Business Administration and Business Economics

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

Cătălin Angelo Ioan[1]

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 third part, we shall analize the following counties: Hunedoara, Ialomita, Iasi, Ilfov, Maramures, Mehedinti, Mures, Neamt, Olt, Prahova and Salaj.

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

2.23. Analysis of Natural Movement of Hunedoara County Population

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

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Table 133. The natural movement of Hunedoara 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	361	566	-205	156	111	3	ian,08	380	489	-109	125	128	2
feb,07	302	454	-152	315	122	3	feb,08	286	504	-218	196	75	3
mar,07	334	520	-186	171	145	6	mar,08	352	501	-149	151	112	4
apr,07	323	439	-116	224	106	2	apr,08	299	509	-210	63	132	2
mai,07	340	472	-132	293	110	2	mai,08	313	491	-178	308	75	6
iun,07	327	407	-80	333	121	7	iun,08	315	423	-108	308	103	5
iul,07	400	442	-42	438	107	7	iul,08	341	423	-82	394	92	6
aug,07	353	440	-87	433	89	3	aug,08	352	414	-62	517	108	6
sept,07	294	397	-103	446	77	5	sept,08	371	490	-119	363	80	2
oct,07	333	439	-106	348	74	5	oct,08	338	491	-153	313	111	5
nov,07	308	462	-154	232	113	2	nov,08	304	443	-139	172	103	3
dec,07	342	499	-157	127	140	3	dec,08	336	515	-179	98	120	1

Source: INSSE

Table 134. The natural movement of Hunedoara 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	291	563	-272	102	109	3	ian,10	294	531	-237	107	107	4
feb,09	279	437	-158	132	97	4	feb,10	267	450	-183	92	111	4
mar,09	338	509	-171	81	136	7	mar,10	337	514	-177	73	111	4
apr,09	302	478	-176	99	107	3	apr,10	281	490	-209	152	99	2
mai,09	326	433	-107	285	100	4	mai,10	265	489	-224	273	102	2
iun,09	329	422	-93	233	94	3	iun,10	315	480	-165	145	103	2
iul,09	377	431	-54	405	51	2	iul,10	334	471	-137	397	120	5
aug,09	345	434	-89	433	90	0	aug,10	336	451	-115	409	87	4
sept,09	359	431	-72	324	74	3	sept,10	349	419	-70	307	65	3
oct,09	347	476	-129	292	44	3	oct,10	299	466	-167	238	38	1
nov,09	301	498	-197	149	36	4	nov,10	292	487	-195	101	94	2

Source: INSSE

Table 135. The natural movement of Hunedoara 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	260	493	-233	78	151	2	ian,12	280	495	-215	71	48	0
feb,11	253	501	-248	113	90	1	feb,12	233	525	-292	97	97	5
mar,11	273	505	-232	108	123	2	mar,12	262	574	-312	67	93	4
apr,11	261	460	-199	90	93	1	apr,12	258	435	-177	90	113	4
mai,11	277	465	-188	172	121	3	mai,12	282	426	-144	202	91	0
iun,11	269	403	-134	215	72	4	iun,12	266	454	-188	207	74	2
iul,11	270	442	-172	342	104	2	iul,12	344	429	-85	341	61	3
aug,11	321	446	-125	398	65	4	aug,12	363	424	-61	370	99	0
sept,11	319	362	-43	293	60	0	sept,12	277	378	-101	340	42	1
oct,11	255	468	-213	248	104	3	oct,12	309	488	-179	207	63	1
nov,11	267	507	-240	99	65	4	nov,12	275	461	-186	126	68	3
dec,11	253	508	-255	86	120	2	dec,12	234	488	-254	95	107	2

Source: INSSE

Table 136. The natural movement of Hunedoara 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	298	453	-155	92	39	0	ian,14	271	500	-229	77	27	0
feb,13	228	483	-255	101	55	1	feb,14	231	480	-249	113	51	2
mar,13	231	540	-309	130	99	2	mar,14	228	485	-257	63	69	2
apr,13	249	468	-219	57	98	5	apr,14	295	471	-176	102	100	1
mai,13	241	458	-217	170	83	3	mai,14	245	444	-199	252	49	5
iun,13	265	498	-233	241	87	4	iun,14	274	462	-188	209	80	2
iul,13	280	431	-151	300	57	3	iul,14	345	477	-132	330	52	4
aug,13	297	429	-132	447	52	5	aug,14	311	456	-145	420	46	1
sept,13	271	422	-151	295	63	3	sept,14	314	463	-149	262	50	2
oct,13	273	466	-193	201	43	2	oct,14	299	489	-190	198	43	1
nov,13	264	432	-168	109	43	2	nov,14	262	516	-254	111	48	1
dec,13	229	496	-267	89	93	2	dec,14	276	564	-288	121	57	4

Source: INSSE

Table 137. The population trends of Hunedoara County during 2007-2014

Year	Population	Year	Population
2007	502593	2011	489548
2008	499521	2012	485787
2009	496391	2013	481915
2010	493479	2014	477675

Source: INSSE

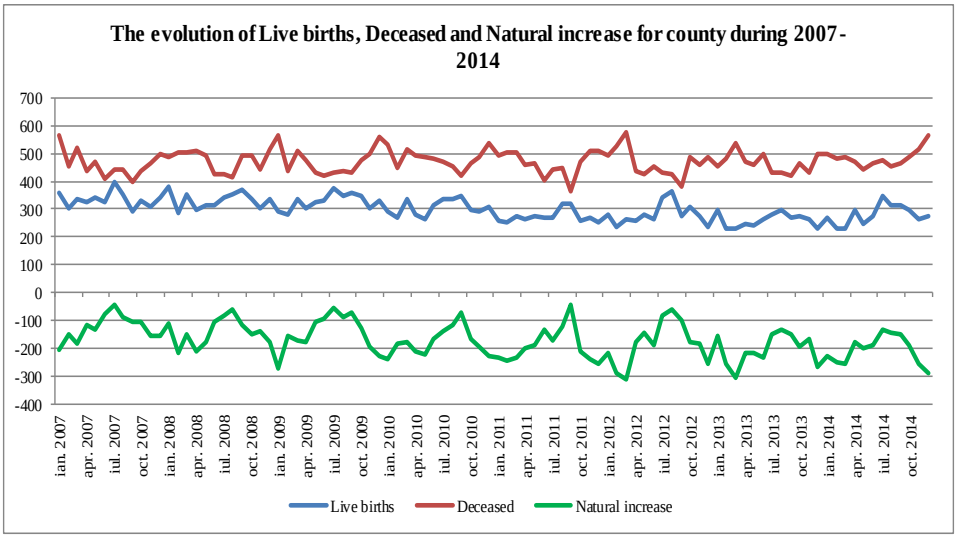

Figure 243

From figure 243 we can see a sinusoidal evolution of the indicator. #VALUE!

Regression analysis relative to indicator "Live births" gives us an equation: y=-0.867329083x+341.4508772 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=0.034820944x+469.2070175 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=-0.902150027x+-127.7561404 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 299, for "Deceased" is 470 and for "Natural increase": -176. 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": (228,268.5,298.5,334,400), for "Deceased": (362,439,469.5,498,574) and for "Natural increase": (-312,-217.25,-176,-131.25,-42).

The arithmetic mean and the standard deviation for "Live births" are: (299,39.88), for "Deceased": (471,41.53) and for "Natural increase": (-172,62.33). This means that with a probability greather than 0.68 "Live births" are in the range [259,339], for "Deceased" in [429,513] and for "Natural increase" in [-234,-110].

Percentiles length indicators analysis (Figure 244) show that, indeed the concentration is around the middle of the data.

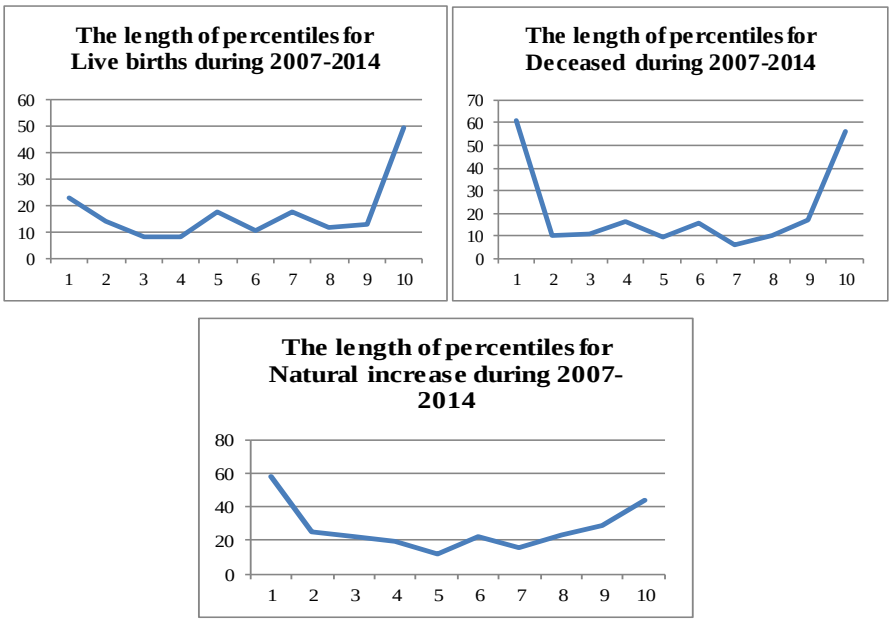

Figure 244

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 245.

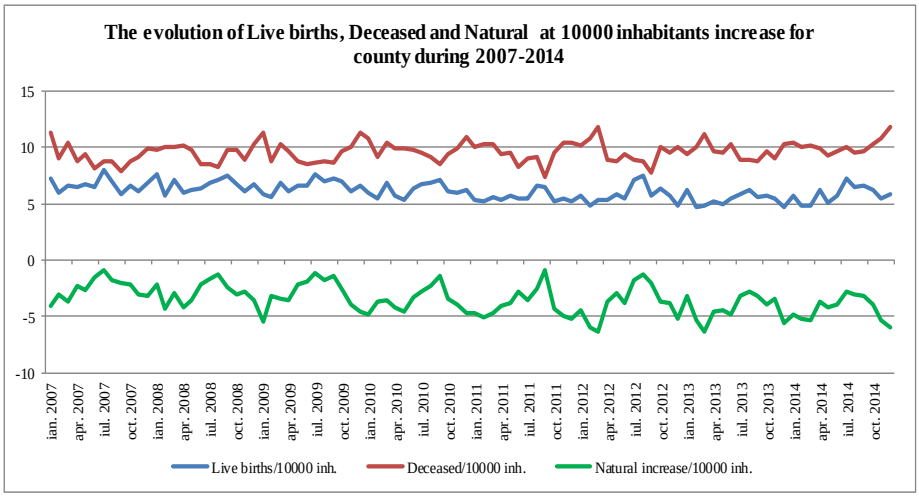

Figure 245

Regression analysis relative to indicator "Live births/10000 inh." gives us an equation: y=-0.01403398x+6.773460526 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=0.006449335x+9.283561404 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=-0.020450488x+-2.511484649 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 10 and for "Natural increase/10000 inh.": -4. 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.": (4.73,5.4975,6.06,6.67,7.96), for "Deceased/10000 inh.": (7.39,8.8925,9.65,10.16,11.82) and for "Natural increase/10000 inh.": (-6.42,-4.4475,-3.555,-2.6225,-0.84).

The arithmetic mean and the standard deviation for "Live births/10000 inh." are: (6,0.75), for "Deceased/10000 inh.": (10,0.87) and for "Natural increase/10000 inh.": (-4,1.3). 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 [9,11] and for "Natural increase/10000 inh." in [-5,-3].

Percentiles length indicators analysis (Figure 246) show that, indeed the concentration is around the middle of the data.

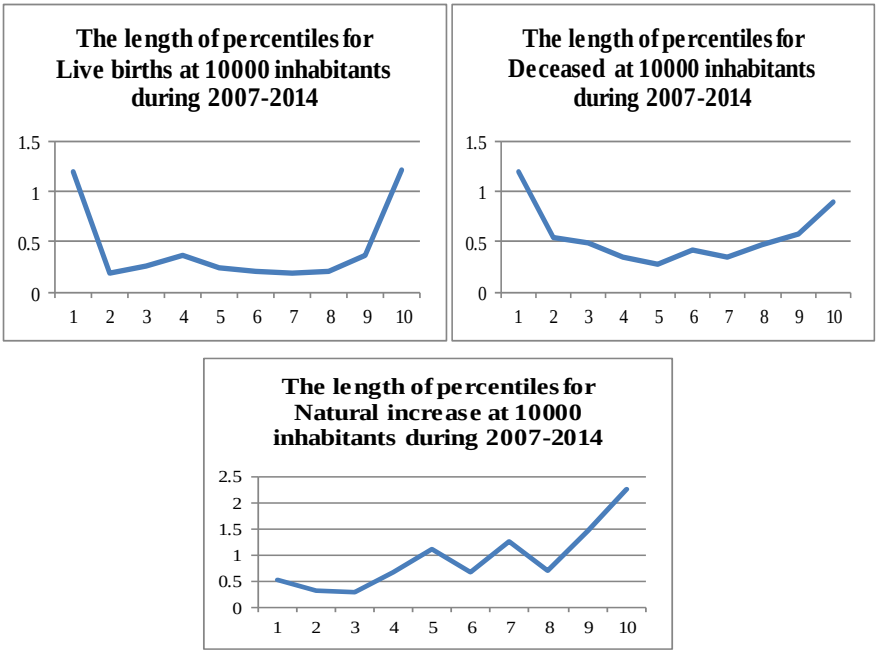

Figure 246

A comparison of the indicator "Live births" with the national level shows that it is worse than the national, being better only in 1.04% cases. For "Deceased" the indicator is worse than the national, being better only in 28.13% cases. Finally, for "Natural increase", the indicator is worse than the national, being better only in 2.08% cases.

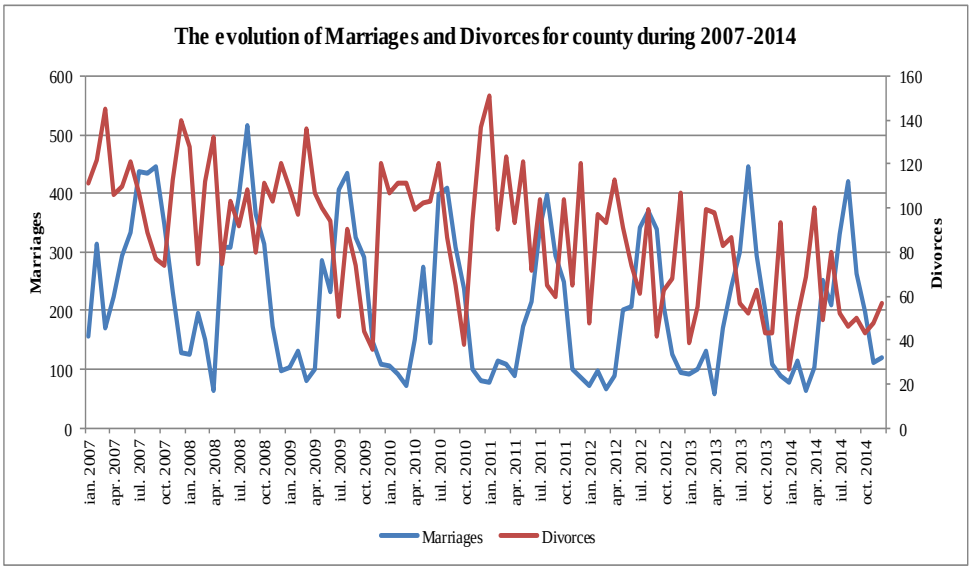

Figure 247

Regression analysis relative to indicator "Marriages" gives us an equation: y=-0.998955507x+261.8660088 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=-0.591766142x+116.1381579 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 197 and for "Divorces" is 93. Also, the distribution of quartiles is for "Marriages": (57,102,197,308,517) and for "Divorces": (27,63,93,108.25,151). The arithmetic mean and the standard deviation for "Marriages" are: (213,119.69) and for "Divorces": (87,28.97). This means that with a probability greather than 0.68 "Marriages" are in the range [93,333] and for "Divorces" in [58,116].

Percentiles length indicators analysis (Figure 248) show that, indeed the concentration is around the middle of the data.

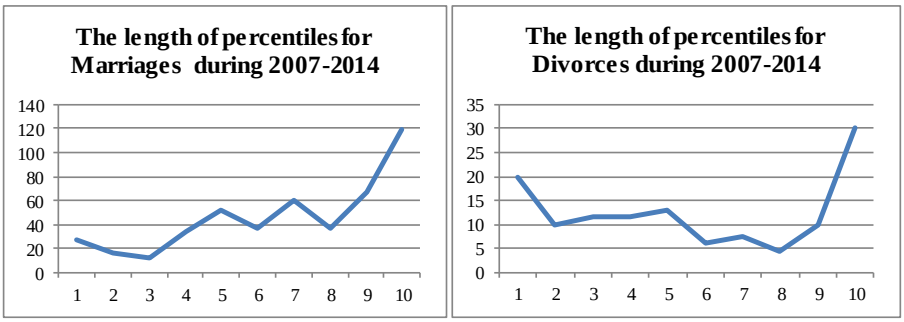

Figure 248

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 249.

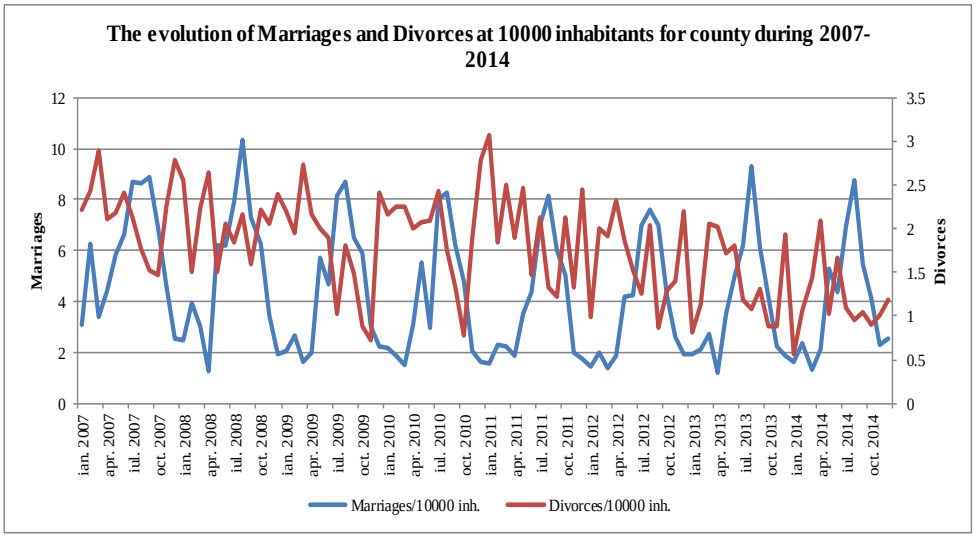

Figure 249

Regression analysis relative to indicator "Marriages/10000 inh." gives us an equation: y=-0.017586747x+5.191811404 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=-0.011066264x+2.312859649 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 2. Also, the distribution of quartiles is for "Marriages/10000 inh.": (1.18,2.13,4.035,6.2225,10.35) and for "Divorces/10000

inh.": (0.57,1.3075,1.895,2.1925,3.08). The arithmetic mean and the standard deviation for "Marriages/10000 inh." are: (4,2.42) and for "Divorces/10000 inh.": (2,0.58). This means that with a probability greather than 0.68 "Marriages/10000 inh." are in the range [2,6] and for "Divorces/10000 inh." in [1,3].

Percentiles length indicators analysis (Figure 250) show that, indeed the concentration is around the middle of the data.

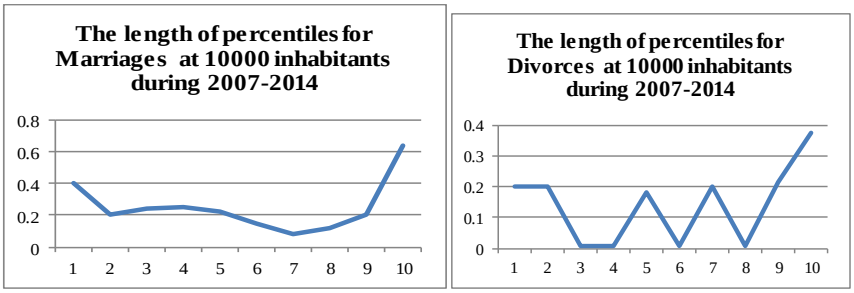

Figure 250

A comparison of the indicator "Marriages" with the national level shows that it is worse than the national, being better only in 32.29% cases. For "Divorces" the indicator is worse than the national, being better only in 7.29% cases.

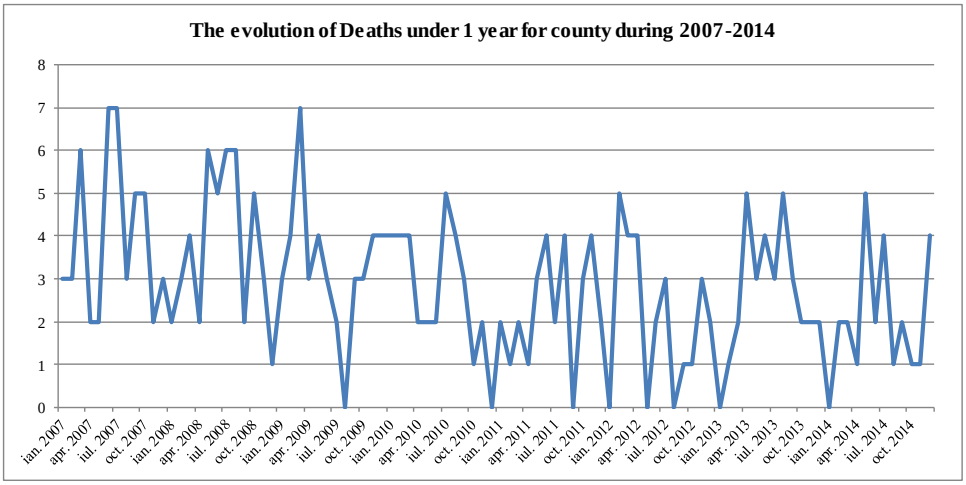

Figure 251

Regression analysis relative to indicator "Deaths under 1 year" gives us an equation: y=-0.022816061x+3.981578947 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": (0,2,3,4,7). The arithmetic

mean and the standard deviation for "Deaths under 1 year" are: (3,1.7) 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 252) show that, indeed the concentration is around the middle of the data.

