	18	1

Source: INSSE

Table 251. The population trends of Vrancea County during 2007-2014

Year	Population	Year	Population
2007	399527	2011	398076
2008	399405	2012	396894
2009	399345	2013	395687
2010	398690	2014	394345

Source: INSSE

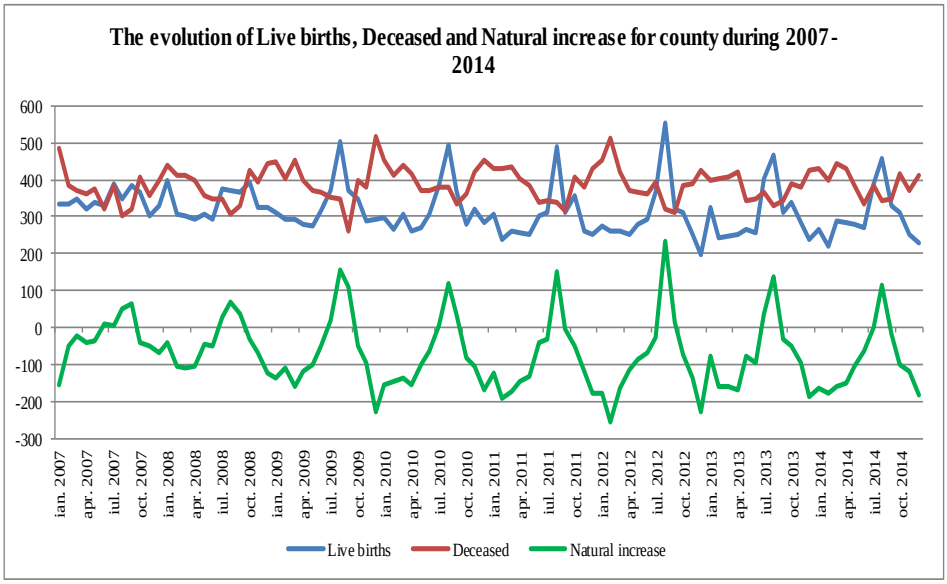


Figure 452

From figure 452 we can see a sinusoidal evolution of the indicator. Except months iun 2007, iul 2007, aug 2007, sept 2007, iul 2008, aug 2008, sept 2008, iul 2009, aug 2009, sept 2009, iul 2010, aug 2010, sept 2010, aug 2011, aug 2012, sept 2012, iul 2013, aug 2013, iul 2014, aug 2014 the natural increase was negative.

Regression analysis relative to indicator "Live births" gives us an equation: y=-0.532704829x+342.3778509 where x is the number of month (Jan, 2007=1), therefore a pronounced downward trend.

Regression analysis relative to indicator "Deceased" gives us an equation: y=0.052916441x+384.4960526 where x is the number of month (Jan, 2007=1), therefore an upward trend.

Regression analysis relative to indicator "Natural increase" gives us an equation: y=-0.58562127x+-42.11820175 where x is the number of month (Jan, 2007=1), therefore a pronounced downward trend.

For the set of values above, the median indicator for "Live births" is 307, for "Deceased" is 384 and for "Natural increase": -81. This means that the probability that the indicator has a value less than the median is equal to the probability that it has a higher value than this.

Also, the distribution of quartiles is for "Live births": (196,271.75,307,347.25,555), for "Deceased": (260,354.25,384,416,518) and for "Natural increase": (-254,-140.25,-80.5,-30.75,235).

The arithmetic mean and the standard deviation for "Live births" are: (317,64.5), for "Deceased": (387,45.46) and for "Natural increase": (-71,92.38). This means that with a probability greather than 0.68 "Live births" are in the range [253,382], for "Deceased" in [342,432] and for "Natural increase" in [-163,21].

Percentiles length indicators analysis (Figure 453) show that, indeed the concentration is around the middle of the data.

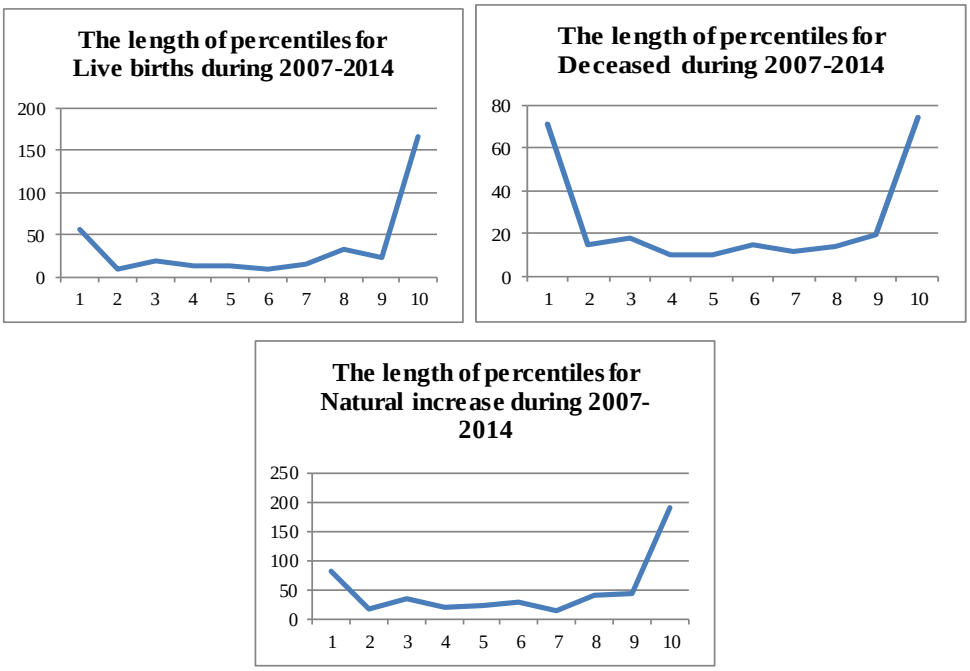


Figure 453

Taking into account the population dynamics during the analyzed period we have the following evolution of the indicators: Live births/10000 inh., Deceased/10000 inh. and Natural increase/10000 inh. as in the figure 454.

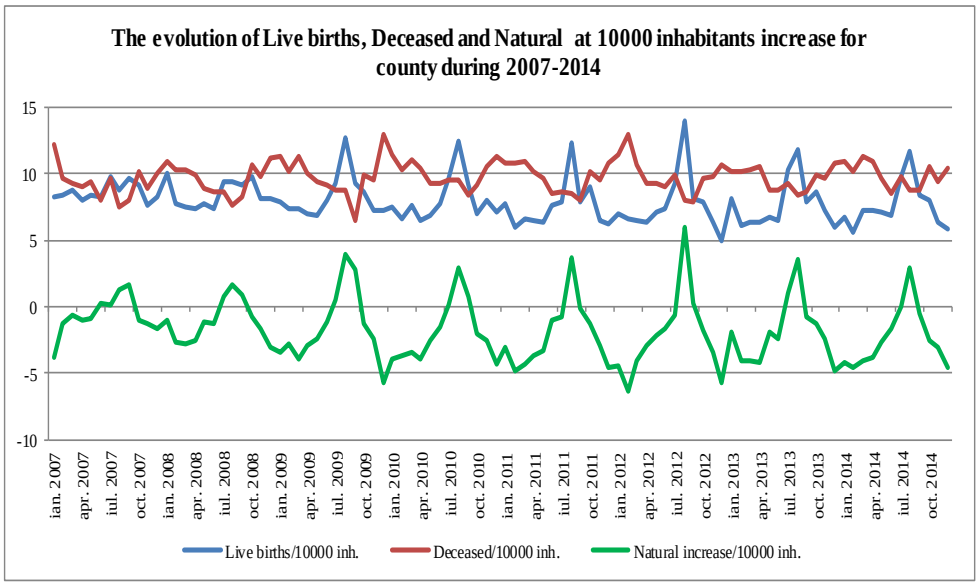


Figure 454

Regression analysis relative to indicator "Live births/10000 inh." gives us an equation: y=-0.012156403x+8.546877193 where x is the number of month (Jan, 2007=1), therefore a very small downward trend.

Regression analysis relative to indicator "Deceased/10000 inh." gives us an equation: y=0.002811177x+9.595532895 where x is the number of month (Jan, 2007=1), therefore a very small upward trend.

Regression analysis relative to indicator "Natural increase/10000 inh." gives us an equation: y=-0.015001356x+-1.047017544 where x is the number of month (Jan, 2007=1), therefore a very small downward trend.

For the set of values above, the median indicator for "Live births/10000 inh." is 8, for "Deceased/10000 inh." is 10 and for "Natural increase/10000 inh.": -2. This means that the probability that the indicator has a value less than the median is equal to the probability that it has a higher value than this.

Also, the distribution of quartiles is for "Live births/10000 inh.": (4.94,6.8575,7.7,8.695,13.98), for "Deceased/10000 inh.": (6.51,8.8725,9.695,10.535,12.97) and for "Natural increase/10000 inh.": (-6.4,-3.5325,-2.025,-0.77,5.92).

The arithmetic mean and the standard deviation for "Live births/10000 inh." are: (8,1.62), for "Deceased/10000 inh.": (10,1.14) and for "Natural increase/10000 inh.": (-2,2.33). This means that with a probability greather than 0.68 "Live

births/10000 inh." are in the range [6,10], for "Deceased/10000 inh." in [9,11] and for "Natural increase/10000 inh." in [-4,0].

Percentiles length indicators analysis (Figure 455) show that, indeed the concentration is around the middle of the data.

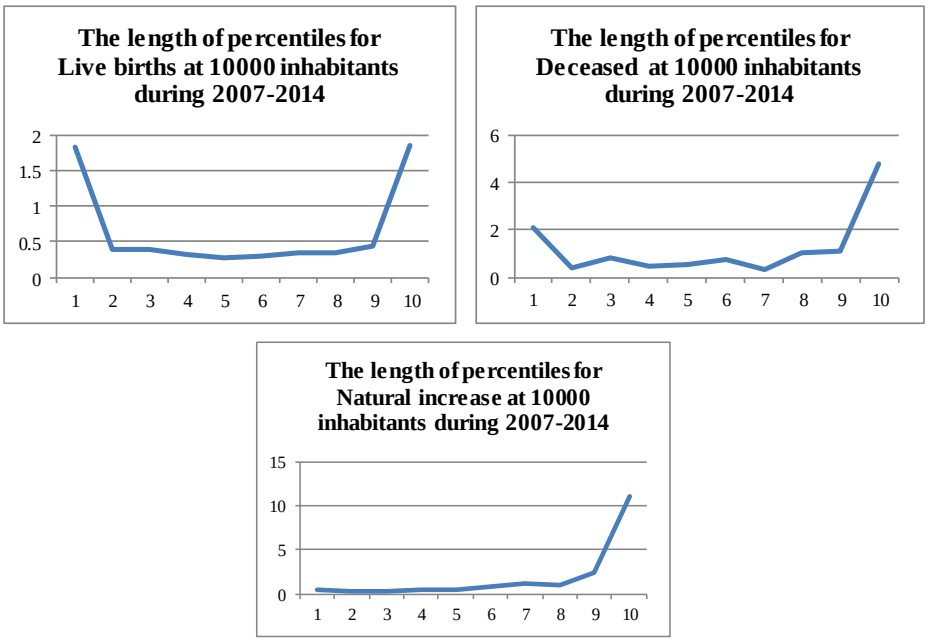


Figure 455

A comparison of the indicator "Live births" with the national level shows that it is about the same with the national, being better in 48.96% cases. For "Deceased" the indicator is worse than the national, being better only in 23.96% cases. Finally, for "Natural increase", the indicator is worse than the national, being better only in 37.5% cases.

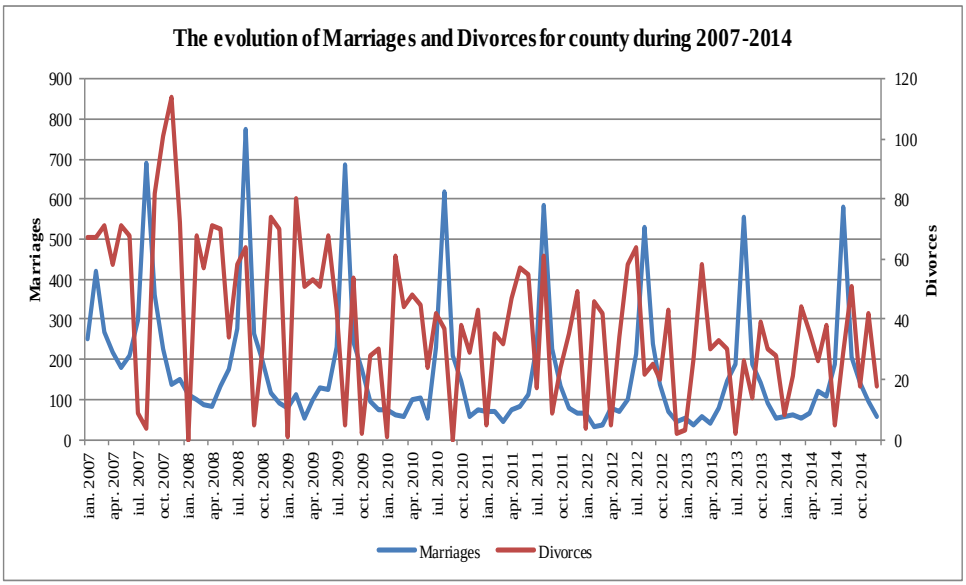


Figure 456

Regression analysis relative to indicator "Marriages" gives us an equation: y=-1.248799512x+232.4105263 where x is the number of month (Jan, 2007=1), therefore a pronounced downward trend.

Regression analysis relative to indicator "Divorces" gives us an equation: y=-0.390518177x+57.58596491 where x is the number of month (Jan, 2007=1), therefore a pronounced downward trend.

For the set of values above, the median indicator for "Marriages" is 114 and for "Divorces" is 38. Also, the distribution of quartiles is for "Marriages": (34,72,113.5,210.5,774) and for "Divorces": (0,21.75,37.5,57.25,114). The arithmetic mean and the standard deviation for "Marriages" are: (172,158.45) and for "Divorces": (39,24.52). This means that with a probability greather than 0.68 "Marriages" are in the range [14,330] and for "Divorces" in [14,64].

Percentiles length indicators analysis (Figure 457) show that, indeed the concentration is around the middle of the data.