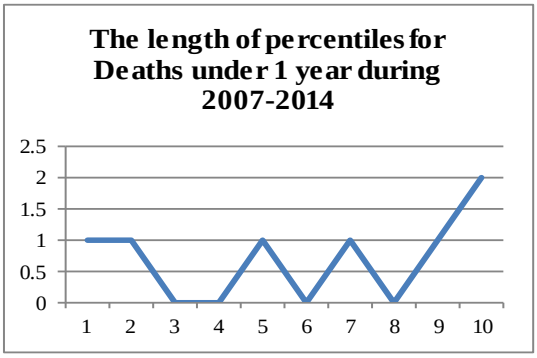

Figure 252

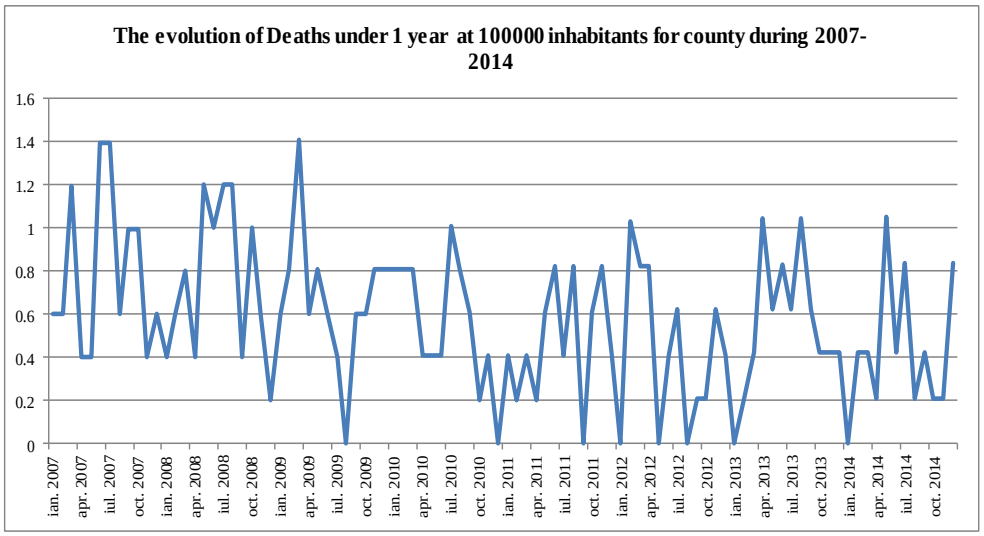

Figure 253

Regression analysis relative to indicator "Deaths under 1 year/100000 inh." gives us an equation: y=-0.004257868x+0.790673246 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.": (0,0.4,0.6,0.8125,1.41). The arithmetic mean and the standard deviation for

"Deaths under 1 year/100000 inh." are: (1,0.34) 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 138. The evolution of Hunedoara County GDP during 2007-2014

Year	GDP (in mil. lei 2007)	Variation (%)
2007	8885	-
2008	8531	-3.98
2009	7879	-7.64
2010	7406	-6.01
2011	7185	-2.98
2012	7964	10.83
2013	7206	-9.51
2014	7424	3.02

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: 0.5878dGDP+-1.0181we find that there is a dependence of Live births from GDP offset by 2 years and the regression equation is:0.7415dGDP+-1.4156. 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.

2.24. Analysis of Natural Movement of Ialomita County Population

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

Table 139. The natural movement of Ialomita 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	281	386	-105	310	48	3	ian,08	259	392	-133	63	30	2
feb,07	248	285	-37	434	51	3	feb,08	237	311	-74	90	40	2
mar,07	296	308	-12	251	56	8	mar,08	265	334	-69	88	37	4
apr,07	248	280	-32	253	45	3	apr,08	299	307	-8	53	66	3
mai,07	277	321	-44	154	65	0	mai,08	268	317	-49	154	42	4
iun,07	276	298	-22	259	28	3	iun,08	324	306	18	159	45	5
iul,07	332	338	-6	213	24	3	iul,08	378	272	106	153	51	3
aug,07	289	259	30	238	63	3	aug,08	287	307	-20	266	40	4
sept,07	273	246	27	305	26	0	sept,08	331	263	68	216	20	4
oct,07	292	296	-4	319	18	2	oct,08	307	311	-4	258	31	4
nov,07	262	299	-37	207	20	2	nov,08	230	323	-93	181	28	2
dec,07	258	358	-100	123	42	3	dec,08	262	386	-124	82	24	6

Source: INSSE

Table 140. The natural movement of Ialomita 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	263	377	-114	52	17	8	ian,10	279	356	-77	56	33	2
feb,09	253	305	-52	83	44	3	feb,10	248	331	-83	54	44	1
mar,09	273	357	-84	63	28	1	mar,10	239	364	-125	37	35	1
apr,09	260	329	-69	52	44	5	apr,10	217	329	-112	109	30	7
mai,09	243	300	-57	152	17	2	mai,10	229	317	-88	139	30	2
iun,09	318	291	27	154	57	1	iun,10	288	286	2	81	26	4
iul,09	378	294	84	169	11	2	iul,10	296	276	20	151	43	4
aug,09	312	271	41	224	48	4	aug,10	311	321	-10	176	33	5
sept,09	304	266	38	231	6	3	sept,10	312	245	67	200	15	2
oct,09	323	304	19	258	32	6	oct,10	292	320	-28	176	12	1
nov,09	216	308	-92	135	23	5	nov,10	264	316	-52	68	8	2

Source: INSSE

Table 141. The natural movement of Ialomita 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	252	349	-97	35	27	4	ian,12	239	353	-114	47	24	6
feb,11	224	338	-114	48	31	2	feb,12	228	378	-150	38	51	2
mar,11	240	376	-136	29	23	2	mar,12	229	396	-167	24	46	7
apr,11	231	329	-98	45	55	3	apr,12	176	311	-135	69	37	0
mai,11	206	332	-126	90	50	1	mai,12	230	309	-79	74	30	3
iun,11	238	277	-39	108	36	2	iun,12	235	309	-74	100	48	2
iul,11	262	309	-47	126	30	7	iul,12	257	282	-25	129	22	1
aug,11	276	307	-31	162	78	3	aug,12	298	275	23	183	27	1
sept,11	300	274	26	169	28	1	sept,12	295	251	44	217	13	1
oct,11	252	324	-72	193	18	3	oct,12	317	311	6	142	14	3
nov,11	225	328	-103	71	21	6	nov,12	213	316	-103	99	46	3
dec,11	262	351	-89	44	40	3	dec,12	195	359	-164	34	25	4

Source: INSSE

Table 142. The natural movement of Ialomita 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	235	319	-84	25	20	3	ian,14	191	368	-177	26	6	3
feb,13	184	293	-109	46	51	2	feb,14	199	314	-115	36	26	1
mar,13	179	381	-202	56	49	1	mar,14	217	383	-166	38	22	1
apr,13	201	355	-154	21	47	4	apr,14	216	335	-119	63	26	2
mai,13	203	291	-88	89	17	2	mai,14	209	353	-144	95	26	4
iun,13	212	260	-48	130	39	3	iun,14	238	282	-44	107	37	2
iul,13	260	278	-18	119	17	1	iul,14	272	298	-26	126	20	2
aug,13	275	258	17	191	30	4	aug,14	297	232	65	222	19	1
sept,13	282	278	4	151	13	2	sept,14	303	260	43	176	20	2
oct,13	243	300	-57	176	14	0	oct,14	264	354	-90	152	18	3
nov,13	191	320	-129	81	30	2	nov,14	215	316	-101	93	14	0
dec,13	194	361	-167	44	29	1	dec,14	202	386	-184	51	25	5

Source: INSSE

Table 143. The population trends of Ialomita County during 2007-2014

Year	Population	Year	Population
2007	306077	2011	302177
2008	305343	2012	300799
2009	304288	2013	299163
2010	303532	2014	297343

Source: INSSE

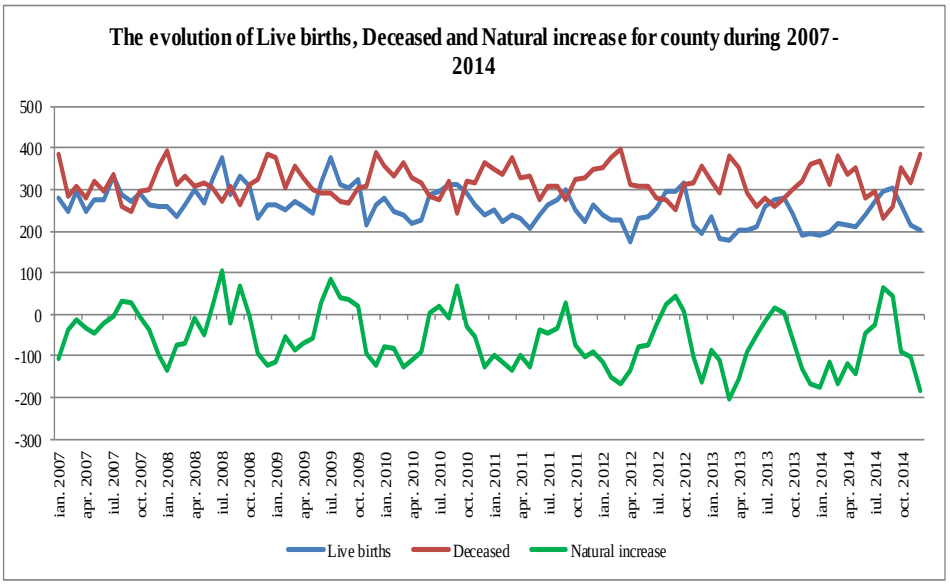

Figure 254

From figure 254 we can see a sinusoidal evolution of the indicator. Except months aug 2007, sept 2007, iun 2008, iul 2008, sept 2008, iun 2009, iul 2009, aug 2009, sept 2009, oct 2009, iun 2010, iul 2010, sept 2010, sept 2011, aug 2012, sept 2012, oct 2012, aug 2013, sept 2013, aug 2014, sept 2014 the natural increase was negative.

Regression analysis relative to indicator "Live births" gives us an equation: y=-0.713917526x+292.5625 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=0.044546934x+314.9019737 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=-0.75846446x+-22.33947368 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 260, for "Deceased" is 313 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": (176,229,259.5,288.25,378), for "Deceased": (232,291,312.5,349.5,396) and for "Natural increase": (-202,-112.5,-69,-7.5,106).

The arithmetic mean and the standard deviation for "Live births" are: (258,41.86), for "Deceased": (317,38.54) and for "Natural increase": (-59,67.9). This means that with a probability greather than 0.68 "Live births" are in the range [216,300], for "Deceased" in [278,356] and for "Natural increase" in [-127,9].

Percentiles length indicators analysis (Figure 255) show that, indeed the concentration is around the middle of the data.

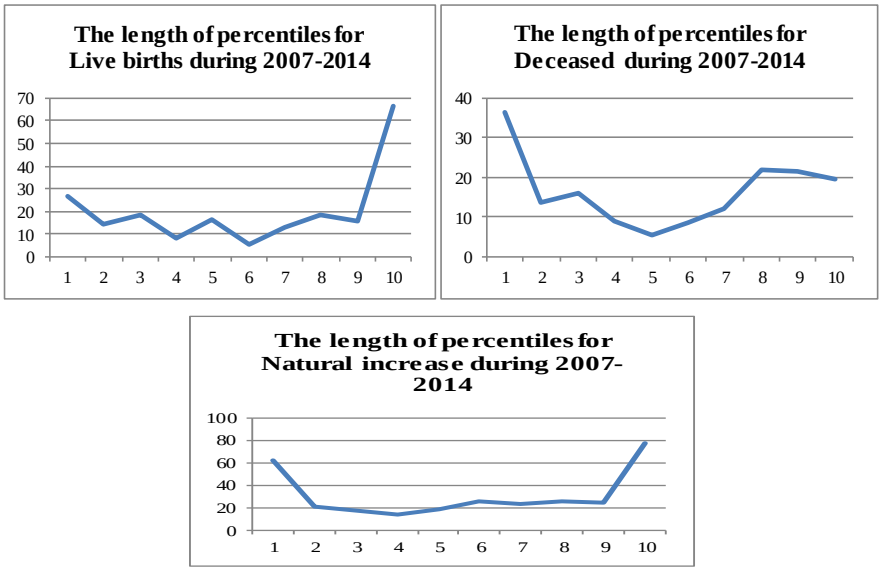

Figure 255

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 256.

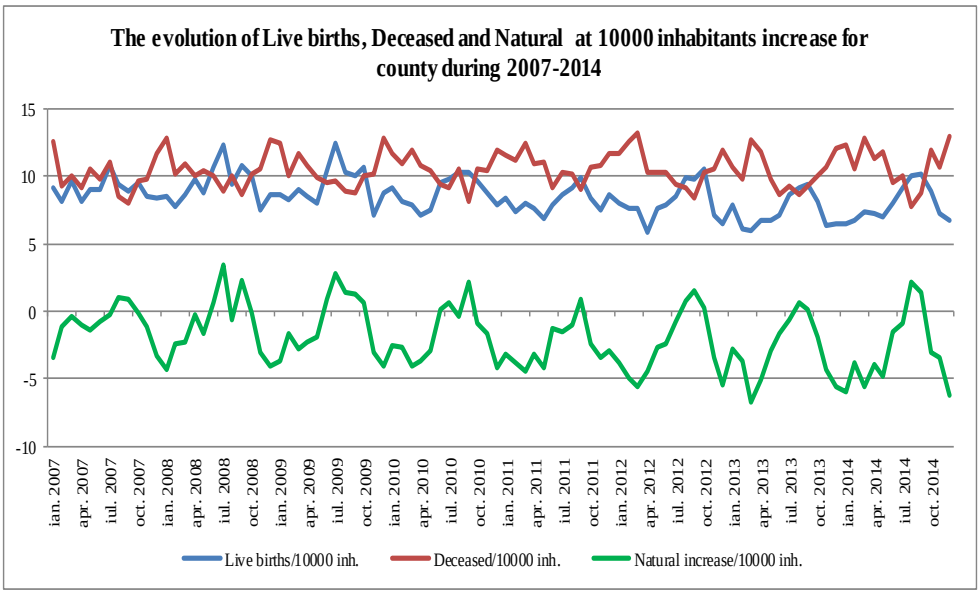

Figure 256

Regression analysis relative to indicator "Live births/10000 inh." gives us an equation: y=-0.020772179x+9.532554825 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=0.004984807x+10.24657018 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=-0.025743489x+-0.714357456 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 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.": (5.85,7.57,8.54,9.4525,12.42), for "Deceased/10000 inh.": (7.8,9.635,10.36,11.5675,13.16) and for "Natural increase/10000 inh.": (-6.75,-3.705,-2.265,-0.245,3.47).

The arithmetic mean and the standard deviation for "Live births/10000 inh." are: (9,1.35), for "Deceased/10000 inh.": (10,1.29) and for "Natural increase/10000 inh.": (-2,2.26). This means that with a probability greather than 0.68 "Live

births/10000 inh." are in the range [8,10], for "Deceased/10000 inh." in [9,11] and for "Natural increase/10000 inh." in [-4,0].

Percentiles length indicators analysis (Figure 257) show that, indeed the concentration is around the middle of the data.

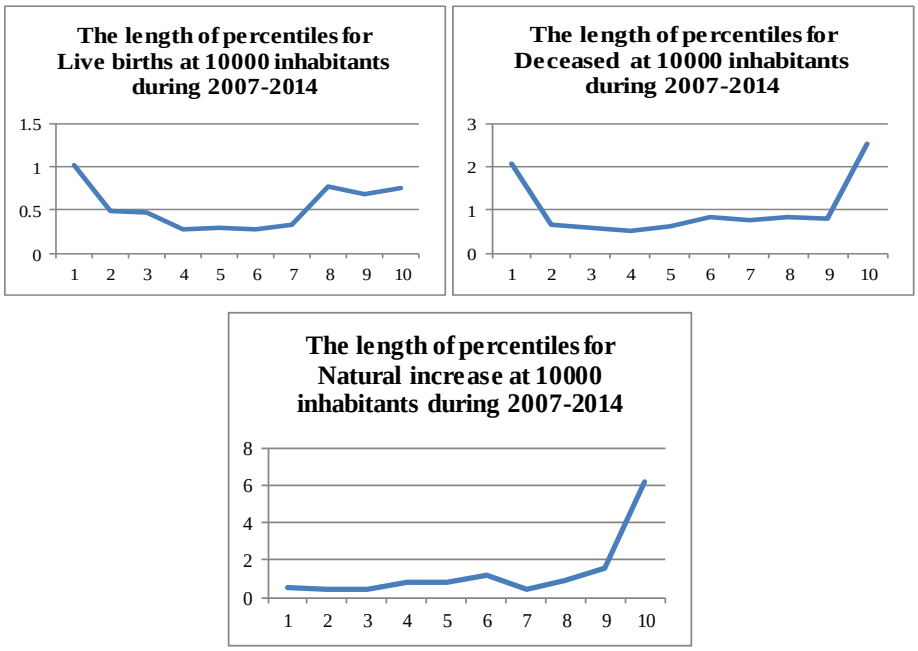

Figure 257

A comparison of the indicator "Live births" with the national level shows that it is better than the national, being better in 91.67% cases. For "Deceased" the indicator is worse than the national, being better only in 3.13% cases. Finally, for "Natural increase", the indicator is about the same with the national, being better in 41.67% cases.

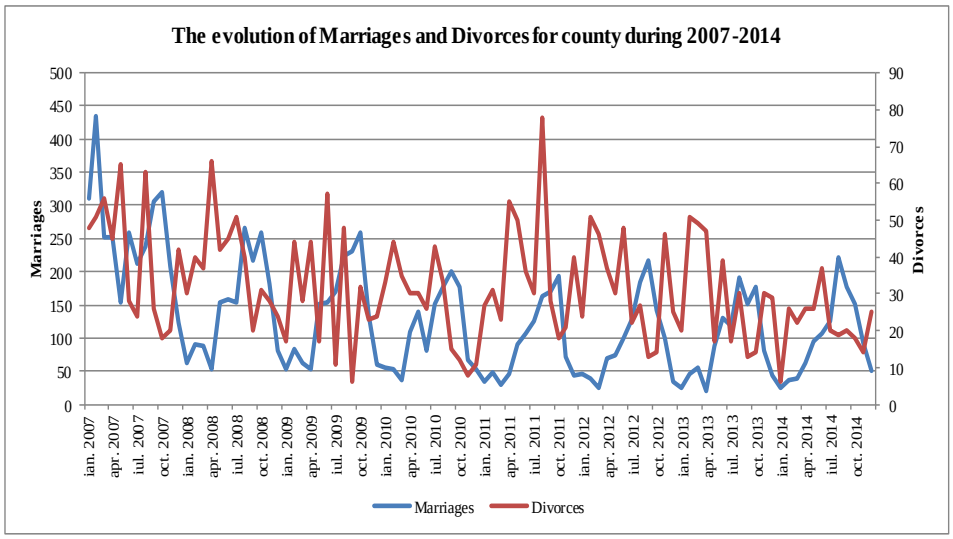

Figure 258

Regression analysis relative to indicator "Marriages" gives us an equation: y=-1.362757732x+194.75 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=-0.17289745x+40.11469298 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 114 and for "Divorces" is 30. Also, the distribution of quartiles is for "Marriages": (21,56,114,176,434) and for "Divorces": (6,20,29.5,43.25,78). The arithmetic mean and the standard deviation for "Marriages" are: (129,81.88) and for "Divorces": (32,14.67). This means that with a probability greather than 0.68 "Marriages" are in the range [47,211] and for "Divorces" in [17,47].

Percentiles length indicators analysis (Figure 259) show that, indeed the concentration is around the middle of the data.

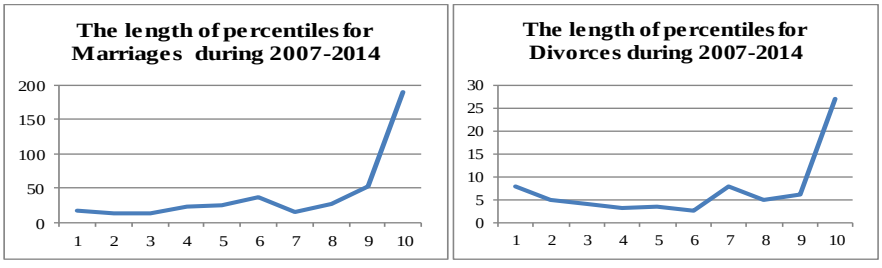

Figure 259

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 260.

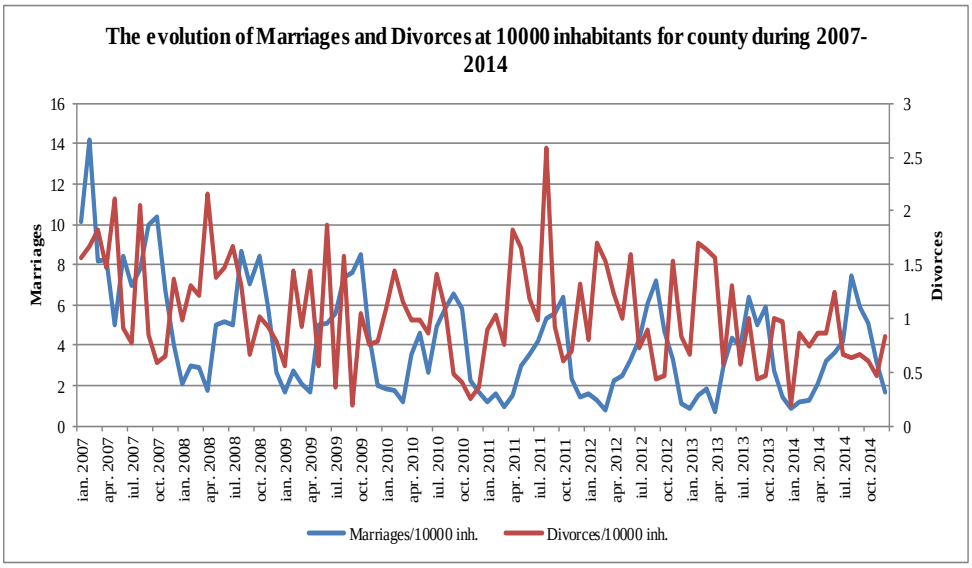

Figure 260

Regression analysis relative to indicator "Marriages/10000 inh." gives us an equation: y=-0.043437398x+6.350984649 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=-0.005389921x+1.309640351 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.": (0.7,1.8625,3.79,5.89,14.18) and for "Divorces/10000 inh.": (0.2,0.67,0.975,1.4275,2.58). The arithmetic mean and the standard deviation for "Marriages/10000 inh." are: (4,2.68) 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 [1,7] and for "Divorces/10000 inh." in [1,1].

Percentiles length indicators analysis (Figure 261) show that, indeed the concentration is around the middle of the data.

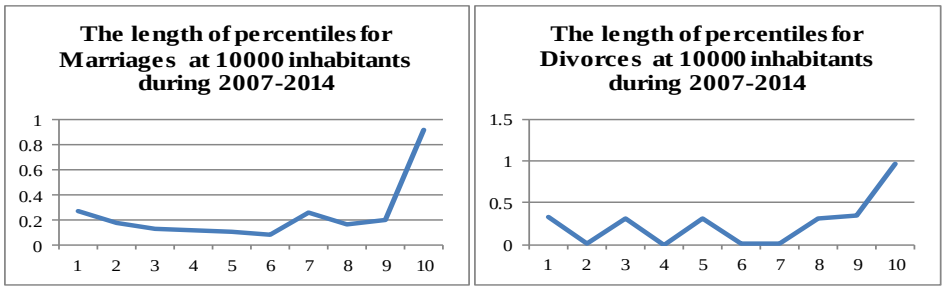

Figure 261

A comparison of the indicator "Marriages" with the national level shows that it is worse than the national, being better only in 28.13% cases. For "Divorces" the indicator is better than the national, being better in 61.46% cases.