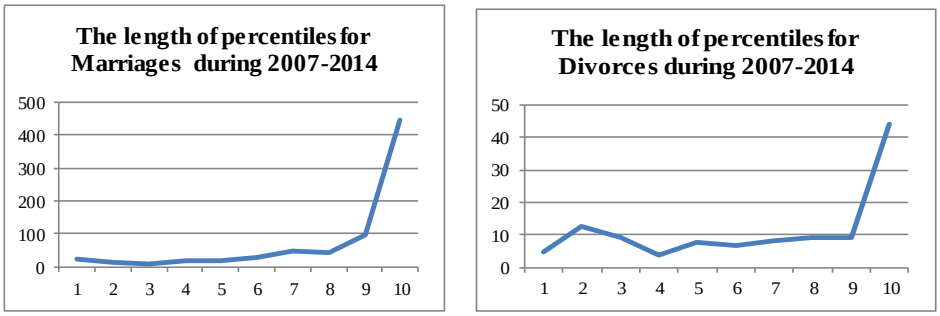


Figure 457

Taking into account the population dynamics during the analyzed period we have the following evolution of the indicators: Marriages/10000 inh. and Divorces/10000 inh. as in the figure 458.

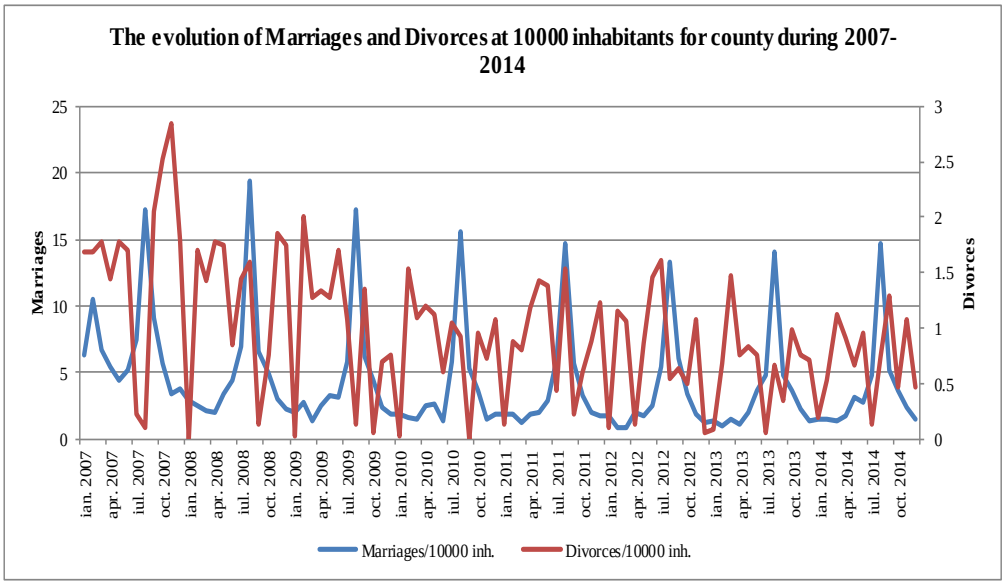


Figure 458

Regression analysis relative to indicator "Marriages/10000 inh." gives us an equation: y=-0.030705168x+5.806179825 where x is the number of month (Jan, 2007=1), therefore a very small downward trend.

Regression analysis relative to indicator "Divorces/10000 inh." gives us an equation: y=-0.009662371x+1.439458333 where x is the number of month (Jan, 2007=1), therefore a very small downward trend.

For the set of values above, the median indicator for "Marriages/10000 inh." is 3 and for "Divorces/10000 inh." is 1. Also, the distribution of quartiles is for

"Marriages/10000 inh.": (0.86,1.81,2.845,5.285,19.38) and for "Divorces/10000 inh.": (0,0.545,0.94,1.435,2.85). The arithmetic mean and the standard deviation for "Marriages/10000 inh." are: (4,3.98) and for "Divorces/10000 inh.": (1,0.61). This means that with a probability greather than 0.68 "Marriages/10000 inh." are in the range [0,8] and for "Divorces/10000 inh." in [0,2].

Percentiles length indicators analysis (Figure 459) show that, indeed the concentration is around the middle of the data.

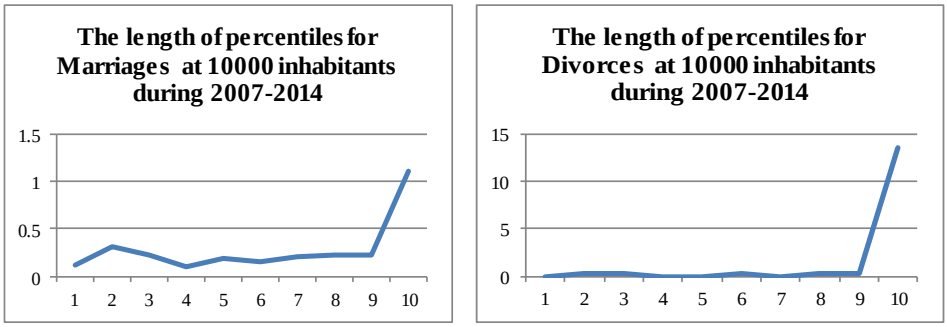


Figure 459

A comparison of the indicator "Marriages" with the national level shows that it is worse than the national, being better only in 16.67% cases. For "Divorces" the indicator is better than the national, being better in 64.58% cases.

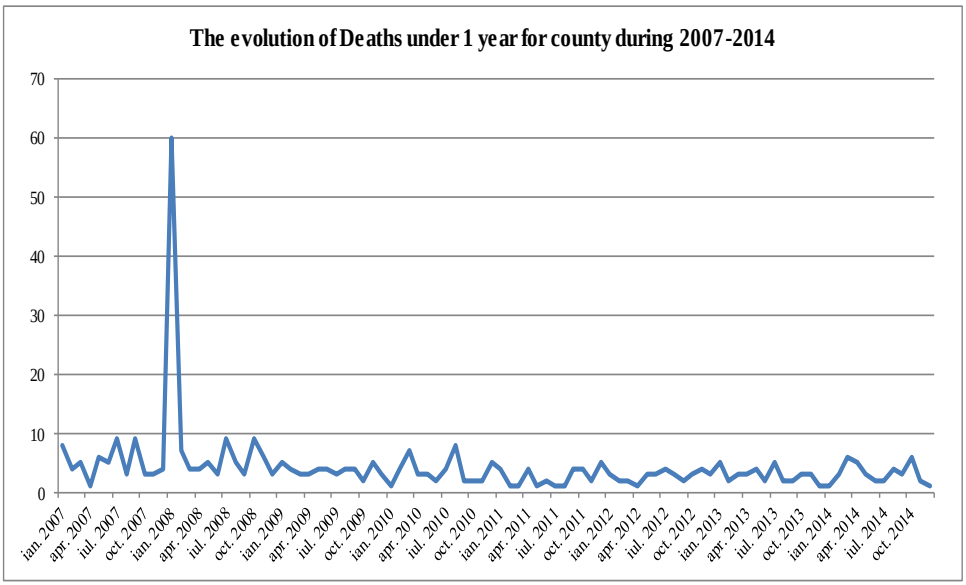


Figure 460

Regression analysis relative to indicator “Deaths under 1 year” gives us an equation: y=-0.054347531x+6.812938596 where x is the number of month (Jan, 2007=1), therefore a very small downward trend.

For the set of values above, the median indicator for “Deaths under 1 year” is 3 and the distribution of quartiles is for “Deaths under 1 year”: (1,2,3,4.25,60). The arithmetic mean and the standard deviation for “Deaths under 1 year” are: (4,6.04) which means that with a probability greather than 0.68 “Deaths under 1 year” are in the range [-2,10]. Percentiles length indicators analysis (Figure 461) show that, indeed the concentration is around the middle of the data.

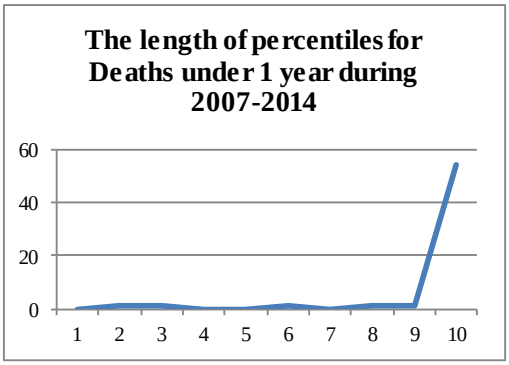


Figure 461

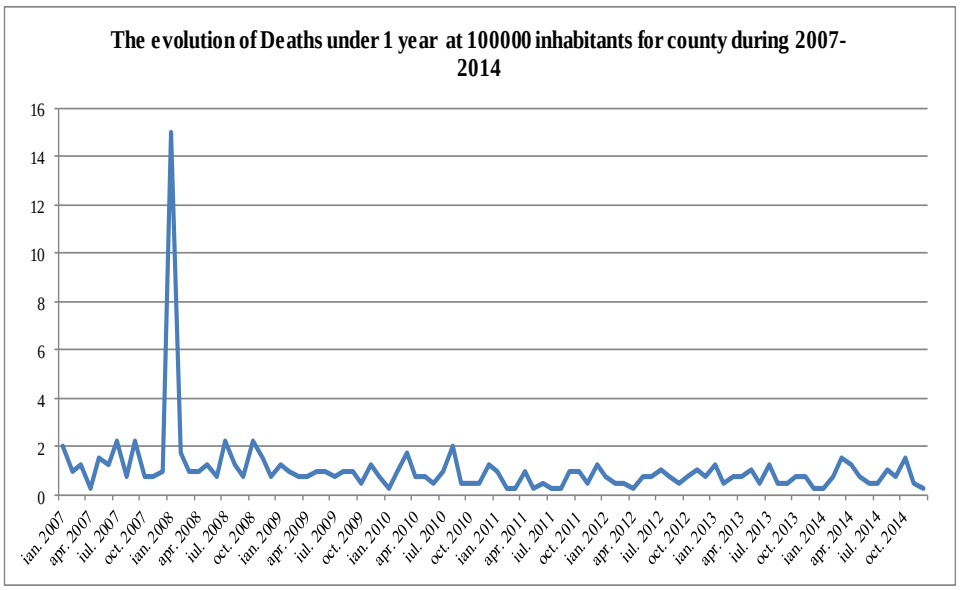


Figure 462

Regression analysis relative to indicator "Deaths under 1 year/100000 inh." gives us an equation: y=-0.013458492x+1.700861842 where x is the number of month (Jan, 2007=1), therefore a very small downward trend.

For the set of values above, the median indicator for "Deaths under 1 year/100000 inh." is 1 and the distribution of quartiles is for "Deaths under 1 year/100000 inh.": (0.25,0.51,0.76,1.07,15.02). The arithmetic mean and the standard deviation for "Deaths under 1 year/100000 inh." are: (1,1.51) which means that with a probability greather than 0.68 "Deaths under 1 year/100000 inh." are in the range [-1,3].

A comparison of the indicator "Deaths under 1 year" with the national level shows that it is worse than the national, being better only in 39.58% cases.

A final analysis examines dependence aforementioned indicators of regional GDP variation.

Table 252. The evolution of Vrancea County GDP during 2007-2014

Year	GDP (in mil. lei 2007)	Variation (%)
2007	4542	-
2008	4786	5.36
2009	4458	-6.85
2010	4538	1.8
2011	4294	-5.37
2012	4464	3.94
2013	4599	3.03
2014	4589	-0.21

Source: INSSE and own calculations

In what follows, we shall investigate if there is a dependency between GDP variation (noted with dGDP) and the aforementioned indicators.

Searching dependence annual variations of "Live births" from GDP, we find that there is a dependence of Live births from GDP in the current year and the regression equation is: 0.3518dGDP+-2.0883. Searching dependence annual variations of "Deceased" from GDP, we find that there is not a dependence of the variation of GDP. Searching dependence annual variations of "Natural increase" from GDP, we find that there is a dependence of Natural increase from GDP offset by 2 years and the regression equation is:2.1701dGDP+9.8021. Searching dependence annual variations of "Marriages" from GDP, we find that there is not a dependence of the variation of GDP. Searching dependence annual variations of "Divorces" from GDP, we find that there is not a dependence of the variation of GDP. Searching dependence annual variations of "Deaths under 1 year" from GDP, we find that there is not a dependence of the variation of GDP.

2.43. Analysis of Natural Movement of Romania County Population

Statistics of natural movement corresponding to Romania County are the following:

Table 253. The natural movement of Romania County population during 2007-2008

Month	Live births	Deceased	Natural increase	Marriages	Divorces	Deaths under 1 year	Month	Live births	Deceased	Natural increase	Marriages	Divorces	Deaths under 1 year
ian,09	18094	24521	-6427	5165	1483	225	ian,10	17327	23709	-6382	4841	1215	167
feb,09	16688	20811	-4123	6982	3245	180	feb,10	16418	22126	-5708	4715	2767	178
mar,09	17737	23995	-6258	4131	3154	181	mar,10	18048	23198	-5150	3613	3191	215
apr,09	16807	21648	-4841	5913	3272	184	apr,10	16143	22084	-5941	8743	3264	157
mai,09	17110	20457	-3347	12563	3354	175	mai,10	16076	21257	-5181	11008	2929	148
iun,09	18478	19731	-1253	11166	3284	178	iun,10	18743	20634	-1891	6033	3093	153
iul,09	21132	19636	1496	18588	2306	185	iul,10	19029	20186	-1157	18546	2330	183
aug,09	20877	18797	2080	24736	2736	170	aug,10	20342	20518	-176	21497	2893	174
sept,09	21456	18707	2749	18021	2131	185	sept,10	18482	18984	-502	15901	1971	165
oct,09	20042	21787	-1745	15272	1649	201	oct,10	17018	21648	-4630	11912	1930	154
nov,09	17306	21930	-4624	7036	1740	190	nov,10	17773	21901	-4128	5120	2207	177
dec,09	17198	25063	-7865	4701	2274	200	dec,10	16523	23502	-6979	3845	3073	214

Source: INSSE

Table 254. The natural movement of Romania County population during 2009-2010

Month	Live births	Deceased	Natural increase	Marriages	Divorces	Deaths under 1 year	Month	Live births	Deceased	Natural increase	Marriages	Divorces	Deaths under 1 year
ian,09	18094	24521	-6427	5165	1483	225	ian,10	17327	23709	-6382	4841	1215	167
feb,09	16688	20811	-4123	6982	3245	180	feb,10	16418	22126	-5708	4715	2767	178
mar,09	17737	23995	-6258	4131	3154	181	mar,10	18048	23198	-5150	3613	3191	215
apr,09	16807	21648	-4841	5913	3272	184	apr,10	16143	22084	-5941	8743	3264	157
mai,09	17110	20457	-3347	12563	3354	175	mai,10	16076	21257	-5181	11008	2929	148
iun,09	18478	19731	-1253	11166	3284	178	iun,10	18743	20634	-1891	6033	3093	153
iul,09	21132	19636	1496	18588	2306	185	iul,10	19029	20186	-1157	18546	2330	183
aug,09	20877	18797	2080	24736	2736	170	aug,10	20342	20518	-176	21497	2893	174
sept,09	21456	18707	2749	18021	2131	185	sept,10	18482	18984	-502	15901	1971	165
oct,09	20042	21787	-1745	15272	1649	201	oct,10	17018	21648	-4630	11912	1930	154
nov,09	17306	21930	-4624	7036	1740	190	nov,10	17773	21901	-4128	5120	2207	177
dec,09	17198	25063	-7865	4701	2274	200	dec,10	16523	23502	-6979	3845	3073	214