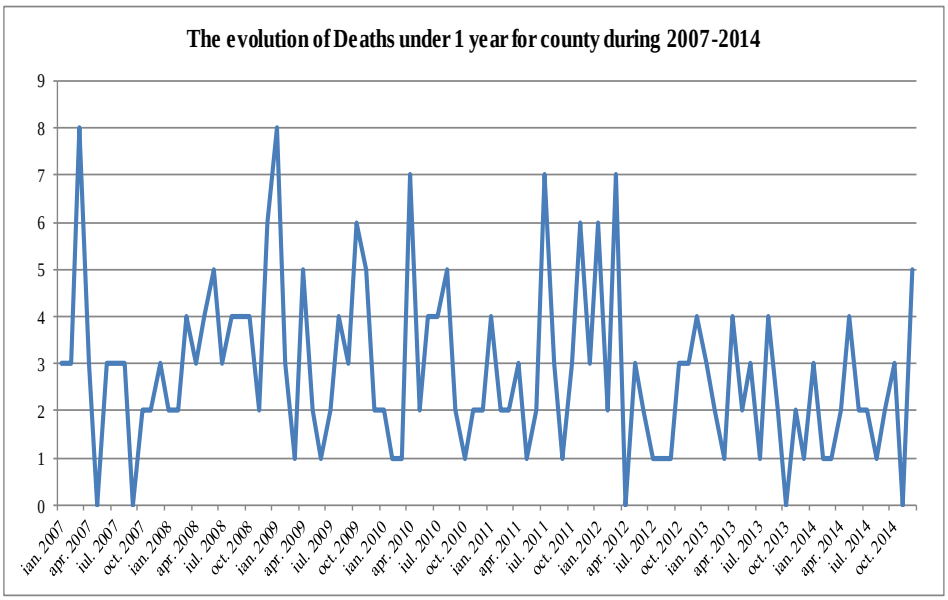

Figure 262

Regression analysis relative to indicator "Deaths under 1 year" gives us an equation: y=-0.01359197x+3.49254386 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": (0,2,3,4,8). The arithmetic mean and the standard deviation for "Deaths under 1 year" are: (3,1.77) 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 263) show that, indeed the concentration is around the middle of the data.

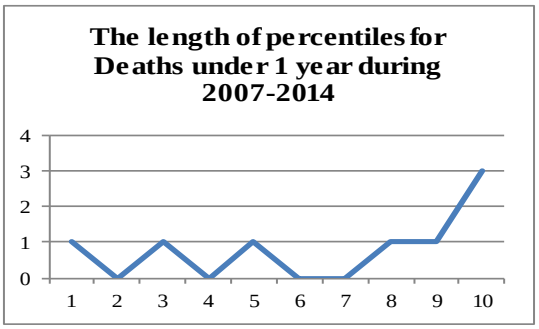

Figure 263

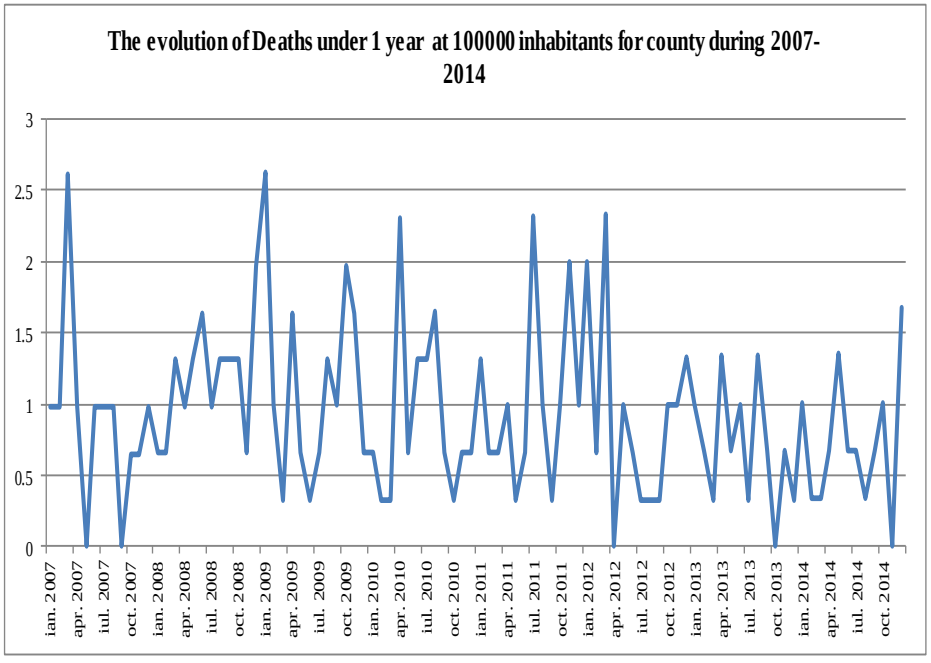

Figure 264

Regression analysis relative to indicator “Deaths under 1 year/100000 inh.” gives us an equation: y=-0.004211883x+1.140317982 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.”: (0,0.66,0.98,1.31,2.63). The arithmetic mean and the standard deviation for

"Deaths under 1 year/100000 inh." are: (1,0.58) 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 40.63% cases.

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

Table 144. The evolution of Ialomita County GDP during 2007-2014

Year	GDP (in mil. lei 2007)	Variation (%)
2007	3297	-
2008	3992	21.08
2009	3743	-6.25
2010	3837	2.51
2011	4028	4.97
2012	3960	-1.67
2013	4068	2.73
2014	4190	2.99

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 2 years and the regression equation is:-1.1925dGDP+-3.1494.

2.25. Analysis of Natural Movement of Iasi County Population

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

Table 145. The natural movement of Iasi 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	853	764	89	584	55	16	ian,08	1110	788	322	209	44	16
feb,07	785	681	104	618	41	9	feb,08	932	678	254	252	77	11
mar,07	856	706	150	282	65	10	mar,08	801	703	98	247	79	10
apr,07	799	653	146	497	48	11	apr,08	748	648	100	174	94	12
mai,07	864	716	148	594	59	10	mai,08	839	707	132	562	90	13
iun,07	861	560	301	513	71	13	iun,08	862	628	234	490	75	6
iul,07	951	678	273	911	26	13	iul,08	981	622	359	766	56	8
aug,07	893	591	302	1076	30	16	aug,08	874	552	322	1313	93	3
sept,07	932	592	340	849	34	10	sept,08	884	605	279	645	32	7
oct,07	922	666	256	695	31	8	oct,08	1017	705	312	623	22	9
nov,07	787	691	96	456	54	8	nov,08	764	704	60	371	57	13
dec,07	848	669	179	307	38	13	dec,08	704	752	-48	254	72	13

Source: INSSE

Table 146. The natural movement of Iasi 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	911	732	179	231	77	9	ian,10	842	850	-8	168	109	14
feb,09	754	658	96	258	109	7	feb,10	762	689	73	184	77	4
mar,09	825	749	76	135	96	6	mar,10	809	847	-38	106	92	10
apr,09	685	736	-51	223	95	5	apr,10	741	791	-50	321	94	8
mai,09	867	653	214	558	100	14	mai,10	718	700	18	434	72	7
iun,09	798	606	192	378	62	8	iun,10	815	725	90	150	84	12
iul,09	860	610	250	725	49	7	iul,10	831	651	180	779	82	7
aug,09	876	549	327	1313	93	3	aug,10	878	629	249	1005	104	6

Source: INSSE

Table 147. The natural movement of Iasi 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	806	824	-18	161	57	9	ian,12	747	812	-65	176	68	7
feb,11	614	705	-91	148	97	8	feb,12	637	898	-261	161	84	5
mar,11	672	737	-65	98	117	5	mar,12	690	818	-128	78	80	7
apr,11	631	673	-42	169	108	5	apr,12	648	705	-57	208	105	6
mai,11	657	644	13	358	93	4	mai,12	787	711	76	369	88	8
iun,11	683	584	99	383	81	3	iun,12	756	672	84	349	90	5
iul,11	787	614	173	655	85	4	iul,12	857	711	146	650	51	12
aug,11	880	651	229	1016	88	5	aug,12	964	628	336	1047	73	6
sept,11	821	569	252	579	43	5	sept,12	872	533	339	713	61	4
oct,11	767	697	70	386	51	9	oct,12	883	719	164	390	58	10
nov,11	758	712	46	153	58	10	nov,12	709	708	1	229	47	4
dec,11	578	737	-159	185	82	4	dec,12	602	755	-153	173	78	8

Source: INSSE

Table 148.The natural movement of Iasi 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	860	781	79	131	107	7	ian,14	781	759	22	220	68	4
feb,13	644	684	-40	134	101	12	feb,14	769	706	63	316	89	10
mar,13	553	749	-196	185	113	7	mar,14	749	799	-50	158	106	6
apr,13	664	738	-74	120	101	7	apr,14	681	791	-110	240	81	10
mai,13	650	667	-17	389	111	6	mai,14	760	708	52	488	91	5
iun,13	626	576	50	501	65	5	iun,14	799	624	175	405	92	6
iul,13	902	665	237	597	78	5	iul,14	987	658	329	697	79	7
aug,13	917	578	339	1133	54	3	aug,14	849	591	258	1181	98	4
sept,13	835	608	227	549	72	6	sept,14	915	658	257	566	61	6
oct,13	912	762	150	404	124	2	oct,14	913	739	174	443	87	4
nov,13	760	689	71	247	71	6	nov,14	740	668	72	253	81	6
dec,13	572	753	-181	197	52	5	dec,14	631	828	-197	210	84	7

Source: INSSE

Table 149. The population trends of Iasi County during 2007-2014

Year	Population	Year	Population
2007	854783	2011	865229
2008	857689	2012	868171
2009	860674	2013	877726
2010	863290	2014	892215

Source: INSSE

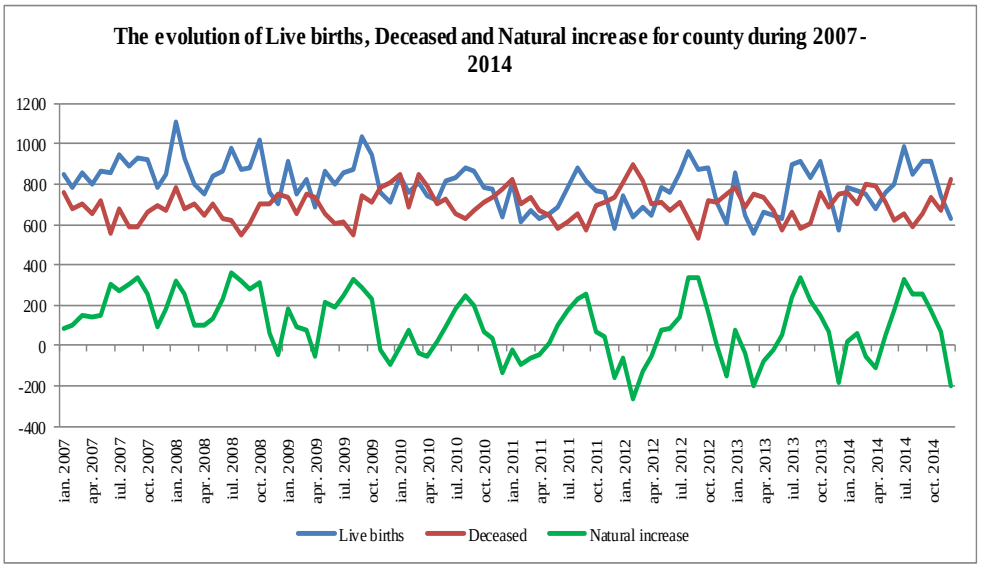

Figure 265

From figure 265 we can see a sinusoidal evolution of the indicator. Except months an 2007, feb 2007, mar 2007, apr 2007, mai 2007, iun 2007, iul 2007, aug 2007, sept 2007, oct 2007, nov 2007, dec 2007, ian 2008, feb 2008, mar 2008, apr 2008, mai 2008, iun 2008, iul 2008, aug 2008, sept 2008, oct 2008, nov 2008, ian 2009, feb 2009, mar 2009, mai 2009, iun 2009, iul 2009, aug 2009, sept 2009, oct 2009, feb 2010, mai 2010, iun 2010, iul 2010, aug 2010, sept 2010, oct 2010, nov 2010, mai 2011, iun 2011, iul 2011, aug 2011, sept 2011, oct 2011, nov 2011, mai 2012, iun 2012, iul 2012, aug 2012, sept 2012, oct 2012, nov 2012, ian 2013, iun 2013, iul 2013, aug 2013, sept 2013, oct 2013, nov 2013, ian 2014, feb 2014, mai 2014, iun 2014, iul 2014, aug 2014, sept 2014, oct 2014, nov 2014 the natural increase was negative.

Regression analysis relative to indicator "Live births" gives us an equation: y=-1.357297884x+864.0372807 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=0.3375x+679.1625 where x is the number of month (Jan, 2007=1), therefore a pronounced upward trend. Regression analysis relative to indicator "Natural increase" gives us an equation: y=-1.694797884x+184.8747807 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 799, for "Deceased" is 704 and for "Natural increase": 96. 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": (553,734.5,799,872.5,1110), for "Deceased": (533,651,703.5,740.75,898) and for "Natural increase": (-261,-17.25,96,231.75,359). The arithmetic mean and the standard deviation for "Live births" are: (798,110.83), for "Deceased": (696,74.36) and for "Natural increase": (103,149.99). This means that with a probability greather than 0.68 "Live births" are in the range [687,909], for "Deceased" in [622,770] and for "Natural increase" in [-47,253].

Percentiles length indicators analysis (Figure 266) show that, indeed the concentration is around the middle of the data.

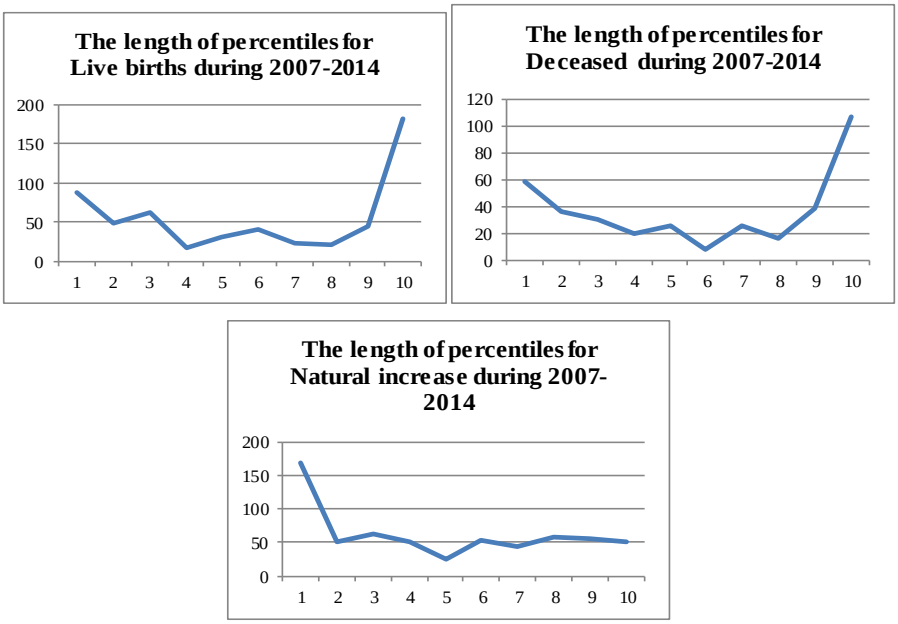

Figure 266

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 267.

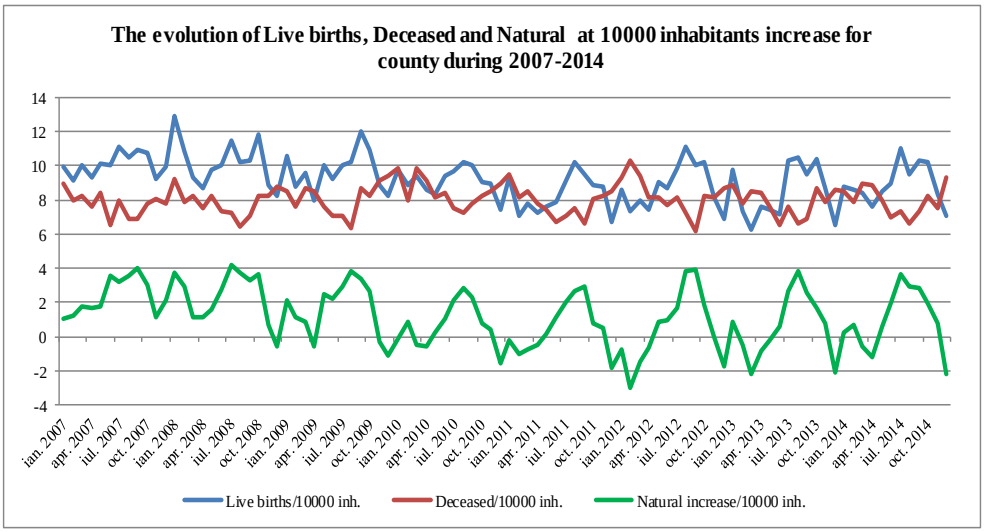

Figure 267

Regression analysis relative to indicator "Live births/10000 inh." gives us an equation: y=-0.019725312x+10.16376096 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=0.000446215x+7.996587719 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=-0.020154029x+2.166324561 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.": 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.": (6.3,8.3125,9.295,10.125,12.94), for "Deceased/10000 inh.": (6.14,7.4775,8.095,8.5325,10.34) and for "Natural increase/10000 inh.": (-3.01,-0.195,1.12,2.685,4.19).

The arithmetic mean and the standard deviation for "Live births/10000 inh." are: (9,1.31), for "Deceased/10000 inh.": (8,0.85) and for "Natural increase/10000

inh.": (1,1.73). This means that with a probability greather than 0.68 "Live births/10000 inh." are in the range [8,10], for "Deceased/10000 inh." in [7,9] and for "Natural increase/10000 inh." in [-1,3].

Percentiles length indicators analysis (Figure 268) show that, indeed the concentration is around the middle of the data.

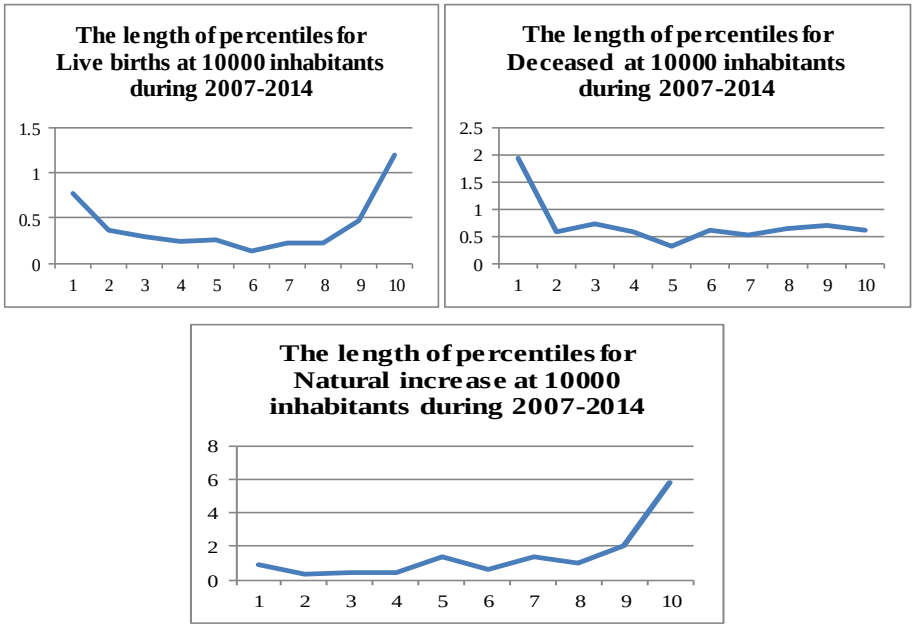

Figure 268

A comparison of the indicator "Live births" with the national level shows that it is better than the national, being better in 98.96% cases. For "Deceased" the indicator is better than the national, being better in 98.96% cases. Finally, for "Natural increase", the indicator is better than the national, being better in 100% cases.

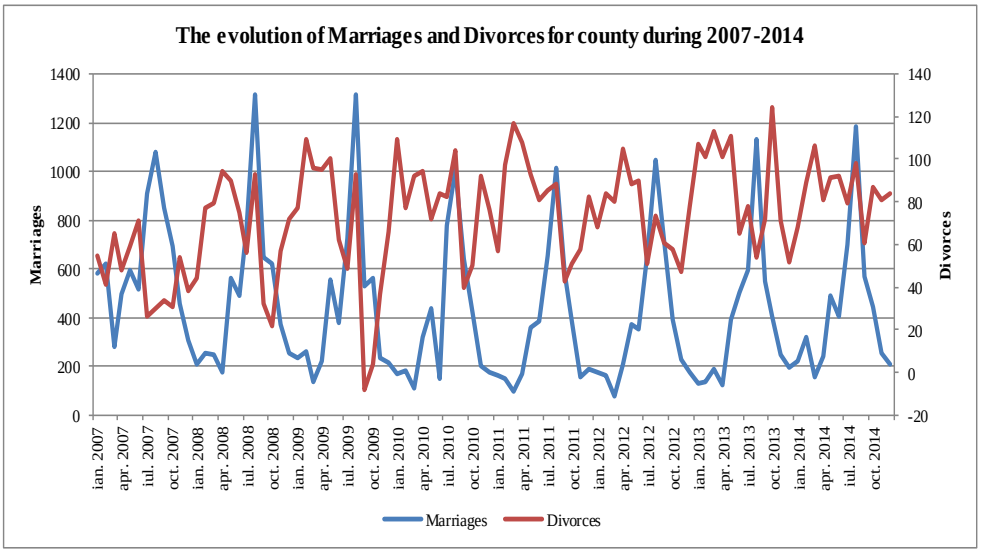

Figure 269

Regression analysis relative to indicator "Marriages" gives us an equation: y=-1.666793272x+516.610307 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=0.349742268x+55.99583333 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 "Marriages" is 375 and for "Divorces" is 77. Also, the distribution of quartiles is for "Marriages": (78,206.75,374.5,586.5,1313) and for "Divorces": (-8,55.75,77,92,124). The arithmetic mean and the standard deviation for "Marriages" are: (436,289.9) and for "Divorces": (73,25.51). This means that with a probability greather than 0.68 "Marriages" are in the range [146,726] and for "Divorces" in [47,99].

Percentiles length indicators analysis (Figure 270) show that, indeed the concentration is around the middle of the data.

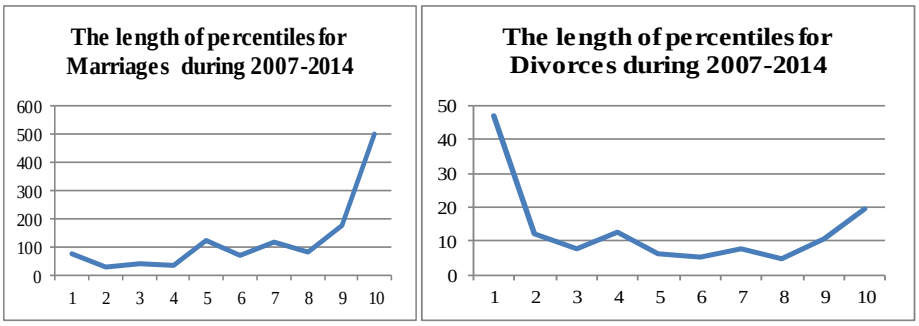

Figure 270

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 271.

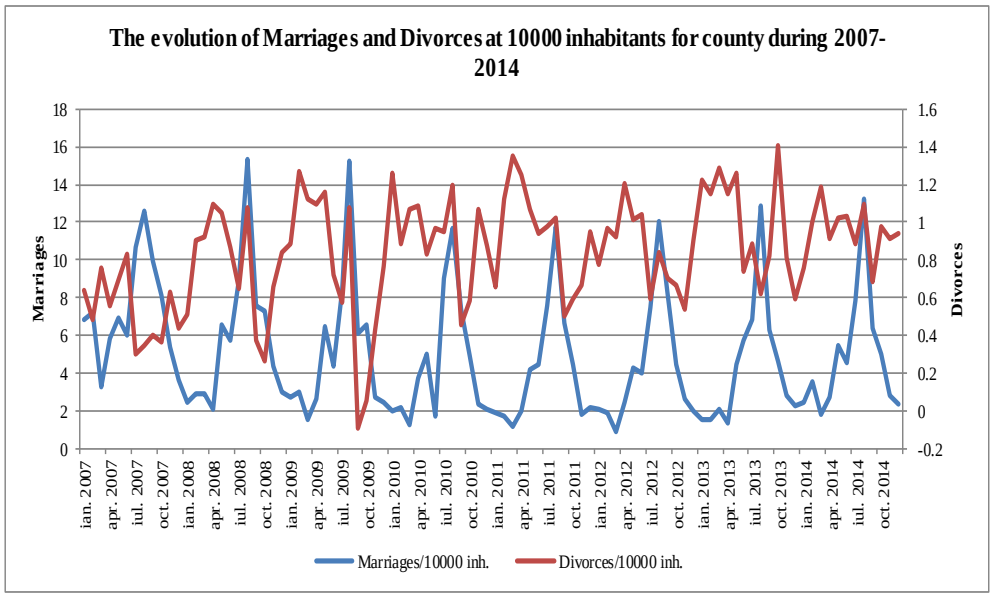

Figure 271

Regression analysis relative to indicator "Marriages/10000 inh." gives us an equation: y=-0.021579083x+6.075960526 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=0.003691129x+0.660563596 where x is the number of month (Jan, 2007=1), therefore an upward 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.": (0.9,2.35,4.36,6.8075,15.31) and for "Divorces/10000 inh.": (-0.09,0.6475,0.89,1.07,1.41). The arithmetic mean and the standard deviation for "Marriages/10000 inh." are: (5,3.35) and for "Divorces/10000 inh.": (1,0.29). 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 272) show that, indeed the concentration is around the middle of the data.

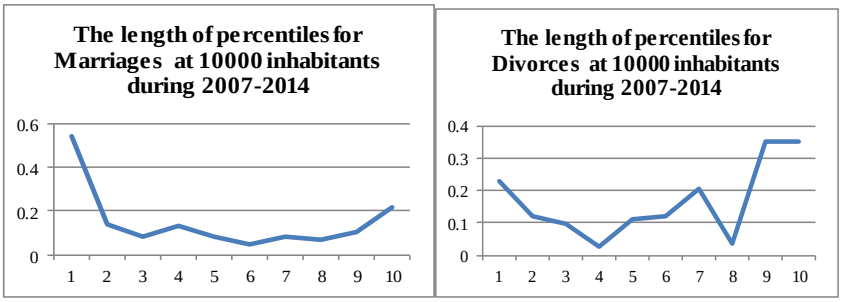

Figure 272

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 better than the national, being better in 83.33% cases.

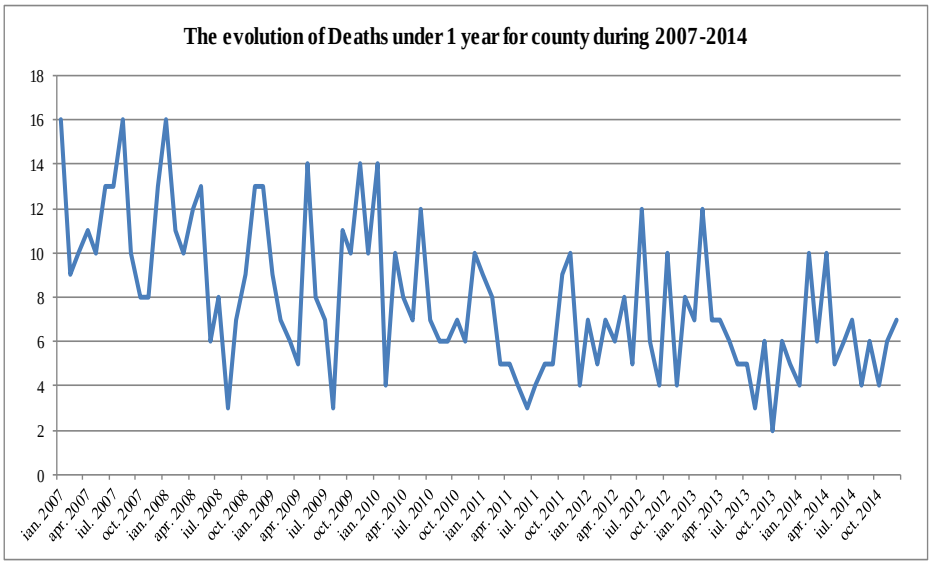

Figure 273

Regression analysis relative to indicator "Deaths under 1 year" gives us an equation: y=-0.064785676x+11.0379386 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 7 and the distribution of quartiles is for "Deaths under 1 year": (2,5,7,10,16). The arithmetic mean and the standard deviation for "Deaths under 1 year" are: (8,3.29) which means that with a probability greather than 0.68 "Deaths under 1 year" are in the range [5,11].

Percentiles length indicators analysis (Figure 274) show that, indeed the concentration is around the middle of the data.

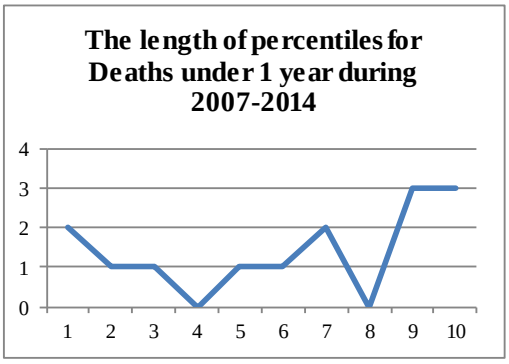

Figure 274

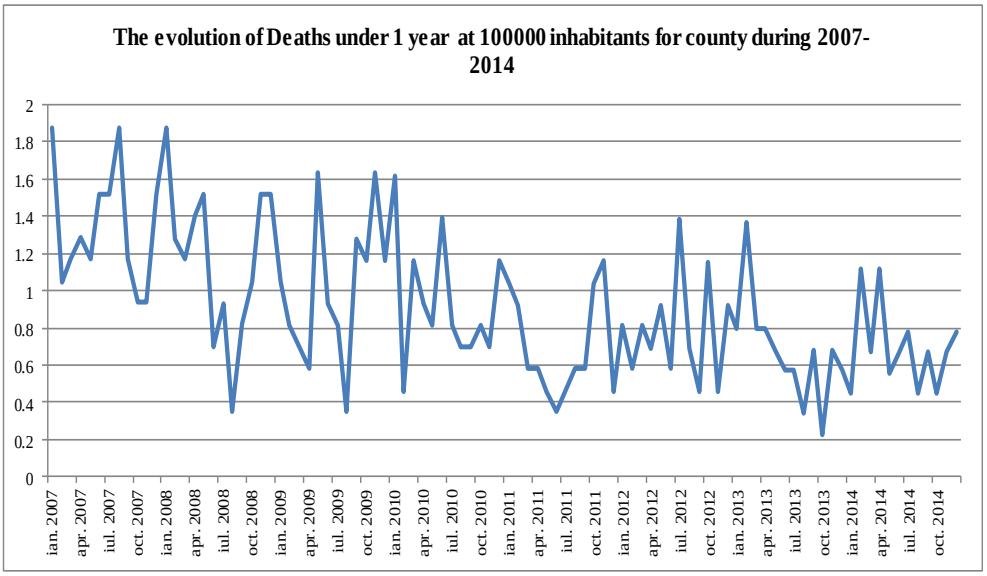

Figure 275

Regression analysis relative to indicator "Deaths under 1 year/100000 inh." gives us an equation: y=-0.007889582x+1.295561404 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.": (0.23,0.58,0.81,1.16,1.87). The arithmetic mean and the standard deviation for "Deaths under 1 year/100000 inh." are: (1,0.39) 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 35.42% cases.

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

Table 150. The evolution of Iasi County GDP during 2007-2014

Year	GDP (in mil. lei 2007)	Variation (%)
2007	12277	-
2008	13226	7.73
2009	12466	-5.74
2010	12765	2.39
2011	12415	-2.74
2012	12574	1.28
2013	13591	8.08
2014	14011	3.09

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.

2.26. Analysis of Natural Movement of Ilfov County Population

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

Table 151. The natural movement of Ilfov 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	267	298	-31	100	13	2	ian,08	339	339	0	55	21	4
feb,07	248	284	-36	144	12	3	feb,08	256	340	-84	98	29	1
mar,07	239	319	-80	109	17	4	mar,08	250	292	-42	128	28	3
apr,07	253	312	-59	210	18	2	apr,08	281	253	28	89	22	2
mai,07	298	282	16	186	20	3	mai,08	280	271	9	230	14	4
iun,07	270	303	-33	307	40	1	iun,08	327	302	25	349	26	4
iul,07	313	279	34	397	7	1	iul,08	374	252	122	380	35	4
aug,07	318	274	44	318	9	3	aug,08	323	298	25	436	25	6
sept,07	311	254	57	412	36	3	sept,08	360	262	98	320	34	2
oct,07	306	269	37	293	45	1	oct,08	339	289	50	247	15	0
nov,07	289	310	-21	165	26	1	nov,08	317	279	38	157	57	4
dec,07	277	309	-32	74	16	3	dec,08	275	330	-55	63	27	4

Source: INSSE

Table 152. The natural movement of Ilfov 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	307	341	-34	64	11	0	ian,10	349	343	6	58	5	3
feb,09	288	301	-13	117	26	2	feb,10	303	289	14	73	26	4
mar,09	320	337	-17	51	26	4	mar,10	344	302	42	50	20	2
apr,09	343	285	58	101	35	0	apr,10	290	306	-16	138	13	4
mai,09	319	275	44	197	26	1	mai,10	256	303	-47	152	64	2
iun,09	367	287	80	235	45	4	iun,10	354	280	74	136	36	1
iul,09	375	289	86	363	18	3	iul,10	362	307	55	371	26	5
aug,09	354	280	74	344	16	4	aug,10	325	303	22	255	19	7
sept,09	398	260	138	331	56	5	sept,10	292	273	19	266	33	2
oct,09	370	323	47	248	32	3	oct,10	347	273	74	219	34	2

Source: INSSE

Table 153. The natural movement of Ilfov 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	242	329	-87	32	11	5	ian,12	311	306	5	49	6	2
feb,11	249	304	-55	76	20	1	feb,12	335	322	13	58	20	1
mar,11	307	337	-30	58	34	3	mar,12	330	388	-58	56	23	1
apr,11	243	302	-59	86	34	2	apr,12	263	329	-66	126	24	4
mai,11	304	316	-12	137	21	2	mai,12	324	334	-10	146	20	4
iun,11	279	278	1	204	22	4	iun,12	342	300	42	265	21	3
iul,11	283	282	1	311	35	2	iul,12	310	341	-31	312	22	2
aug,11	304	272	32	284	29	3	aug,12	326	292	34	345	32	5
sept,11	299	269	30	274	20	1	sept,12	363	238	125	346	26	0
oct,11	308	283	25	230	36	0	oct,12	382	318	64	198	20	2
nov,11	326	309	17	103	33	4	nov,12	320	303	17	110	44	2
dec,11	432	316	116	58	32	5	dec,12	282	340	-58	61	28	2

Source: INSSE

Table 154. The natural movement of Ilfov 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,11	242	329	-87	32	11	5	ian,12	311	306	5	49	6	2
feb,11	249	304	-55	76	20	1	feb,12	335	322	13	58	20	1
mar,11	307	337	-30	58	34	3	mar,12	330	388	-58	56	23	1
apr,11	243	302	-59	86	34	2	apr,12	263	329	-66	126	24	4
mai,11	304	316	-12	137	21	2	mai,12	324	334	-10	146	20	4
iun,11	279	278	1	204	22	4	iun,12	342	300	42	265	21	3
iul,11	283	282	1	311	35	2	iul,12	310	341	-31	312	22	2
aug,11	304	272	32	284	29	3	aug,12	326	292	34	345	32	5
sept,11	299	269	30	274	20	1	sept,12	363	238	125	346	26	0
oct,11	308	283	25	230	36	0	oct,12	382	318	64	198	20	2
nov,11	326	309	17	103	33	4	nov,12	320	303	17	110	44	2
dec,11	432	316	116	58	32	5	dec,12	282	340	-58	61	28	2

Source: INSSE

Table 155. The population trends of Ilfov County during 2007-2014

Year	Population	Year	Population
2007	292087	2011	329932
2008	298047	2012	339940
2009	307938	2013	352466
2010	316808	2014	364954

Source: INSSE

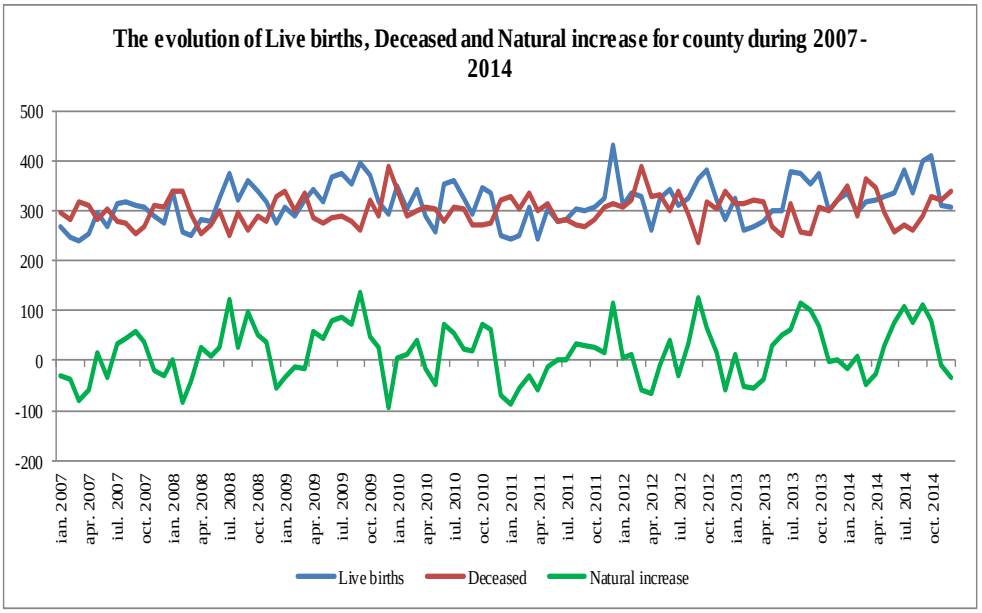

Figure 276

From figure 276 we can see a sinusoidal evolution of the indicator. Except months mai 2007, iul 2007, aug 2007, sept 2007, oct 2007, ian 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, ian 2010, feb 2010, mar 2010, iun 2010, iul 2010, aug 2010, sept 2010, oct 2010, nov 2010, iun 2011, iul 2011, aug 2011, sept 2011, oct 2011, nov 2011, dec 2011, ian 2012, feb 2012, iun 2012, aug 2012, sept 2012, oct 2012, nov 2012, ian 2013, mai 2013, iun 2013, iul 2013, aug 2013, sept 2013, oct 2013, dec 2013, feb 2014, 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=0.443597396x+294.7355263 where x is the number of month (Jan, 2007=1), therefore a pronounced upward trend.

Regression analysis relative to indicator "Deceased" gives us an equation: y=0.160560228x+293.3690789 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=0.283037168x+1.366447368 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 317, for "Deceased" is 302 and for "Natural increase": 17. 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": (239,288.75,317,339.75,432), for "Deceased": (238,279,302,321,388) and for "Natural increase": (-93,-31,16.5,51.25,138).

The arithmetic mean and the standard deviation for "Live births" are: (316,41.08), for "Deceased": (301,29.73) and for "Natural increase": (15,54.53). This means that with a probability greather than 0.68 "Live births" are in the range [275,357], for "Deceased" in [271,331] and for "Natural increase" in [-40,70].

Percentiles length indicators analysis (Figure 277) show that, indeed the concentration is around the middle of the data.

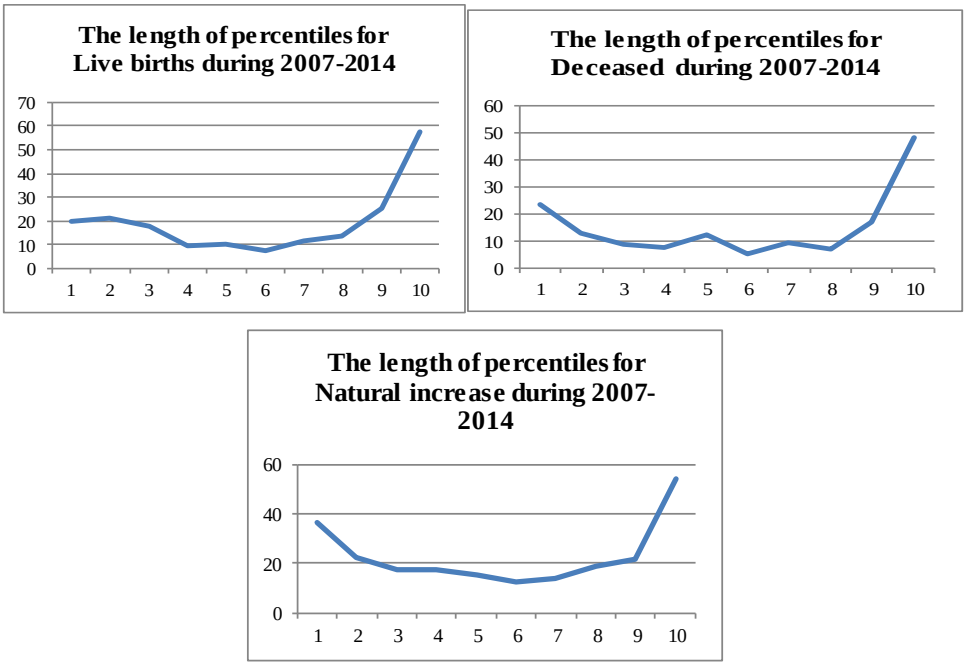

Figure 277

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 278.

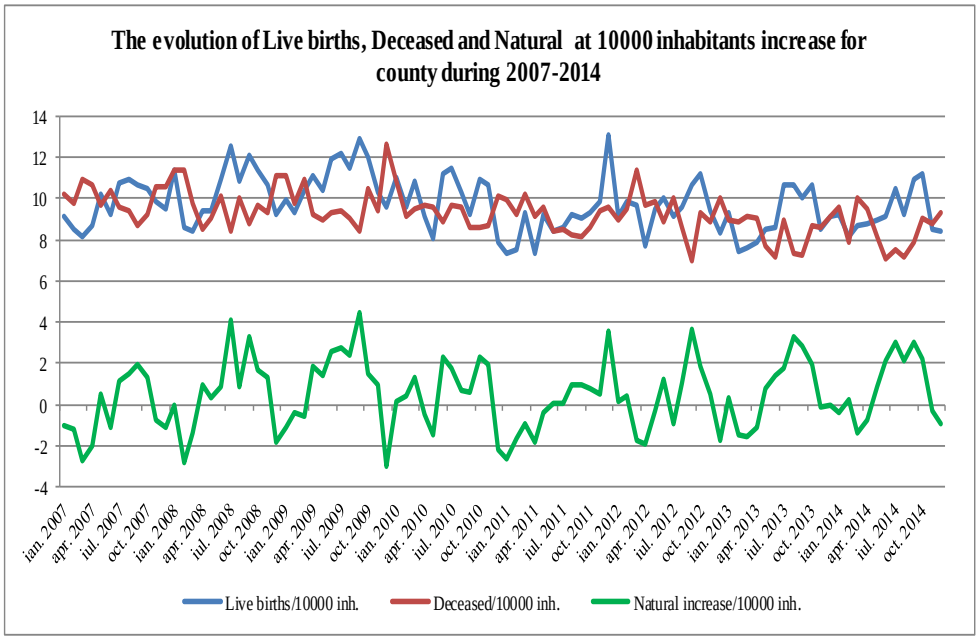

Figure 278

Regression analysis relative to indicator "Live births/10000 inh." gives us an equation: y=-0.012187873x+10.34486184 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=-0.019653622x+10.25163816 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=0.007484672x+0.092201754 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 10, for "Deceased/10000 inh." is 9 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.": (7.33,8.7725,9.505,10.685,13.09), for "Deceased/10000 inh.":

(7,8.7075,9.32,9.8075,12.6) and for "Natural increase/10000 inh.": (-3.02,-0.91,0.51,1.695,4.48).

The arithmetic mean and the standard deviation for "Live births/10000 inh." are: (10,1.3), for "Deceased/10000 inh.": (9,1.04) and for "Natural increase/10000 inh.": (0,1.68). This means that with a probability greather than 0.68 "Live births/10000 inh." are in the range [9,11], for "Deceased/10000 inh." in [8,10] and for "Natural increase/10000 inh." in [-2,2]. Percentiles length indicators analysis (Figure 279) show that, indeed the concentration is around the middle of the data.