Source: INSSE

Table 255. The natural movement of Romania County population during 2011-2012

Month	Live births	Deceased	Natural increase	Marriages	Divorces	Deaths under 1 year	Month	Live births	Deceased	Natural increase	Marriages	Divorces	Deaths under 1 year
ian,11	16325	23449	-7124	3753	1277	199	ian,12	16180	22869	-6689	3762	1207	150
feb,11	14917	21703	-6786	4393	3311	147	feb,12	15034	24516	-9482	3962	2728	148
mar,11	15801	23576	-7775	3219	3369	166	mar,12	14950	24563	-9613	2961	2897	142
apr,11	13844	21254	-7410	4609	3546	149	apr,12	13924	22054	-8130	5951	2563	172
mai,11	15800	21378	-5578	8836	3598	148	mai,12	17332	20372	-3040	8279	2633	172
iun,11	15850	18859	-3009	10115	2950	162	iun,12	15949	19933	-3984	10439	2631	152
iul,11	17404	19104	-1700	16086	2611	132	iul,12	18728	20934	-2206	14816	2308	125
aug,11	20223	19076	1147	20160	3247	151	aug,12	21017	19182	1835	20781	2713	137
sept,11	18031	17673	358	15033	2336	110	sept,12	17696	17099	597	16886	2137	127
oct,11	16467	20722	-4255	10518	2423	144	oct,12	18640	20621	-1981	10266	2372	179
nov,11	15867	21533	-5666	4974	2719	184	nov,12	15670	20241	-4571	5308	2502	162
dec,11	15844	23043	-7199	3891	2965	153	dec,12	13650	23073	-9423	4305	2859	134

Source: INSSE

Table 256. The natural movement of Romania County population during 2013-2014

Month	Live births	Deceased	Natural increase	Marriages	Divorces	Deaths under 1 year	Month	Live births	Deceased	Natural increase	Marriages	Divorces	Deaths under 1 year
ian,13	17913	22238	-4325	3471	1289	149	ian,14	16553	22583	-6030	3978	924	130
feb,13	13486	20288	-6802	3840	2920	154	feb,14	14295	21174	-6879	4881	2203	126
mar,13	13566	22353	-8787	5167	2956	160	mar,14	15360	23090	-7730	4125	2338	134
apr,13	14577	22164	-7587	3557	2682	157	apr,14	15332	21965	-6633	5465	2508	119
mai,13	14848	20164	-5316	8352	2834	143	mai,14	15204	20903	-5699	10720	2276	137
iun,13	14445	19320	-4875	12154	2322	127	iun,14	16098	19284	-3186	10054	2201	141
iul,13	18959	19498	-539	13908	1692	155	iul,14	19628	19290	338	15527	1901	140
aug,13	19373	18515	858	22269	2141	150	aug,14	19022	18819	203	23676	2155	139
sept,13	18212	18646	-434	13728	2034	108	sept,14	19092	18997	95	14242	2216	164
oct,13	18115	21636	-3521	10745	2021	138	oct,14	17715	21881	-4166	11452	2041	147
nov,13	14931	20408	-5477	6112	1967	128	nov,14	14897	21097	-6200	6535	2345	114
dec,13	14149	24034	-9885	4187	2240	123	dec,14	14697	24276	-9579	4863	2356	138

Source: INSSE

Table 257. The population trends of Romania County during 2007-2014

Year	Population	Year	Population
2007	22582773	2011	22480599
2008	22561686	2012	22433741
2009	22541941	2013	22390978
2010	22516004	2014	22346178

Source: INSSE

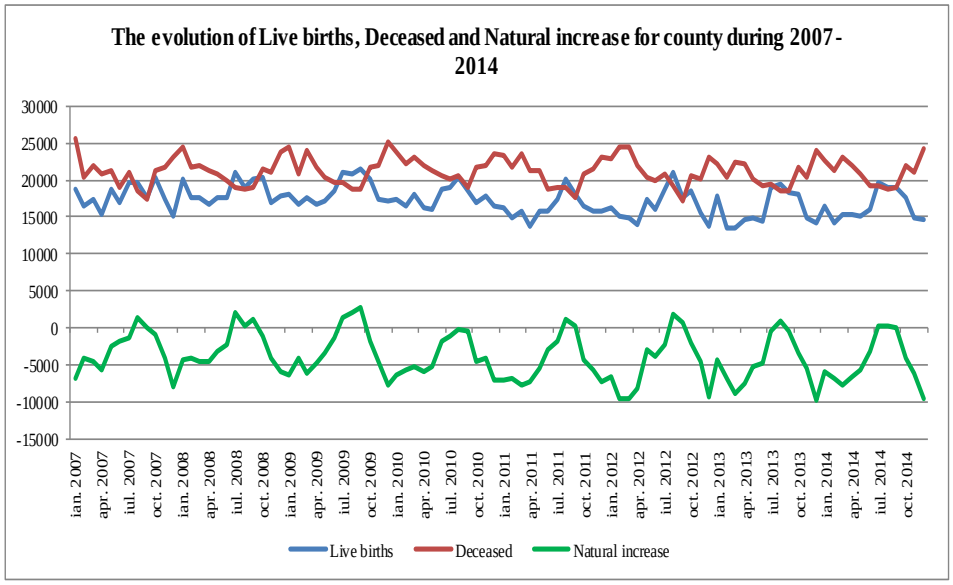


Figure 463

From figure 463 we can see a sinusoidal evolution of the indicator. Except months aug 2007, sept 2007, iul 2008, aug 2008, sept 2008, iul 2009, aug 2009, sept 2009, aug 2011, sept 2011, aug 2012, sept 2012, aug 2013, iul 2014, aug 2014, sept 2014 the natural increase was negative.

Regression analysis relative to indicator "Live births" gives us an equation: y=-26.73288795x+18555.20132 where x is the number of month (Jan, 2007=1), therefore a pronounced downward trend.

Regression analysis relative to indicator "Deceased" gives us an equation: y=-3.932569181x+21352.75044 where x is the number of month (Jan, 2007=1), therefore a pronounced downward trend.

Regression analysis relative to indicator "Natural increase" gives us an equation: y=-22.80031877x+-2797.549123 where x is the number of month (Jan, 2007=1), therefore a pronounced downward trend.

For the set of values above, the median indicator for "Live births" is 17329, for "Deceased" is 21183 and for "Natural increase": -4290. This means that the probability that the indicator has a value less than the median is equal to the probability that it has a higher value than this.

Also, the distribution of quartiles is for "Live births": (13486,15833.25,17328.5,18731.5,21456), for "Deceased": (17099,19707.25,21183,22135.5,25578) and for "Natural increase": (-9885,-6289,-4290,-1316.75,2749).

The arithmetic mean and the standard deviation for "Live births" are: (17259,1977.72), for "Deceased": (21162,1848.16) and for "Natural increase": (-3903,3158.48). This means that with a probability greather than 0.68 "Live births" are in the range [15281,19237], for "Deceased" in [19314,23010] and for "Natural increase" in [-7061,-745].