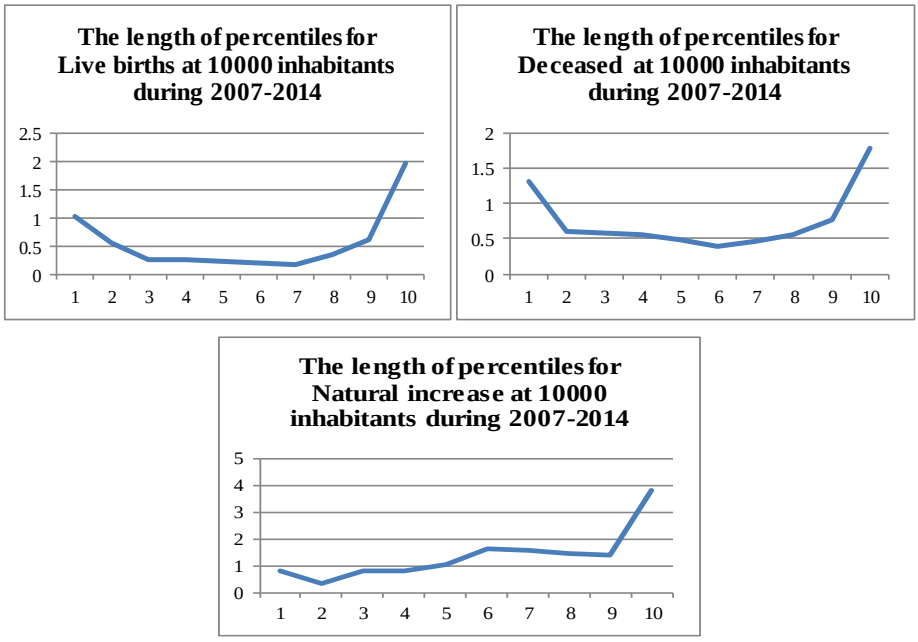

Figure 279

A comparison of the indicator "Live births" with the national level shows that it is better than the national, being better in 92.71% cases. For "Deceased" the indicator is better than the national, being better in 71.88% cases. Finally, for "Natural increase", the indicator is better than the national, being better in 96.88% cases.

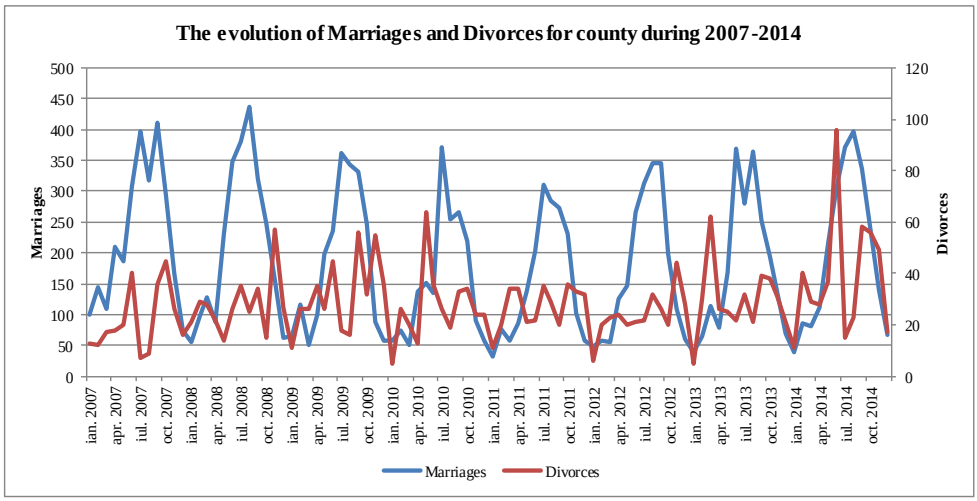

Figure 280

Regression analysis relative to indicator "Marriages" gives us an equation: y=-0.224511666x+196.0138158 where x is the number of month (Jan, 2007=1), therefore a downward trend.

Regression analysis relative to indicator "Divorces" gives us an equation: y=0.117702116x+22.64561404 where x is the number of month (Jan, 2007=1), therefore an upward trend.

For the set of values above, the median indicator for "Marriages" is 149 and for "Divorces" is 26. Also, the distribution of quartiles is for "Marriages": (32,79.5,149,281,436) and for "Divorces": (5,20,26,34.25,96). The arithmetic mean and the standard deviation for "Marriages" are: (185,114.52) and for "Divorces": (28,14.4). This means that with a probability greather than 0.68 "Marriages" are in the range [70,300] and for "Divorces" in [14,42].

Percentiles length indicators analysis (Figure 281) show that, indeed the concentration is around the middle of the data.

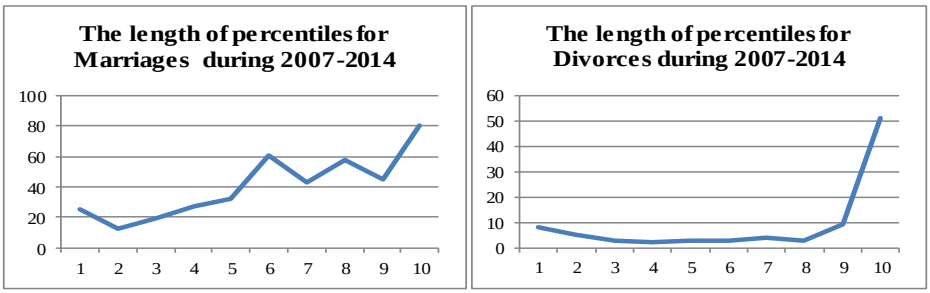

Figure 281

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 282.

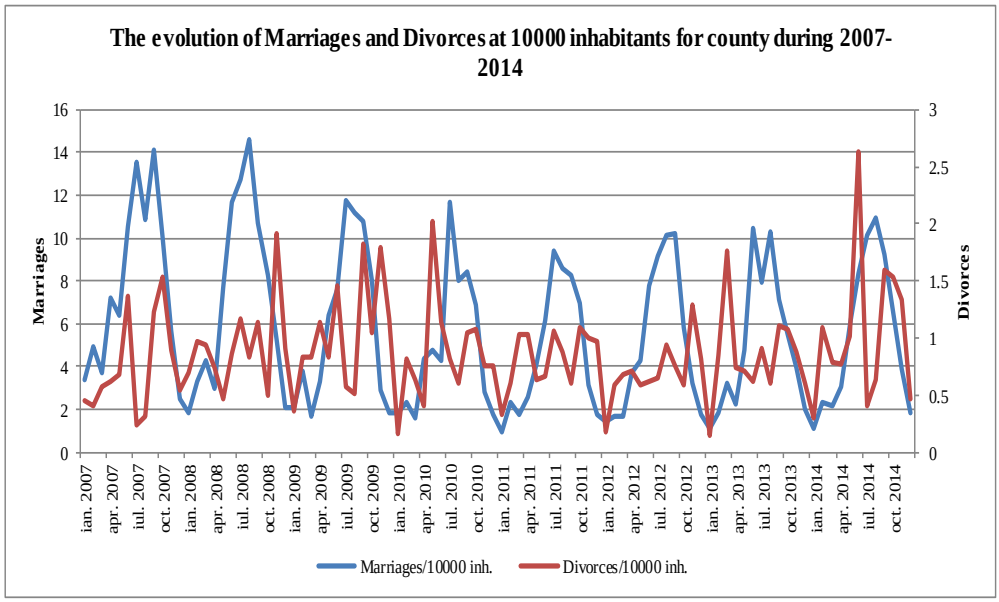

Figure 282

Regression analysis relative to indicator "Marriages/10000 inh." gives us an equation: y=-0.023597328x+6.892699561 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=0.001239352x+0.810412281 where x is the number of month (Jan, 2007=1), therefore a very small upward 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.": (0.97,2.345,4.785,8.37,14.63) and for "Divorces/10000 inh.": (0.14,0.6,0.82,1.0625,2.63). The arithmetic mean and the standard deviation for "Marriages/10000 inh." are: (6,3.63) 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 [2,10] and for "Divorces/10000 inh." in [1,1].

Percentiles length indicators analysis (Figure 283) show that, indeed the concentration is around the middle of the data.

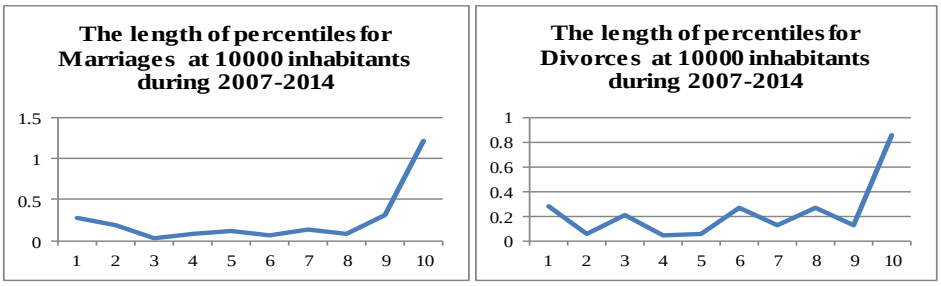

Figure 283

A comparison of the indicator "Marriages" with the national level shows that it is better than the national, being better in 63.54% cases. For "Divorces" the indicator is better than the national, being better in 76.04% cases.

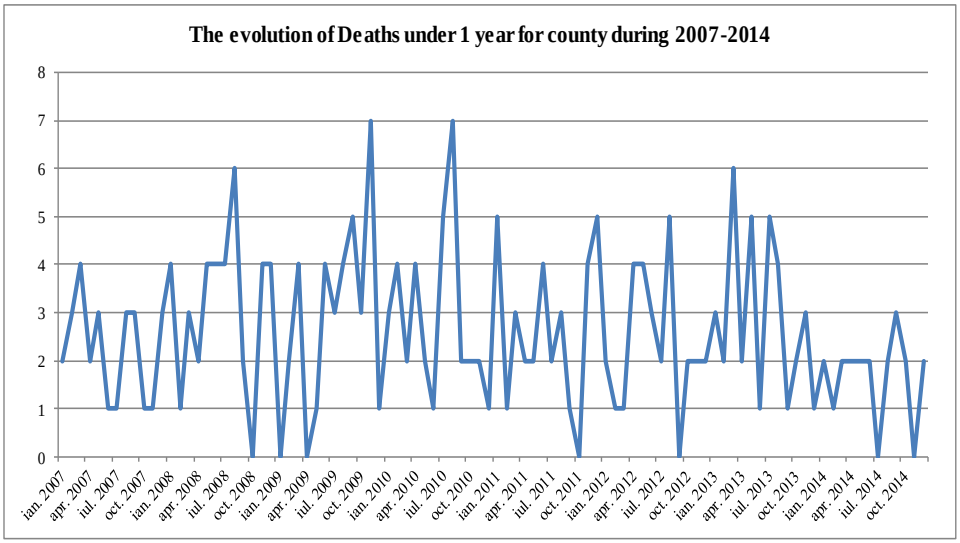

Figure 284

Regression analysis relative to indicator "Deaths under 1 year" gives us an equation: y=-0.006992675x+2.932894737 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": (0,1.75,2,4,7). The arithmetic mean and the standard deviation for "Deaths under 1 year" are: (3,1.58) 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 285) show that, indeed the concentration is around the middle of the data.

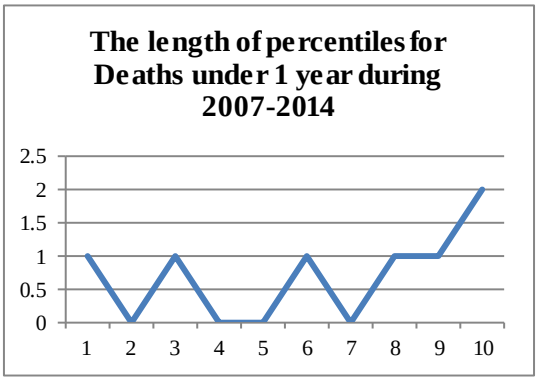

Figure 285

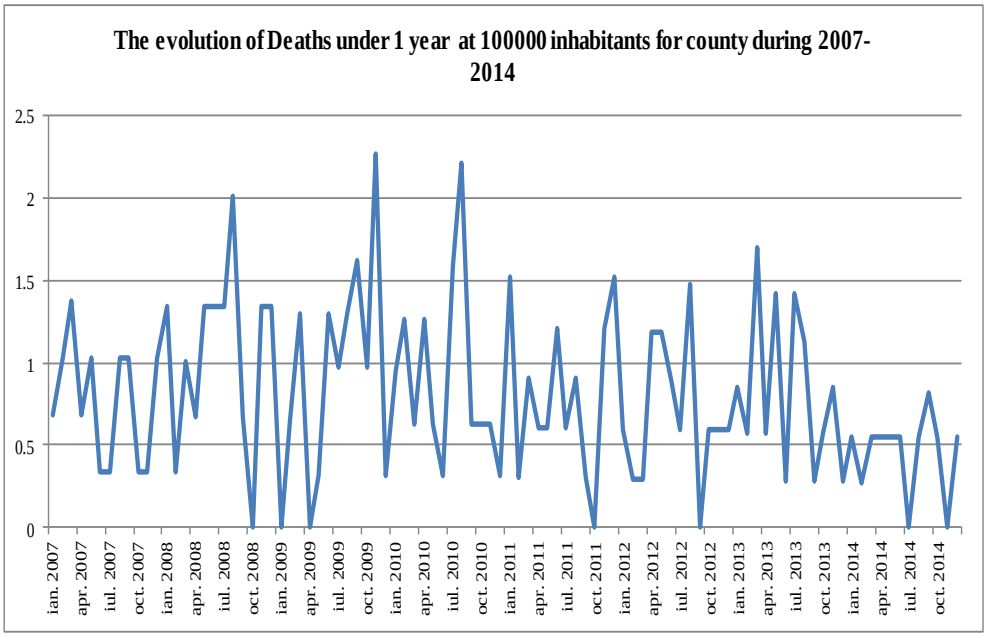

Figure 286

Regression analysis relative to indicator "Deaths under 1 year/100000 inh." gives us an equation: y=-0.004082406x+1.004350877 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.": (0,0.4975,0.64,1.21,2.27). The arithmetic mean and the standard deviation for "Deaths under 1 year/100000 inh." are: (1,0.5) which means that with a probability greather than 0.68 "Deaths under 1 year/100000 inh." are in the range [1,2].

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 57.29% cases.

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

Table 156. The evolution of Ilfov County GDP during 2007-2014

Year	GDP (in mil. lei 2007)	Variation (%)
2007	9931	-
2008	11549	16.29
2009	10745	-6.96
2010	10270	-4.42
2011	10992	7.04

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.

2.27. Analysis of Natural Movement of Maramures County Population

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

Table 157. The natural movement of Maramures 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	419	571	-152	357	113	7	ian,08	494	503	-9	271	54	5
feb,07	394	427	-33	325	86	3	feb,08	408	442	-34	161	90	7
mar,07	417	449	-32	143	84	7	mar,08	445	432	13	162	64	3
apr,07	387	463	-76	304	84	6	apr,08	488	425	63	97	111	3
mai,07	472	468	4	322	79	4	mai,08	394	443	-49	403	106	6
iun,07	408	395	13	295	77	3	iun,08	418	424	-6	233	57	5
iul,07	495	425	70	538	79	7	iul,08	523	392	131	452	80	2
aug,07	503	425	78	774	71	2	aug,08	560	410	150	815	78	6
sept,07	484	390	94	485	72	2	sept,08	446	428	18	400	94	5
oct,07	447	446	1	316	91	3	oct,08	499	471	28	262	46	5
nov,07	423	443	-20	194	97	7	nov,08	424	421	3	174	68	4
dec,07	434	506	-72	132	83	4	dec,08	414	487	-73	123	71	3

Source: INSSE

Table 158. The natural movement of Maramures 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	415	526	-111	211	62	1	ian,10	401	508	-107	203	72	2
feb,09	456	407	49	175	122	5	feb,10	423	448	-25	142	69	6
mar,09	468	539	-71	84	72	3	mar,10	398	488	-90	58	91	4
apr,09	380	424	-44	122	81	4	apr,10	387	494	-107	226	104	2
mai,09	401	469	-68	412	85	7	mai,10	436	462	-26	292	104	3
iun,09	403	413	-10	221	53	2	iun,10	431	461	-30	124	89	7
iul,09	470	419	51	483	61	5	iul,10	420	429	-9	471	85	5
aug,09	548	432	116	724	46	4	aug,10	553	467	86	678	82	6
sept,09	563	426	137	433	41	1	sept,10	407	426	-19	358	46	3
oct,09	448	449	-1	306	35	2	oct,10	384	486	-102	214	48	7
nov,09	428	438	-10	166	58	4	nov,10	384	465	-81	120	74	1
dec,09	350	558	-208	127	53	4	dec,10	379	527	-148	110	80	6

Source: INSSE

Table 159. The natural movement of Maramures 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	437	513	-76	175	55	7	ian,12	445	497	-52	164	43	3
feb,11	352	464	-112	132	79	1	feb,12	355	517	-162	122	58	0
mar,11	438	478	-40	77	64	4	mar,12	360	494	-134	64	70	4
apr,11	315	445	-130	108	127	2	apr,12	321	500	-179	163	58	2
mai,11	363	438	-75	286	92	2	mai,12	446	430	16	285	61	6
iun,11	323	423	-100	187	96	6	iun,12	339	427	-88	196	73	7
iul,11	435	394	41	423	97	1	iul,12	457	455	2	425	48	6
aug,11	540	406	134	669	38	3	aug,12	646	432	214	714	62	3
sept,11	410	400	10	360	56	1	sept,12	400	394	6	364	61	5
oct,11	424	434	-10	184	29	6	oct,12	419	442	-23	188	64	3
nov,11	358	406	-48	116	63	5	nov,12	338	435	-97	116	71	9
dec,11	344	517	-173	111	72	1	dec,12	312	455	-143	115	68	1

Source: INSSE

Table 160. The natural movement of Maramures 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	390	462	-72	158	33	2	ian,14	333	489	-156	169	34	3
feb,13	280	431	-151	119	74	0	feb,14	337	455	-118	135	62	4
mar,13	316	491	-175	135	78	4	mar,14	350	523	-173	84	29	5
apr,13	405	431	-26	76	66	2	apr,14	384	469	-85	131	60	4
mai,13	343	446	-103	296	87	1	mai,14	380	423	-43	327	55	2
iun,13	329	410	-81	241	65	0	iun,14	344	398	-54	189	75	4
iul,13	451	416	35	390	49	6	iul,14	470	429	41	408	59	1
aug,13	543	402	141	776	57	1	aug,14	483	408	75	771	55	2
sept,13	392	411	-19	287	46	3	sept,14	436	447	-11	319	41	2
oct,13	425	485	-60	207	41	3	oct,14	423	479	-56	234	36	1
nov,13	297	453	-156	136	48	2	nov,14	317	444	-127	108	100	1
dec,13	375	477	-102	112	17	1	dec,14	360	552	-192	107	65	5

Source: INSSE

Table 161. The population trends of Maramures County during 2007-2014

Year	Population	Year	Population
2007	536890	2011	532852
2008	535747	2012	531949
2009	535068	2013	530239
2010	534365	2014	528768

Source: INSSE

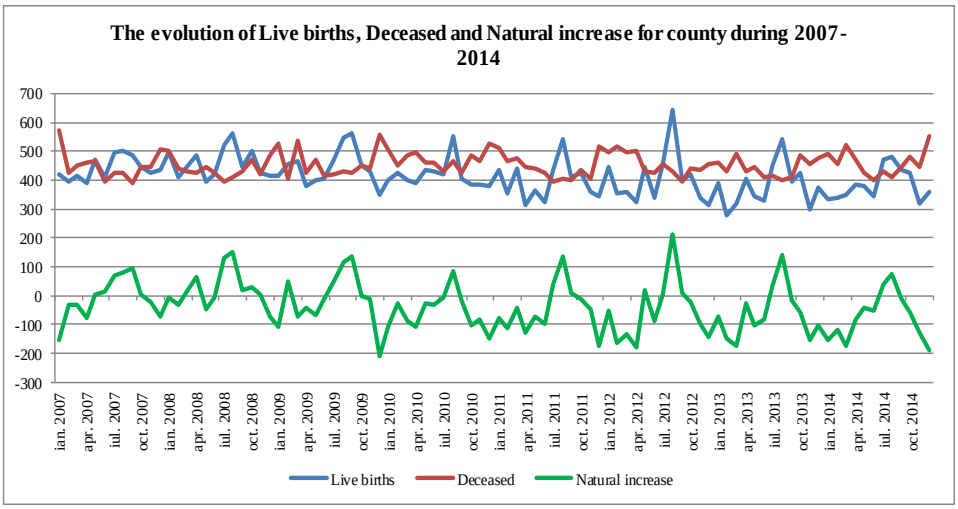

Figure 287

From figure 287 we can see a sinusoidal evolution of the indicator. Except months mai 2007, iun 2007, iul 2007, aug 2007, sept 2007, oct 2007, mar 2008, apr 2008, iul 2008, aug 2008, sept 2008, oct 2008, nov 2008, feb 2009, iul 2009, aug 2009, sept 2009, aug 2010, iul 2011, aug 2011, sept 2011, mai 2012, iul 2012, 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=-0.886808193x+458.3122807 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=0.014093869x+452.170614 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=-0.900902062x+6.141666667 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 415, for "Deceased" is 445 and for "Natural increase": -37. 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": (280,372,414.5,446.25,646), for "Deceased": (390,425,444.5,478.25,571) and for "Natural increase": (-208,-100.5,-37,7,214).

The arithmetic mean and the standard deviation for "Live births" are: (415,66.38), for "Deceased": (453,40.47) and for "Natural increase": (-38,85.84). This means that with a probability greather than 0.68 "Live births" are in the range [349,481], for "Deceased" in [413,493] and for "Natural increase" in [-124,48].

Percentiles length indicators analysis (Figure 288) show that, indeed the concentration is around the middle of the data.

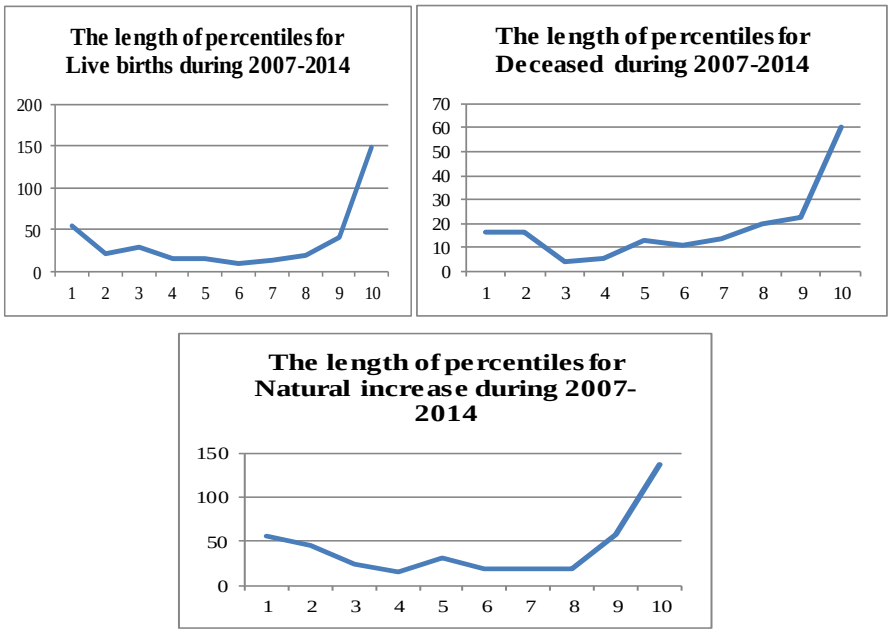

Figure 288

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 289.

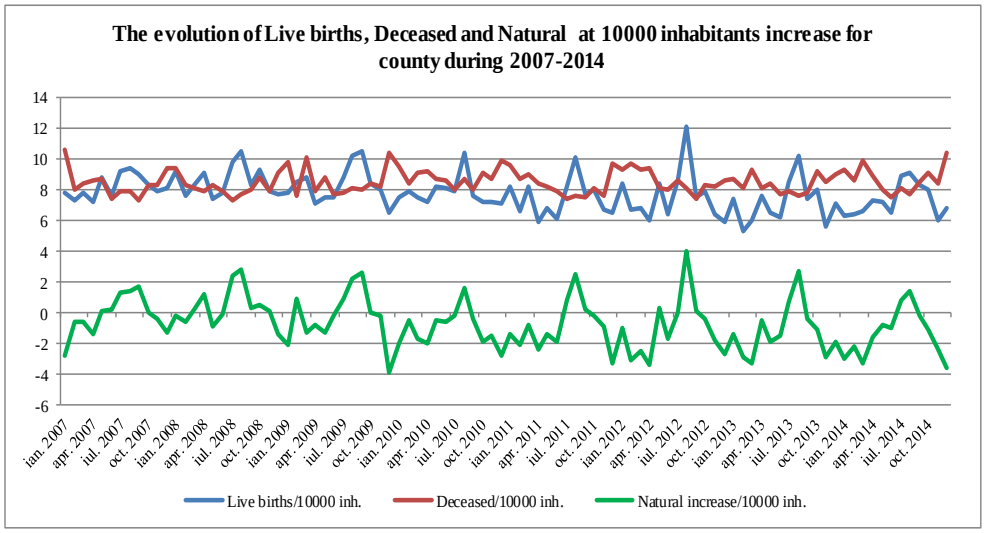

Figure 289

Regression analysis relative to indicator "Live births/10000 inh." gives us an equation: y=-0.015262547x+8.526379386 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=0.001749593x+8.40785307 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=-0.017016888x+0.118756579 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.": -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.": (5.28,7.005,7.745,8.37,12.14), for "Deceased/10000 inh.": (7.26,7.9375,8.33,9.015,10.64) and for "Natural increase/10000 inh.": (-3.89,-1.8875,-0.69,0.13,4.02).

The arithmetic mean and the standard deviation for "Live births/10000 inh." are: (8,1.23), for "Deceased/10000 inh.": (8,0.76) and for "Natural increase/10000 inh.": (-1,1.61). 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 [-3,1].

Percentiles length indicators analysis (Figure 290) show that, indeed the concentration is around the middle of the data.

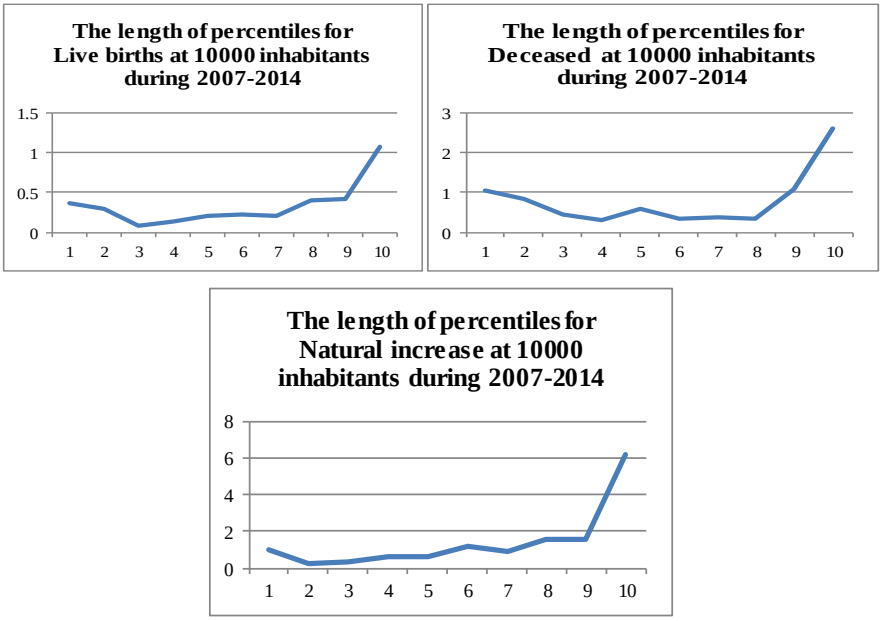

Figure 290

A comparison of the indicator "Live births" with the national level shows that it is about the same with the national, being better in 53.13% cases. For "Deceased" the indicator is better than the national, being better in 98.96% cases. Finally, for "Natural increase", the indicator is better than the national, being better in 89.58% cases.

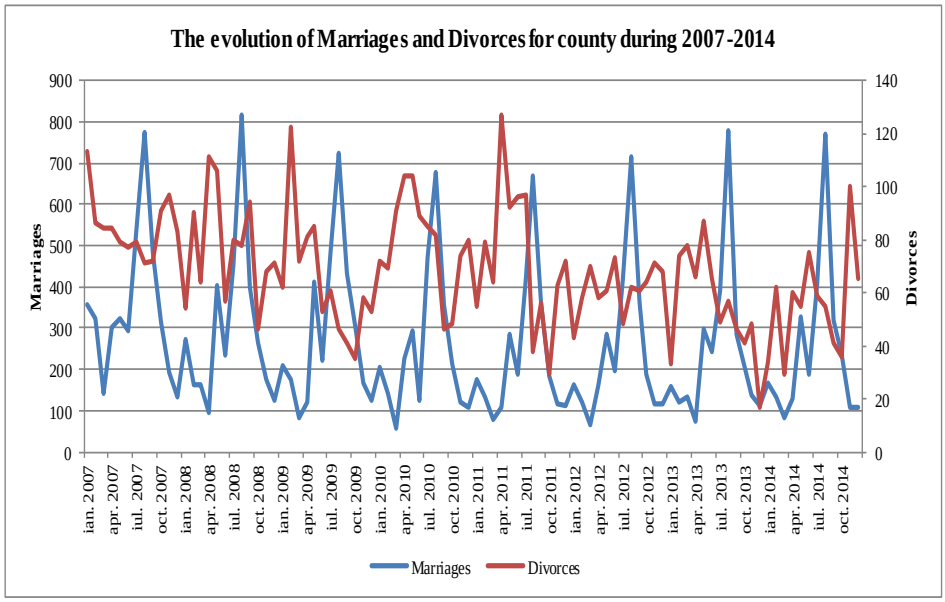

Figure 291

Regression analysis relative to indicator "Marriages" gives us an equation: y=-0.960967173x+315.9506579 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=-0.335533098x+84.86710526 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 205 and for "Divorces" is 68. Also, the distribution of quartiles is for "Marriages": (58,131.75,205,357.25,815) and for "Divorces": (17,55,68,82.25,127). The arithmetic mean and the standard deviation for "Marriages" are: (269,182.3) and for "Divorces": (69,21.46). This means that with a probability greather than 0.68 "Marriages" are in the range [87,451] and for "Divorces" in [48,90].

Percentiles length indicators analysis (Figure 292) show that, indeed the concentration is around the middle of the data.

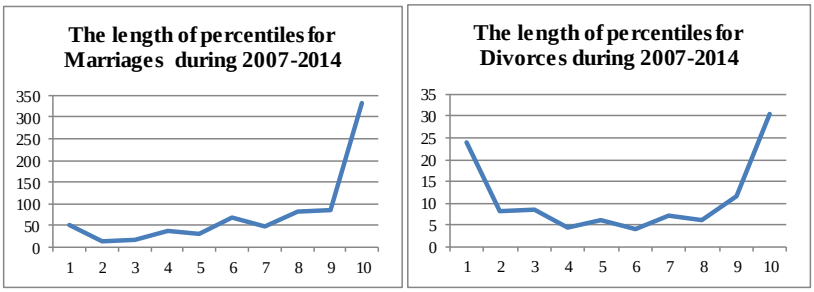

Figure 292

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 293.

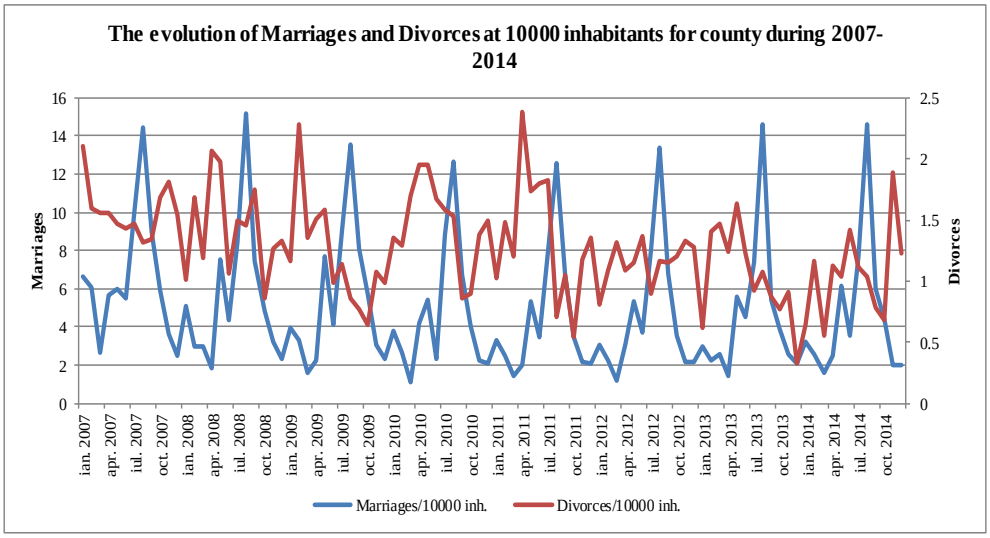

Figure 293

Regression analysis relative to indicator "Marriages/10000 inh." gives us an equation: y=-0.017104721x+5.877912281 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=-0.006057854x+1.578910088 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.": (1.09,2.475,3.85,6.6625,15.21) and for "Divorces/10000 inh.": (0.32,1.0375,1.275,1.535,2.38). The arithmetic mean and the standard

deviation for "Marriages/10000 inh." are: (5,3.41) and for "Divorces/10000 inh.": (1,0.4). 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 294) show that, indeed the concentration is around the middle of the data.

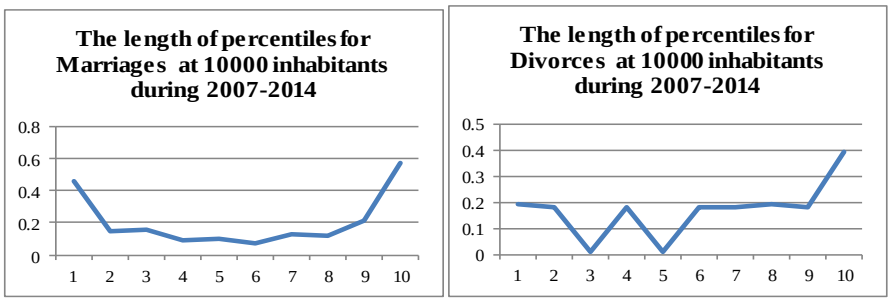

Figure 294

A comparison of the indicator "Marriages" with the national level shows that it is about the same with the national, being better in 52.08% cases. For "Divorces" the indicator is worse than the national, being better only in 28.13% cases.

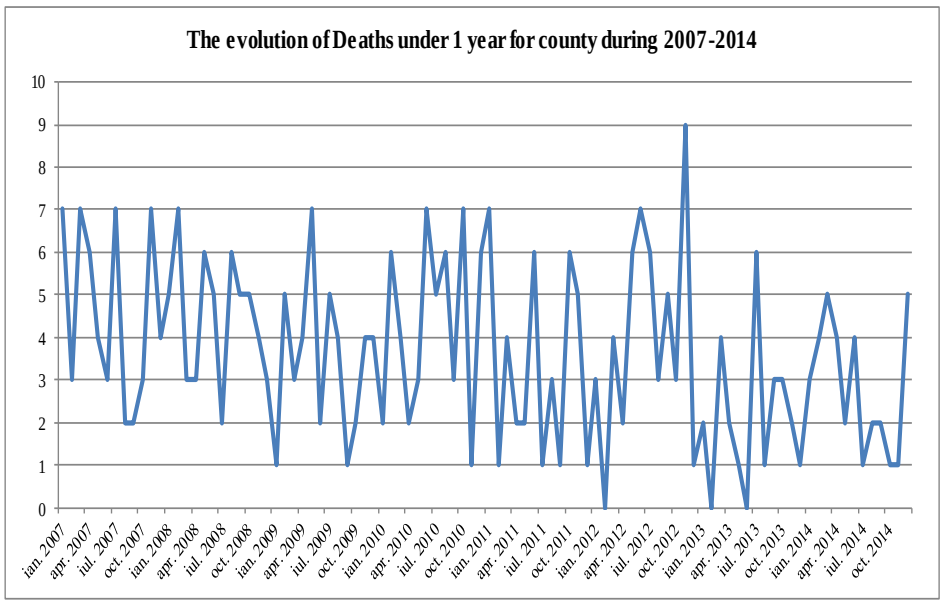

Figure 295

Regression analysis relative to indicator "Deaths under 1 year" gives us an equation: y=-0.023440043x+4.782675439 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": (0,2,3,5,9). The arithmetic mean and the standard deviation for "Deaths under 1 year" are: (4,2.07) which means that with a probability greather than 0.68 "Deaths under 1 year" are in the range [2,6].

Percentiles length indicators analysis (Figure 296) show that, indeed the concentration is around the middle of the data.

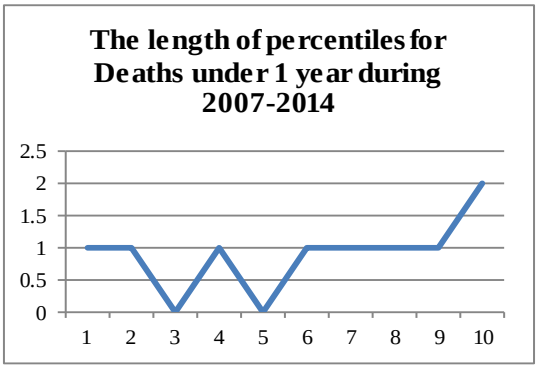

Figure 296

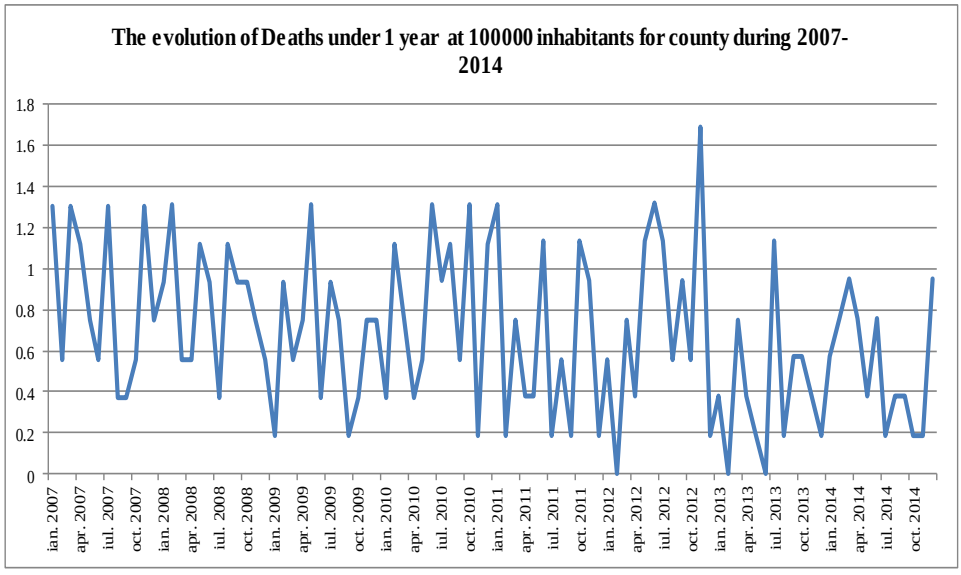

Figure 297

Regression analysis relative to indicator "Deaths under 1 year/100000 inh." gives us an equation: y=-0.004247558x+0.889548246 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.": (0,0.3775,0.57,0.9425,1.69). The arithmetic mean and the standard deviation for "Deaths under 1 year/100000 inh." are: (1,0.39) 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 61.46% cases.

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

Table 162. The evolution of Maramures County GDP during 2007-2014

Year	GDP (in mil. lei 2007)	Variation (%)
2007	6887	-
2008	7095	3.03
2009	6890	-2.88
2010	6704	-2.71
2011	6539	-2.46
2012	7107	8.69
2013	7057	-0.71
2014	7408	4.97

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: 0.7916dGDP+-2.7224. 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:-5.4739dGDP+0.9088.

2.28. Analysis of Natural Movement of Mehedinti County Population

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

Table 163. The natural movement of Mehedinti 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	208	439	-231	321	55	6	ian,08	233	420	-187	72	50	4
feb,07	179	320	-141	593	60	1	feb,08	189	366	-177	99	40	1
mar,07	187	375	-188	323	38	2	mar,08	227	384	-157	81	42	7
apr,07	188	289	-101	237	40	2	apr,08	190	340	-150	63	41	3
mai,07	199	328	-129	191	54	4	mai,08	211	332	-121	147	82	4
iun,07	219	339	-120	189	42	4	iun,08	185	312	-127	178	66	2
iul,07	222	346	-124	236	37	6	iul,08	233	319	-86	183	25	1
aug,07	225	309	-84	256	31	4	aug,08	217	304	-87	305	31	5
sept,07	212	299	-87	270	22	5	sept,08	262	284	-22	226	7	5
oct,07	203	366	-163	274	45	3	oct,08	242	341	-99	259	23	4
nov,07	185	384	-199	167	60	2	nov,08	206	364	-158	134	49	1
dec,07	199	375	-176	128	60	3	dec,08	223	374	-151	89	52	0

Source: INSSE

Table 164. The natural movement of Mehedinti 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	236	419	-183	78	58	4	ian,10	224	403	-179	67	41	2
feb,09	248	360	-112	91	34	6	feb,10	204	359	-155	52	40	5
mar,09	224	388	-164	74	47	5	mar,10	212	379	-167	65	76	0
apr,09	218	360	-142	96	53	7	apr,10	198	353	-155	108	48	1
mai,09	181	295	-114	153	39	5	mai,10	192	331	-139	137	55	1
iun,09	233	317	-84	156	38	3	iun,10	228	326	-98	71	39	6
iul,09	278	309	-31	211	46	4	iul,10	261	336	-75	220	50	5
aug,09	279	313	-34	286	39	4	aug,10	248	341	-93	261	56	1
sept,09	296	275	21	233	14	4	sept,10	241	278	-37	202	7	3
oct,09	259	343	-84	228	22	6	oct,10	193	319	-126	166	14	3
nov,09	222	320	-98	99	22	4	nov,10	216	347	-131	81	34	2

Source: INSSE

Table 165. The natural movement of Mehedinti 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	203	386	-183	55	60	8	ian,12	230	354	-124	53	46	1
feb,11	171	362	-191	77	39	3	feb,12	173	405	-232	54	25	4
mar,11	188	355	-167	44	39	2	mar,12	192	392	-200	55	37	2
apr,11	172	376	-204	79	48	4	apr,12	208	368	-160	91	46	6
mai,11	211	344	-133	92	49	0	mai,12	224	309	-85	114	49	3
iun,11	210	309	-99	123	35	5	iun,12	219	318	-99	119	45	1
iul,11	199	298	-99	184	42	3	iul,12	241	315	-74	160	35	1
aug,11	303	294	9	239	25	2	aug,12	270	303	-33	249	50	4
sept,11	218	276	-58	175	51	1	sept,12	249	255	-6	243	16	4
oct,11	216	328	-112	181	26	6	oct,12	222	339	-117	165	12	3
nov,11	195	364	-169	75	41	3	nov,12	192	318	-126	83	40	4
dec,11	162	358	-196	58	41	3	dec,12	164	339	-175	65	23	4

Source: INSSE

Table 166. The natural movement of Mehedinti 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	196	329	-133	53	40	1	ian,14	219	353	-134	59	7	2
feb,13	140	301	-161	63	20	5	feb,14	162	311	-149	84	12	2
mar,13	146	335	-189	78	28	2	mar,14	169	365	-196	58	29	1
apr,13	191	331	-140	60	31	0	apr,14	187	364	-177	79	22	1
mai,13	193	303	-110	100	27	2	mai,14	168	335	-167	96	1	1
iun,13	164	291	-127	156	0	4	iun,14	163	346	-183	97	39	3
iul,13	237	310	-73	133	44	2	iul,14	267	308	-41	177	7	1
aug,13	244	284	-40	276	17	1	aug,14	265	319	-54	280	25	2
sept,13	217	258	-41	183	39	0	sept,14	248	266	-18	199	14	3
oct,13	185	344	-159	180	11	2	oct,14	141	315	-174	167	6	0

Source: INSSE

Table 167. The population trends of Mehedinti County during 2007-2014

Year	Population	Year	Population
2007	307612	2011	298143
2008	305042	2012	295975
2009	302821	2013	293999
2010	300756	2014	291674

Source: INSSE

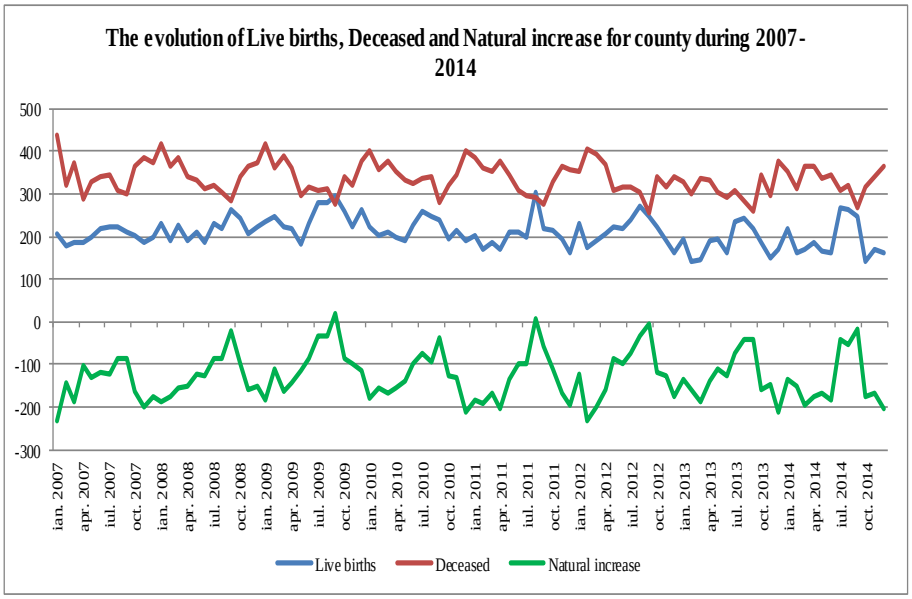

Figure 298

From figure 298 we can see a sinusoidal evolution of the indicator. Except months sept 2009, aug 2011 the natural increase was negative.