Percentiles length indicators analysis (Figure 464) show that, indeed the concentration is around the middle of the data.

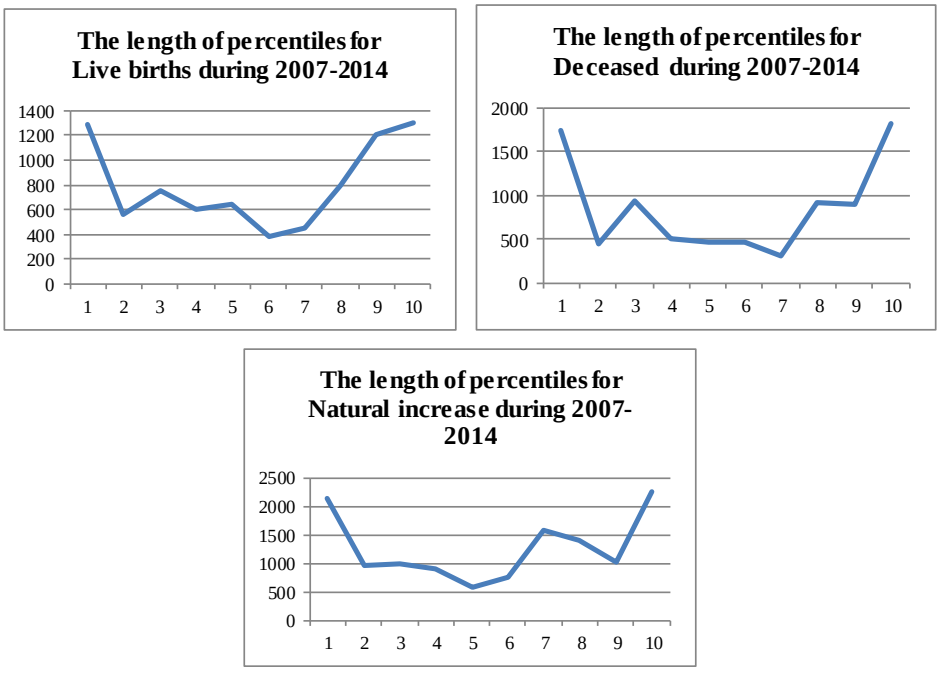


Figure 464

Taking into account the population dynamics during the analyzed period we have the following evolution of the indicators: Live births/10000 inh., Deceased/10000 inh. and Natural increase/10000 inh. as in the figure 465.

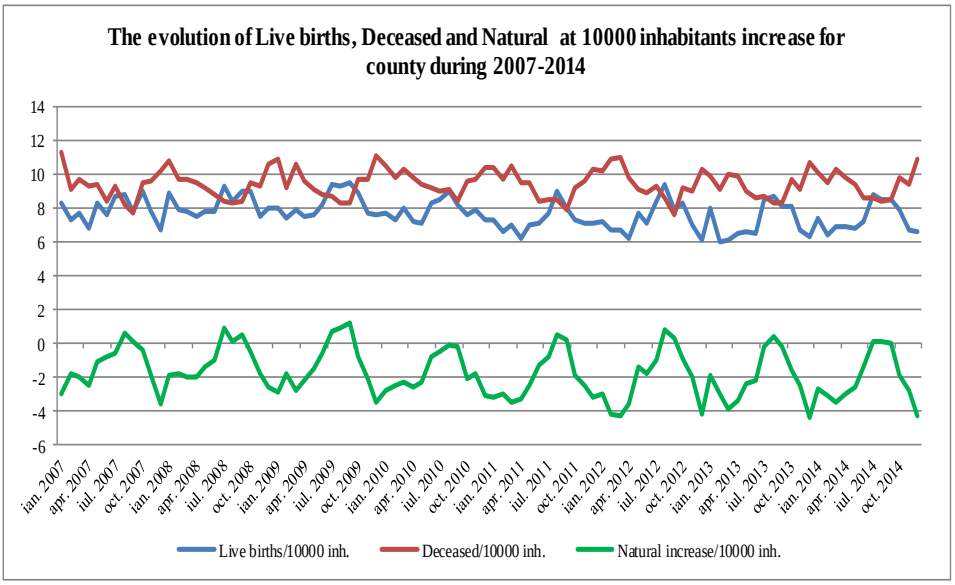


Figure 465

Regression analysis relative to indicator "Live births/10000 inh." gives us an equation: y=-0.01094296x+8.206462719 where x is the number of month (Jan, 2007=1), therefore a very small downward trend.

Regression analysis relative to indicator "Deceased/10000 inh." gives us an equation: y=-0.000589867x+9.441421053 where x is the number of month (Jan, 2007=1), therefore a very small downward trend.

Regression analysis relative to indicator "Natural increase/10000 inh." gives us an equation: y=-0.010357434x+-1.235164474 where x is the number of month (Jan, 2007=1), therefore a very small downward trend.

For the set of values above, the median indicator for "Live births/10000 inh." is 8, for "Deceased/10000 inh." is 9 and for "Natural increase/10000 inh.": -2. This means that the probability that the indicator has a value less than the median is equal to the probability that it has a higher value than this.

Also, the distribution of quartiles is for "Live births/10000 inh.": (6.02,7.045,7.69,8.3125,9.52), for "Deceased/10000 inh.": (7.62,8.74,9.44,9.8475,11.33) and for "Natural increase/10000 inh.": (-4.41,-2.7925,-1.905,-0.5825,1.22).

The arithmetic mean and the standard deviation for "Live births/10000 inh." are: (8,0.87), for "Deceased/10000 inh.": (9,0.82) and for "Natural increase/10000 inh.": (-2,1.41). This means that with a probability greather than 0.68 "Live births/10000 inh." are in the range [7,9], for "Deceased/10000 inh." in [8,10] and

for "Natural increase/10000 inh." in [-3,-1]. Percentiles length indicators analysis (Figure 466) show that, indeed the concentration is around the middle of the data.