Regression analysis relative to indicator "Live births" gives us an equation: y=-0.295523603x+224.4995614 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=-0.330921053x+353.2475877 where x is the number of month (Jan, 2007=1), therefore a downward trend.

Regression analysis relative to indicator "Natural increase" gives us an equation: y=0.03539745x+-128.7480263 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 211, for "Deceased" is 338 and for "Natural increase": -132. 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": (140,187.75,210.5,230.75,303), for "Deceased": (255,309.75,337.5,364,439) and for "Natural increase": (-232,-167.5,-132,-91.5,21).

The arithmetic mean and the standard deviation for "Live births" are: (210,34.34), for "Deceased": (337,37.31) and for "Natural increase": (-127,55.99). This means that with a probability greather than 0.68 "Live births" are in the range [176,244], for "Deceased" in [300,374] and for "Natural increase" in [-183,-71].

Percentiles length indicators analysis (Figure 299) show that, indeed the concentration is around the middle of the data.

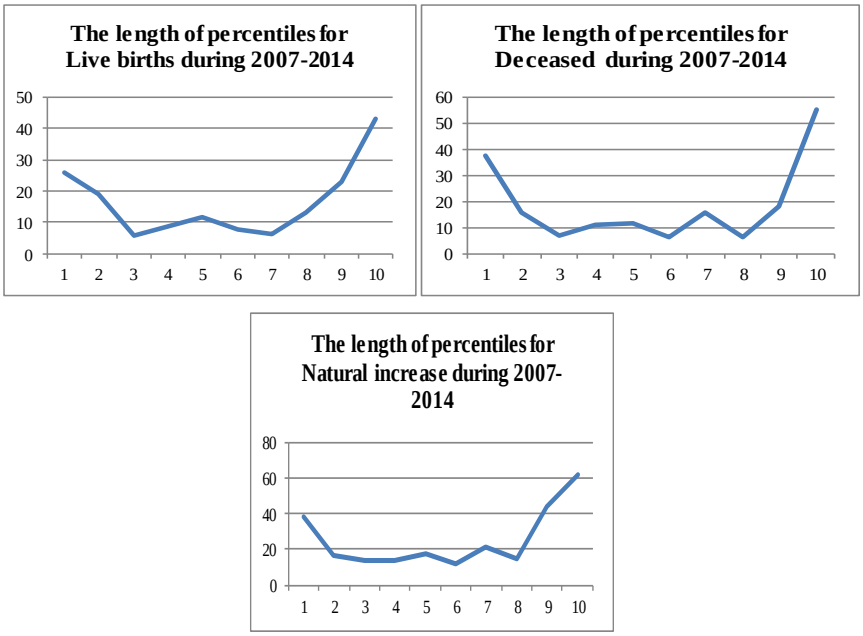

Figure 299

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 300.

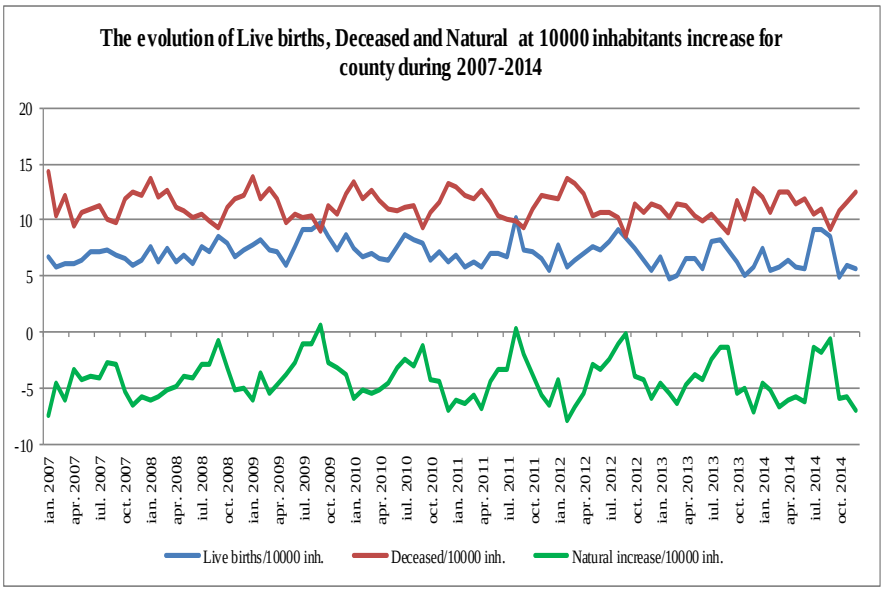

Figure 300

Regression analysis relative to indicator "Live births/10000 inh." gives us an equation: y=-0.005678717x+7.28927193 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=-0.004101058x+11.45640132 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=-0.001602008x+-4.165219298 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 11 and for "Natural increase/10000 inh.": -4. 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.": (4.76,6.2225,6.975,7.64,10.16), for "Deceased/10000 inh.": (8.62,10.39,11.22,12.11,14.27) and for "Natural increase/10000 inh.": (-7.84,-5.7225,-4.41,-3.035,0.69).

The arithmetic mean and the standard deviation for "Live births/10000 inh." are: (7,1.13), for "Deceased/10000 inh.": (11,1.22) and for "Natural increase/10000 inh.": (-4,1.88). 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 [10,12] and for "Natural increase/10000 inh." in [-6,-2].

Percentiles length indicators analysis (Figure 301) show that, indeed the concentration is around the middle of the data.

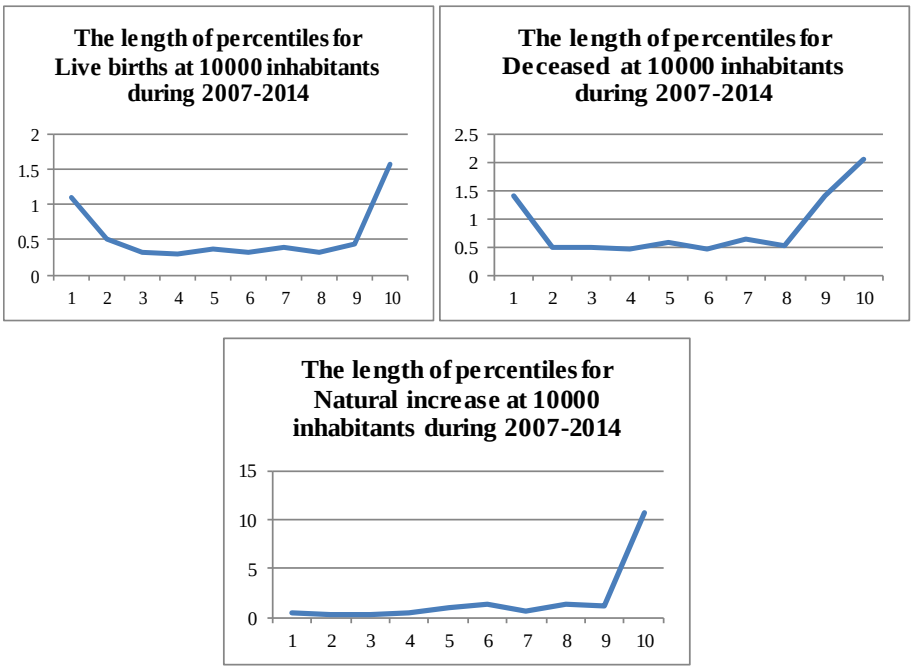

Figure 301

A comparison of the indicator "Live births" with the national level shows that it is worse than the national, being better only in 23.96% 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.

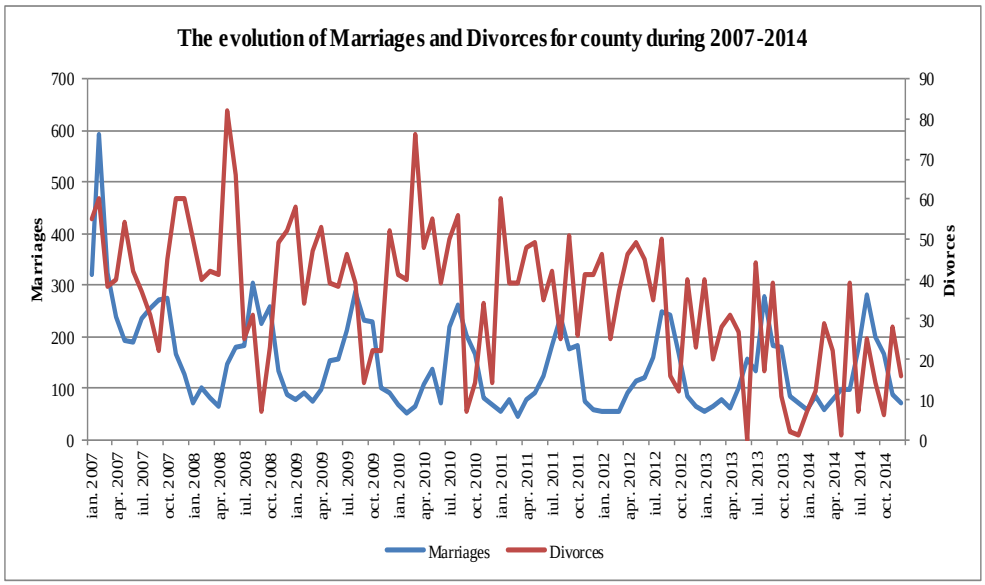

Figure 302

Regression analysis relative to indicator "Marriages" gives us an equation: y=-1.172239555x+203.1140351 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=-0.323996202x+50.88048246 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 121 and for "Divorces" is 39. Also, the distribution of quartiles is for "Marriages": (44,77.75,121,193,593) and for "Divorces": (0,22.75,39,47.25,82). The arithmetic mean and the standard deviation for "Marriages" are: (146,88.49) and for "Divorces": (35,17.24). This means that with a probability greather than 0.68 "Marriages" are in the range [58,234] and for "Divorces" in [18,52].

Percentiles length indicators analysis (Figure 303) show that, indeed the concentration is around the middle of the data.

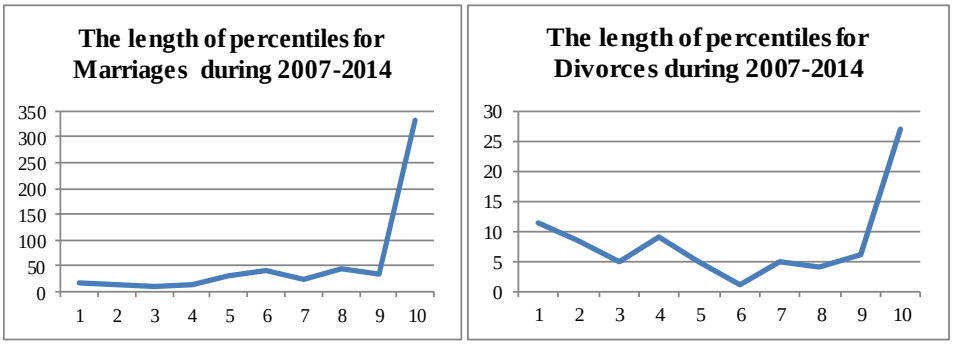

Figure 303

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 304.

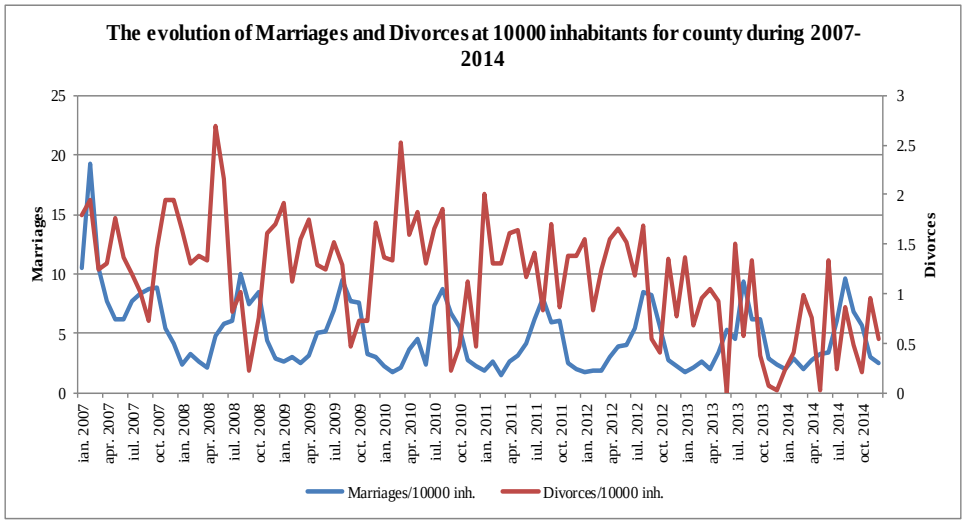

Figure 304

Regression analysis relative to indicator "Marriages/10000 inh." gives us an equation: y=-0.035614826x+6.592214912 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=-0.010165152x+1.662905702 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.": (1.48,2.58,4.075,6.345,19.28) and for "Divorces/10000

inh.”: (0,0.75,1.295,1.5625,2.69). The arithmetic mean and the standard deviation for “Marriages/10000 inh.” are: (5,2.9) and for “Divorces/10000 inh.”: (1,0.57). 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 305) show that, indeed the concentration is around the middle of the data.

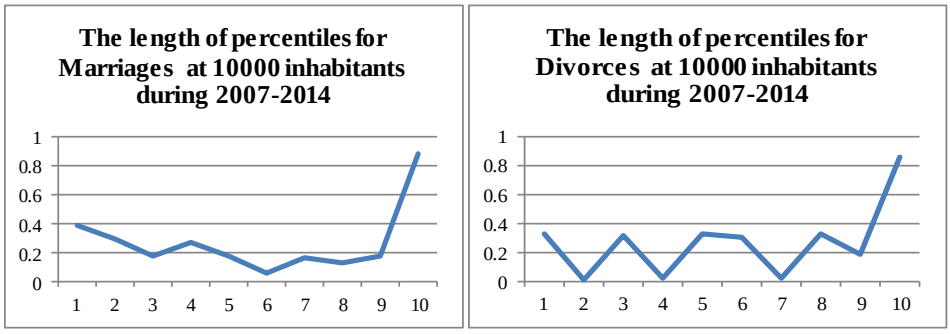

Figure 305

A comparison of the indicator “Marriages” with the national level shows that it is better than the national, being better in 60.42% cases. For “Divorces” the indicator is about the same with the national, being better in 52.08% cases.

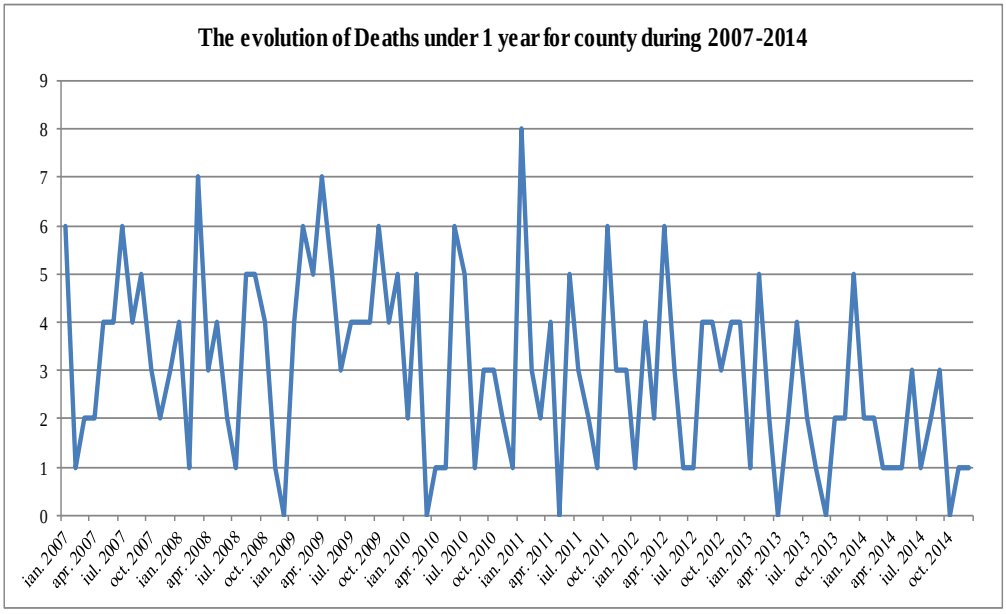

Figure 306

Regression analysis relative to indicator "Deaths under 1 year" gives us an equation: y=-0.022809278x+4.095833333 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": (0,1,3,4,8). The arithmetic mean and the standard deviation for "Deaths under 1 year" are: (3,1.86) 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 307) show that, indeed the concentration is around the middle of the data.

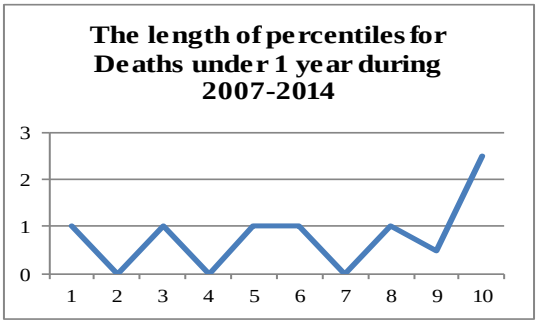

Figure 307

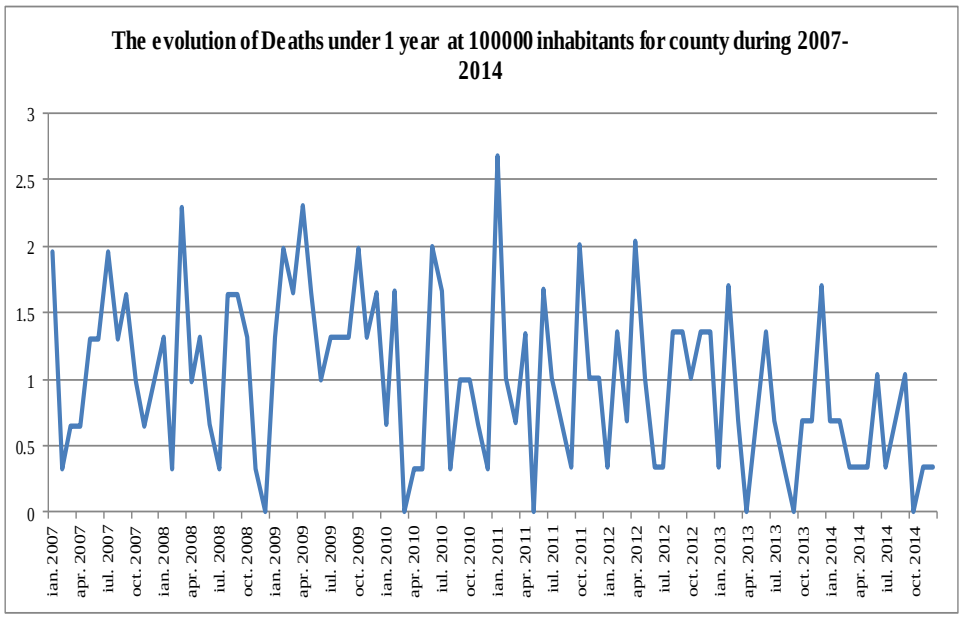

Figure 308

Regression analysis relative to indicator "Deaths under 1 year/100000 inh." gives us an equation: y=-0.007062941x+1.337344298 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.": (0,0.34,1,1.35,2.68). 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 35.42% cases.

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

Table 168. The evolution of Mehedinti County GDP during 2007-2014

Year	GDP (in mil. lei 2007)	Variation (%)
2007	3741	-
2008	3837	2.55
2009	3653	-4.78
2010	3390	-7.2
2011	3355	-1.03
2012	3304	-1.52
2013	3216	-2.68
2014	3229	0.41

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 1 year and the regression equation is:1.9742dGDP+3.3069. 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:4.4552dGDP+19.6447. 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:-6.1815dGDP+-31.2189.