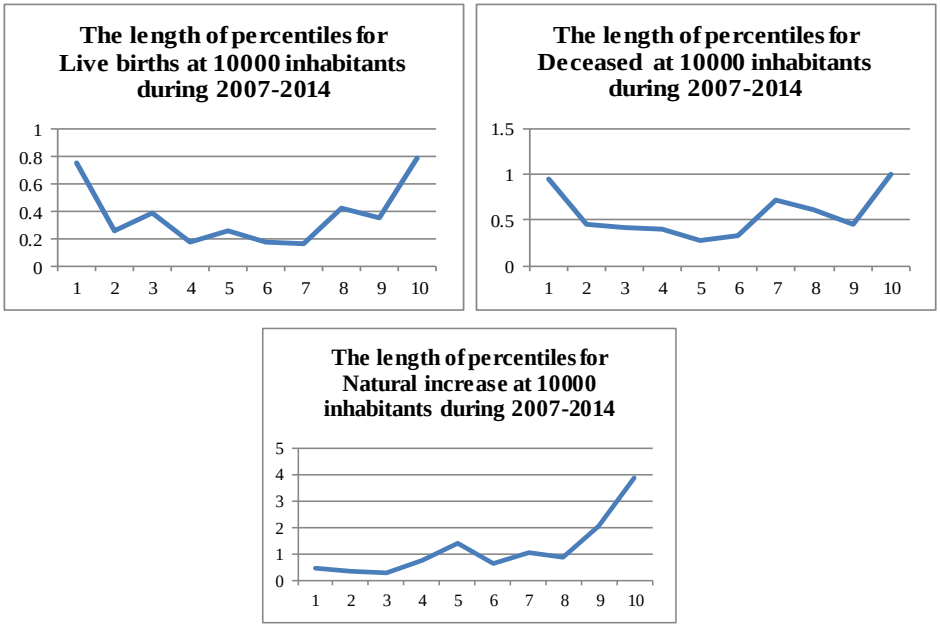


Figure 466

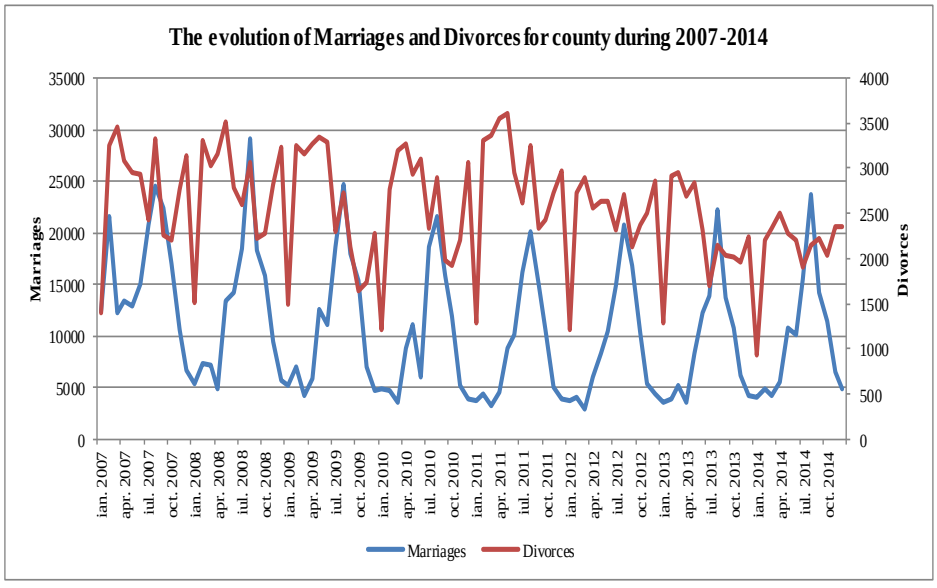


Figure 467

Regression analysis relative to indicator “Marriages” gives us an equation: y=-58.73511259x+13523.14254 where x is the number of month (Jan, 2007=1), therefore a pronounced downward trend.

Regression analysis relative to indicator “Divorces” gives us an equation: y=-7.06289338x+2891.456579 where x is the number of month (Jan, 2007=1), therefore a pronounced downward trend.

For the set of values above, the median indicator for “Marriages” is 10085 and for “Divorces” is 2603. Also, the distribution of quartiles is for “Marriages”: (2961,4950.75,10084.5,14994.75,29151) and for “Divorces”: (924,2206,2602.5,3040.5,3598). The arithmetic mean and the standard deviation for “Marriages” are: (10674,6298.66) and for “Divorces”: (2549,602.44). This means that with a probability greather than 0.68 “Marriages” are in the range [4375,16973] and for “Divorces” in [1947,3151].

Percentiles length indicators analysis (Figure 468) show that, indeed the concentration is around the middle of the data.

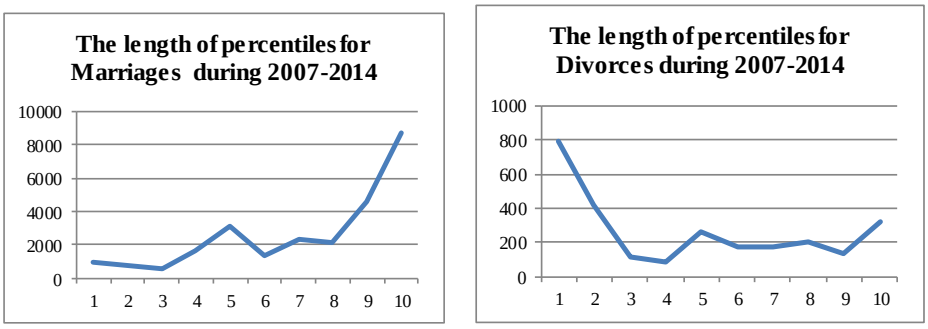


Figure 468

Taking into account the population dynamics during the analyzed period we have the following evolution of the indicators: Marriages/10000 inh. and Divorces/10000 inh. as in the figure 469.

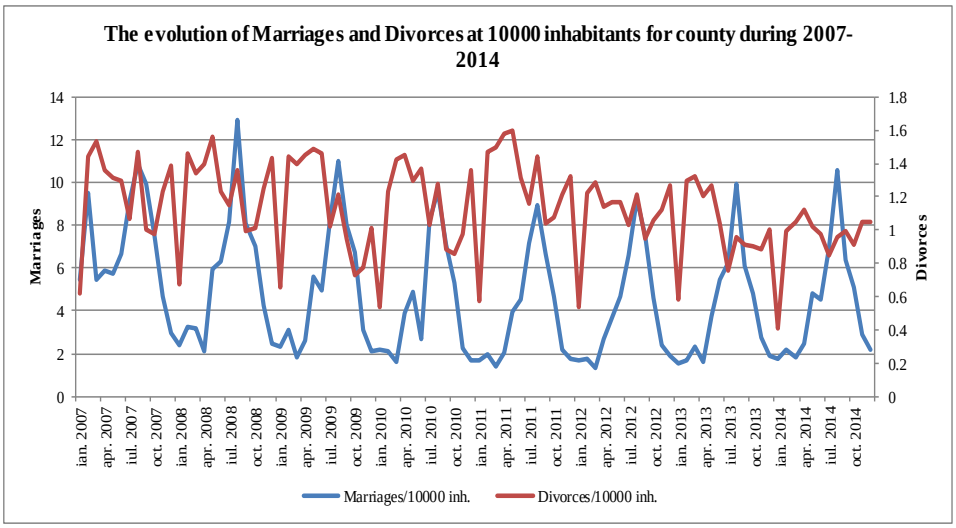


Figure 469

Regression analysis relative to indicator "Marriages/10000 inh." gives us an equation: y=-0.025459984x+5.980017544 where x is the number of month (Jan, 2007=1), therefore a very small downward trend.

Regression analysis relative to indicator "Divorces/10000 inh." gives us an equation: y=-0.002999254x+1.278692982 where x is the number of month (Jan, 2007=1), therefore a very small downward trend.

For the set of values above, the median indicator for "Marriages/10000 inh." is 5 and for "Divorces/10000 inh." is 1. Also, the distribution of quartiles is for "Marriages/10000 inh.": (1.32,2.2025,4.5,6.645,12.92) and for "Divorces/10000 inh.": (0.41,0.98,1.155,1.345,1.6). The arithmetic mean and the standard deviation for "Marriages/10000 inh." are: (5,2.8) and for "Divorces/10000 inh.": (1,0.27). This means that with a probability greather than 0.68 "Marriages/10000 inh." are in the range [2,8] and for "Divorces/10000 inh." in [1,1].

Percentiles length indicators analysis (Figure 470) show that, indeed the concentration is around the middle of the data.

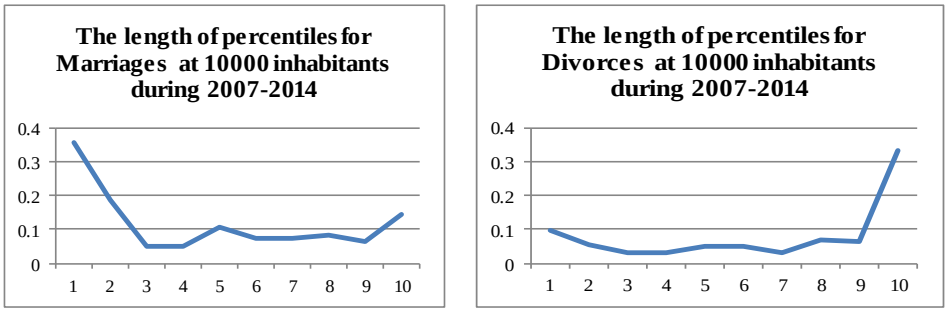


Figure 470

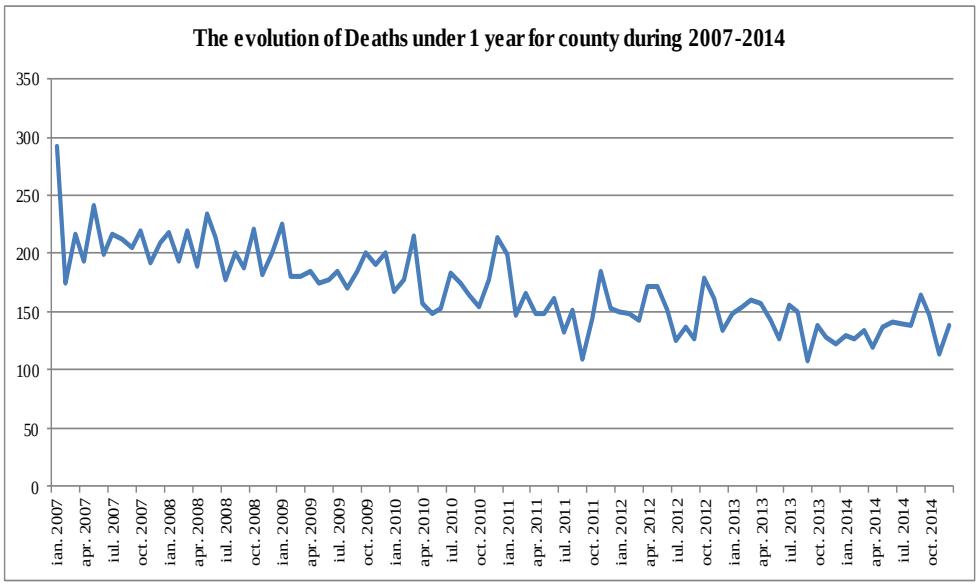


Figure 471

Regression analysis relative to indicator "Deaths under 1 year" gives us an equation: y=-0.986550461x+217.795614 where x is the number of month (Jan, 2007=1), therefore a pronounced downward trend.

For the set of values above, the median indicator for "Deaths under 1 year" is 167 and the distribution of quartiles is for "Deaths under 1 year": (108,146.25,166.5,192.5,292). The arithmetic mean and the standard deviation for "Deaths under 1 year" are: (170,33.53) which means that with a probability greather than 0.68 "Deaths under 1 year" are in the range [136,204].

Percentiles length indicators analysis (Figure 472) show that, indeed the concentration is around the middle of the data.

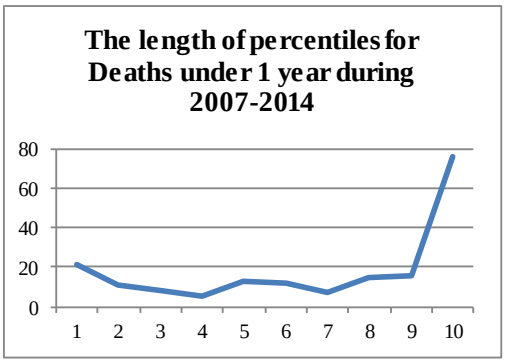


Figure 472

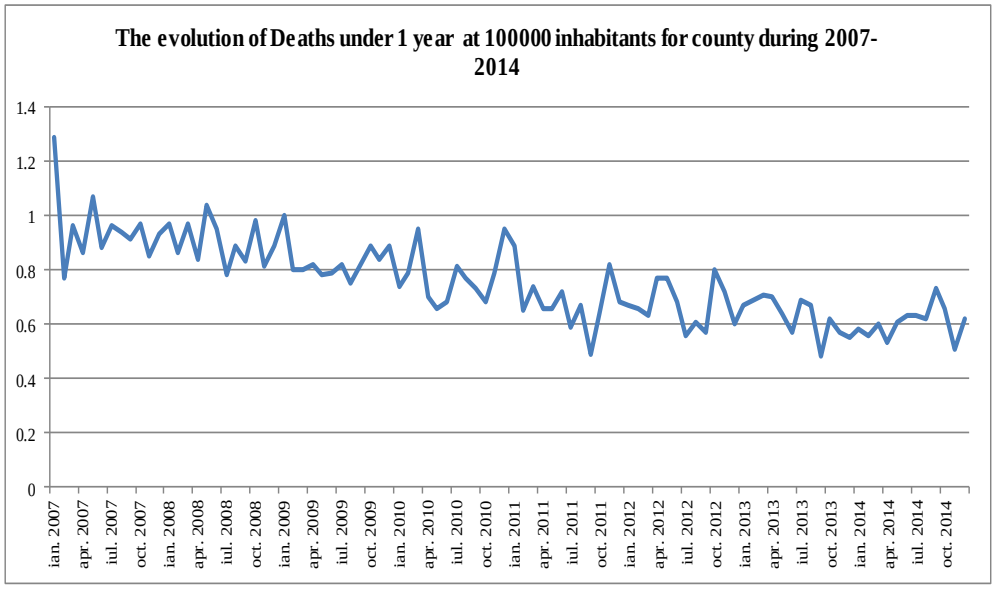


Figure 473

Regression analysis relative to indicator "Deaths under 1 year/100000 inh." gives us an equation: y=-0.0042949x+0.963927632 where x is the number of month (Jan, 2007=1), therefore a very small downward trend.

For the set of values above, the median indicator for "Deaths under 1 year/100000 inh." is 1 and the distribution of quartiles is for "Deaths under 1 year/100000 inh.": (0.48,0.6475,0.74,0.8525,1.29). The arithmetic mean and the standard deviation for "Deaths under 1 year/100000 inh." are: (1,0.15) which means that with a probability greather than 0.68 "Deaths under 1 year/100000 inh." are in the range [1,1].

A final analysis examines dependence aforementioned indicators of regional GDP variation.

Table 258. The evolution of Romania County GDP during 2007-2014

Year	GDP (in mil. lei 2007)	Variation (%)
2007	418258	-
2008	453596	8.45
2009	421692	-7.03
2010	418563	-0.74
2011	423258	1.12
2012	425688	0.57
2013	440482	3.48
2014	454338	3.15

Source: INSSE and own calculations

In what follows, we shall investigate if there is a dependency between GDP variation (noted with dGDP) and the aforementioned indicators.

Searching dependence annual variations of "Live births" from GDP, we find that there is not a dependence of the variation of GDP. Searching dependence annual variations of "Deceased" from GDP, we find that there is not a dependence of the variation of GDP. Searching dependence annual variations of "Natural increase" from GDP, we find that there is not a dependence of the variation of GDP. Searching dependence annual variations of "Marriages" from GDP, we find that there is not a dependence of the variation of GDP. Searching dependence annual variations of "Divorces" from GDP, we find that there is not a dependence of the variation of GDP. Searching dependence annual variations of "Deaths under 1 year" from GDP, we find that there is not a dependence of the variation of GDP.

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