2.29. Analysis of Natural Movement Of Mures County Population

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

Table 169. The natural movement of Mures 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	548	642	-94	344	61	10	ian,08	570	633	-63	141	26	5
feb,07	424	532	-108	1159	64	3	feb,08	576	586	-10	205	76	6
mar,07	546	601	-55	626	80	5	mar,08	477	607	-130	204	91	5
apr,07	475	609	-134	337	76	4	apr,08	543	571	-28	136	95	7
mai,07	534	582	-48	437	80	7	mai,08	569	580	-11	399	69	9
iun,07	495	524	-29	420	72	7	iun,08	538	534	4	338	69	5
iul,07	497	554	-57	547	12	10	iul,08	633	520	113	453	51	10
aug,07	539	501	38	577	3	5	aug,08	557	515	42	619	63	7
sept,07	601	504	97	506	61	6	sept,08	616	510	106	427	90	4
oct,07	538	608	-70	387	100	6	oct,08	616	573	43	344	57	5
nov,07	561	624	-63	297	100	5	nov,08	506	568	-62	178	72	9
dec,07	549	638	-89	170	75	6	dec,08	522	650	-128	130	61	3

Source: INSSE

Table 170. The natural movement of Mures 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	537	752	-215	133	19	8	ian,10	504	627	-123	96	16	10
feb,09	487	576	-89	163	54	9	feb,10	480	589	-109	139	87	3
mar,09	523	645	-122	104	94	10	mar,10	572	657	-85	115	77	7
apr,09	488	619	-131	144	80	8	apr,10	429	589	-160	207	86	8
mai,09	500	559	-59	391	54	4	mai,10	493	589	-96	379	86	4
iun,09	543	555	-12	257	92	4	iun,10	536	575	-39	206	88	4
iul,09	569	502	67	475	56	6	iul,10	513	523	-10	464	55	5
aug,09	567	549	18	523	63	4	aug,10	583	580	3	451	81	6
sept,09	626	491	135	407	41	6	sept,10	528	540	-12	378	37	5
oct,09	530	574	-44	176	86	7	oct,10	514	616	-102	262	68	5
nov,09	492	592	-100	147	45	4	nov,10	475	621	-146	112	53	4
dec,09	503	638	-135	108	48	1	dec,10	493	625	-132	97	81	7

Source: INSSE

Table 171. The natural movement of Mures 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	523	624	-101	91	78	6	ian,12	466	581	-115	64	15	3
feb,11	502	622	-120	83	26	8	feb,12	435	655	-220	86	69	3
mar,11	477	668	-191	115	101	4	mar,12	452	688	-236	101	70	3
apr,11	402	607	-205	97	76	6	apr,12	441	598	-157	129	76	4
mai,11	469	595	-126	294	75	6	mai,12	469	546	-77	288	68	3
iun,11	481	504	-23	277	78	2	iun,12	489	514	-25	270	61	1
iul,11	543	464	79	399	37	6	iul,12	526	537	-11	389	35	2
aug,11	613	503	110	415	53	3	aug,12	531	522	9	395	27	6
sept,11	511	510	1	362	64	4	sept,12	461	437	24	356	112	1
oct,11	502	549	-47	219	49	4	oct,12	568	556	12	224	43	8
nov,11	456	651	-195	89	63	6	nov,12	422	525	-103	99	34	5

Source: INSSE

Table 172.The natural movement of Mures 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	537	610	-73	81	27	8	ian,14	538	593	-55	91	17	4
feb,13	418	585	-167	93	63	6	feb,14	379	519	-140	94	63	4
mar,13	460	619	-159	118	69	9	mar,14	451	639	-188	93	44	4
apr,13	480	552	-72	111	30	5	apr,14	439	585	-146	121	66	6
mai,13	502	497	5	244	83	2	mai,14	457	563	-106	355	52	3
iun,13	401	472	-71	301	25	3	iun,14	440	571	-131	273	28	3
iul,13	572	488	84	377	6	3	iul,14	540	494	46	387	37	3
aug,13	475	512	-37	472	29	4	aug,14	510	532	-22	486	71	5
sept,13	485	490	-5	314	90	0	sept,14	585	557	28	343	47	6
oct,13	569	585	-16	195	35	0	oct,14	487	535	-48	211	41	6
nov,13	396	556	-180	122	46	2	nov,14	432	547	-115	126	59	2
dec,13	419	680	-261	88	16	8	dec,14	431	621	-190	86	47	8

Source: INSSE

Table 173. The population trends of Mures County during 2007-2014

Year	Population	Year	Population
2007	605853	2011	602537
2008	605092	2012	601226
2009	604647	2013	599984
2010	603708	2014	598872

Source: INSSE

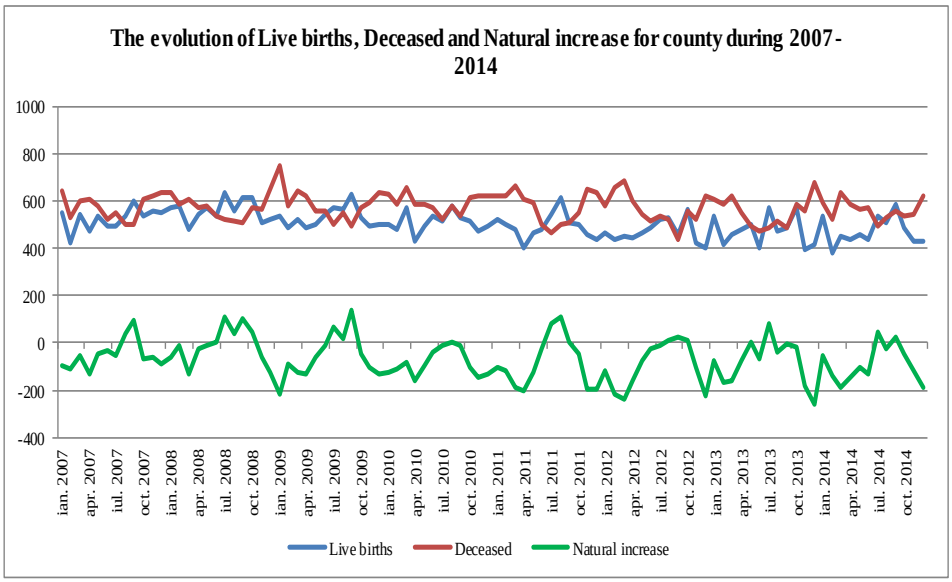

Figure 309

From figure 309 we can see a sinusoidal evolution of the indicator. Except months aug 2007, sept 2007, iun 2008, iul 2008, aug 2008, sept 2008, oct 2008, iul 2009, aug 2009, sept 2009, aug 2010, iul 2011, aug 2011, sept 2011, aug 2012, sept 2012, oct 2012, mai 2013, iul 2013, iul 2014, sept 2014 the natural increase was negative.

Regression analysis relative to indicator "Live births" gives us an equation: y=-0.931741725x+550.3144737 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=-0.307813348x+588.5122807 where x is the number of month (Jan, 2007=1), therefore a downward trend.

Regression analysis relative to indicator "Natural increase" gives us an equation: y=-0.633288117x+-37.95219298 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 503, for "Deceased" is 576 and for "Natural increase": -71. 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": (379,468.25,502.5,543,633), for "Deceased": (437,530.25,575.5,619,752) and for "Natural increase": (-261,-130.25,-70.5,-10.75,135).

The arithmetic mean and the standard deviation for “Live births” are: (505,56.87), for “Deceased”: (574,56.29) and for “Natural increase”: (-69,86.83). This means that with a probability greather than 0.68 “Live births” are in the range [448,562], for “Deceased” in [518,630] and for “Natural increase” in [-156,18].

Percentiles length indicators analysis (Figure 310) show that, indeed the concentration is around the middle of the data.

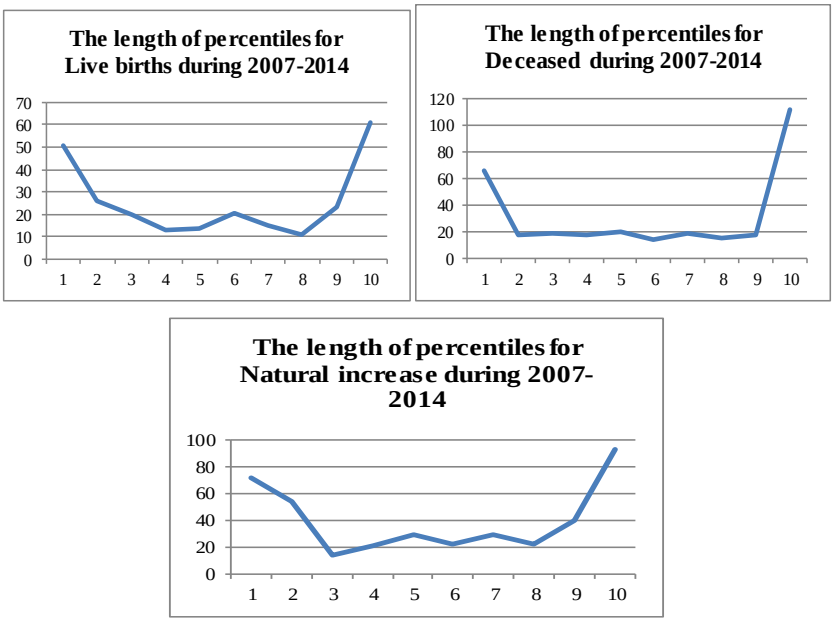

Figure 310

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 311.

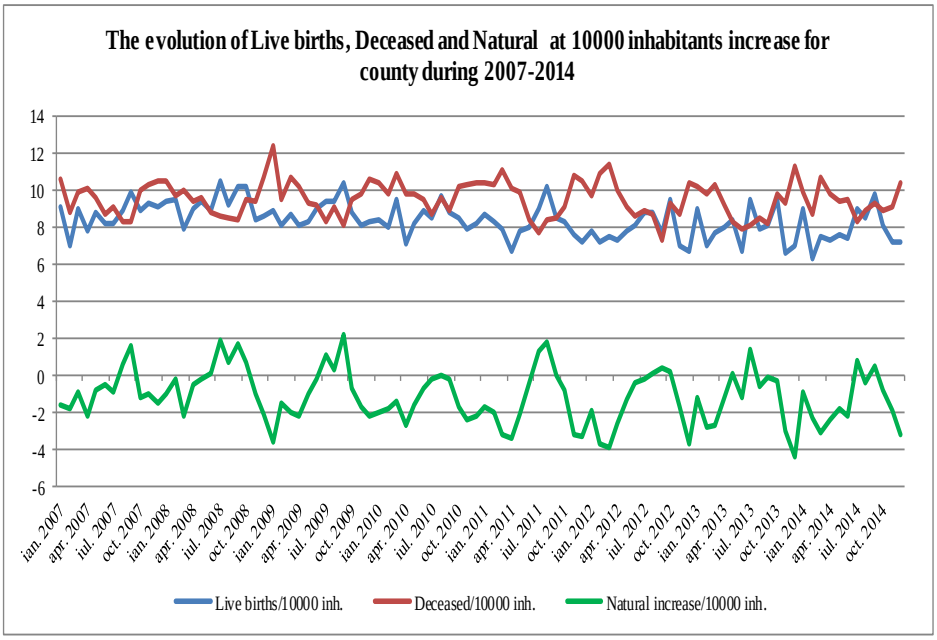

Figure 311

Regression analysis relative to indicator "Live births/10000 inh." gives us an equation: y=-0.014293814x+9.072208333 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=-0.003817146x+9.700756579 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=-0.010655792x+-0.623923246 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.": (6.33,7.7725,8.34,8.9875,10.46), for "Deceased/10000 inh.": (7.27,8.7675,9.53,10.2525,12.44) and for "Natural increase/10000 inh.": (-4.35,-2.155,-1.17,-0.1775,2.23).

The arithmetic mean and the standard deviation for "Live births/10000 inh." are: (8,0.93), for "Deceased/10000 inh.": (10,0.93) and for "Natural increase/10000

inh.": (-1,1.44). 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 [-2,0].

Percentiles length indicators analysis (Figure 312) show that, indeed the concentration is around the middle of the data.

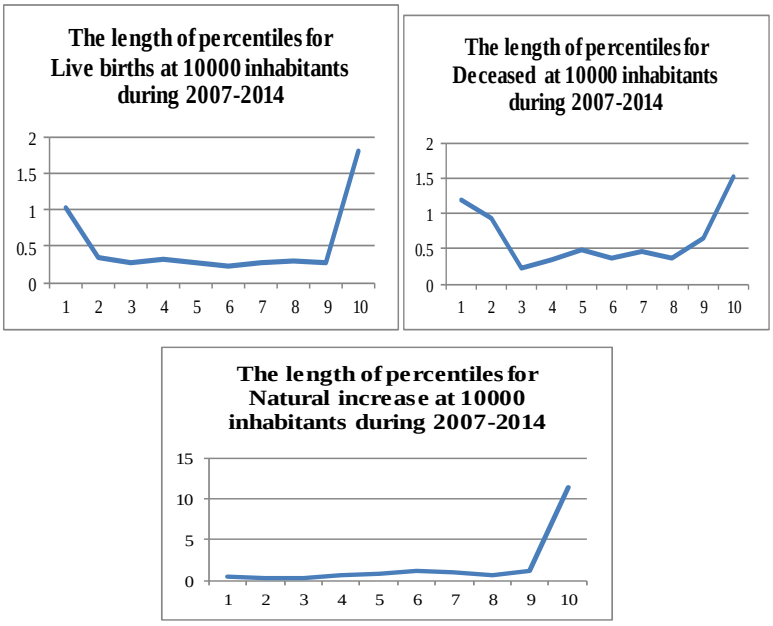

Figure 312

A comparison of the indicator "Live births" with the national level shows that it is better than the national, being better in 89.58% cases. For "Deceased" the indicator is worse than the national, being better only in 36.46% cases. Finally, for "Natural increase", the indicator is better than the national, being better in 82.29% cases.

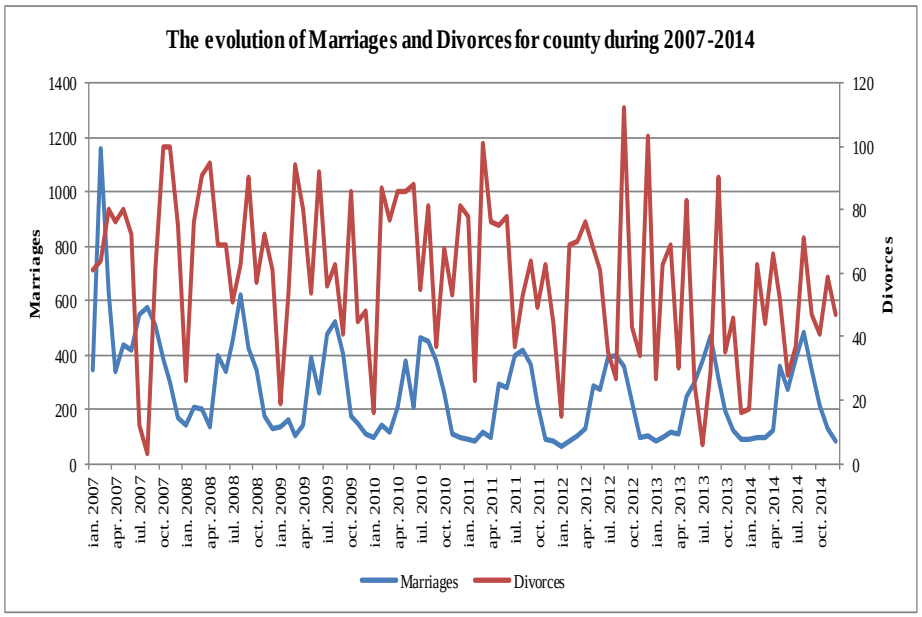

Figure 313

Regression analysis relative to indicator "Marriages" gives us an equation: y=-2.325379816x+378.6767544 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=-0.252963918x+71.63333333 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 222 and for "Divorces" is 63. Also, the distribution of quartiles is for "Marriages": (64,115,221.5,387,1159) and for "Divorces": (3,42.5,63,77.25,112). The arithmetic mean and the standard deviation for "Marriages" are: (266,174.86) and for "Divorces": (59,24.61). This means that with a probability greather than 0.68 "Marriages" are in the range [91,441] and for "Divorces" in [34,84].

Percentiles length indicators analysis (Figure 314) show that, indeed the concentration is around the middle of the data.

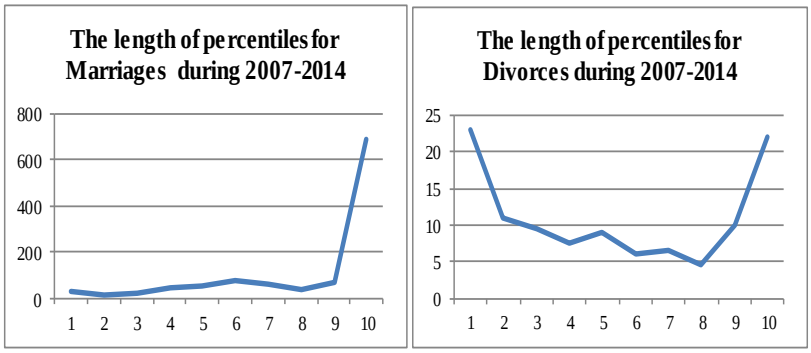

Figure 314

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 315.

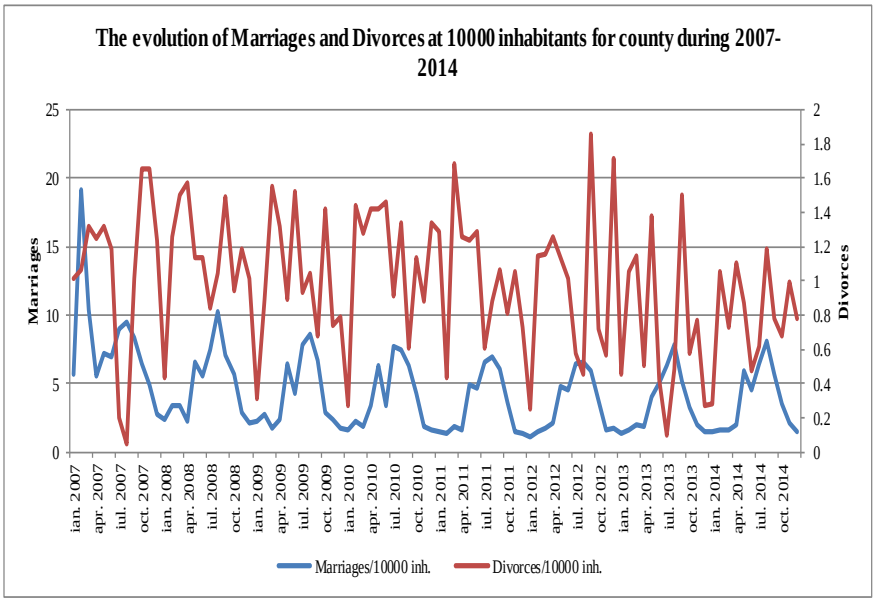

Figure 315

Regression analysis relative to indicator "Marriages/10000 inh." gives us an equation: y=-0.037880087x+6.245309211 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=-0.00407481x+1.181482456 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.": (1.06,1.9075,3.68,6.4075,19.13) and for "Divorces/10000 inh.": (0.05,0.71,1.04,1.2825,1.86). The arithmetic mean and the standard deviation for "Marriages/10000 inh." are: (4,2.89) and for "Divorces/10000 inh.": (1,0.41). 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 316) show that, indeed the concentration is around the middle of the data.

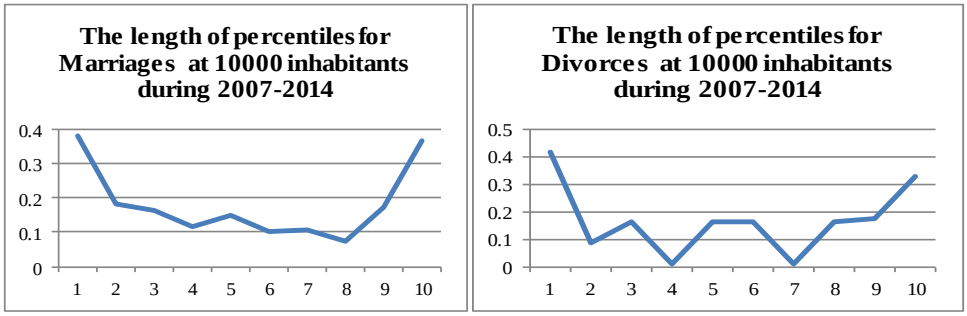

Figure 316

A comparison of the indicator "Marriages" with the national level shows that it is worse than the national, being better only in 26.04% cases. For "Divorces" the indicator is better than the national, being better in 72.92% cases.

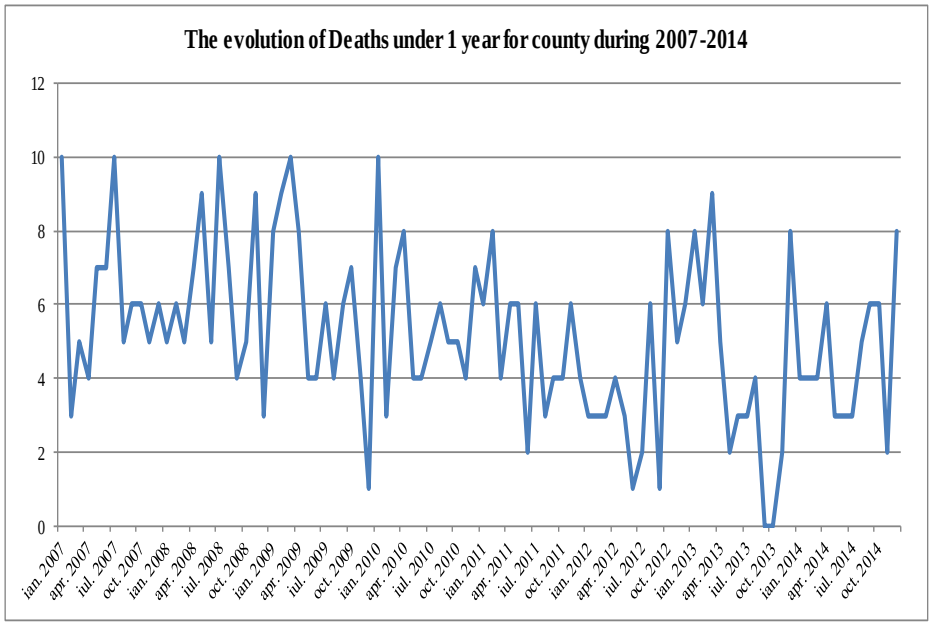

Figure 317

Regression analysis relative to indicator "Deaths under 1 year" gives us an equation: y=-0.030453066x+6.643640351 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": (0,4,5,6.25,10). The arithmetic mean and the standard deviation for "Deaths under 1 year" are: (5,2.32) which means that with a probability greather than 0.68 "Deaths under 1 year" are in the range [3,7].

Percentiles length indicators analysis (Figure 318) show that, indeed the concentration is around the middle of the data.

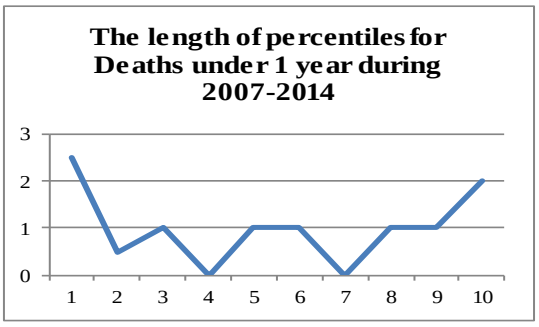

Figure 318

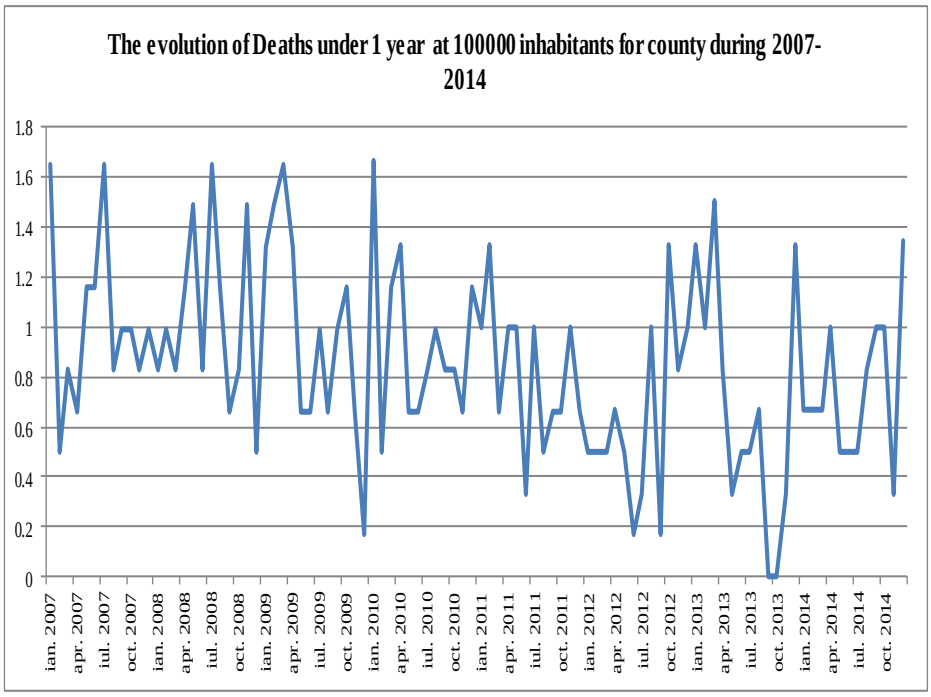

Figure 319

Regression analysis relative to indicator "Deaths under 1 year/100000 inh." gives us an equation: y=-0.004961272x+1.097809211 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.": (0,0.66,0.83,1.04,1.66). 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 43.75% cases.

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

Table 174. The evolution of Mures County GDP during 2007-2014

Year	GDP (in mil. lei 2007)	Variation (%)
2007	9510	-
2008	9816	3.22
2009	9050	-7.81
2010	8635	-4.58
2011	8576	-0.68
2012	9452	10.22
2013	9409	-0.46
2014	9823	4.41

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 2 years and the regression equation is:0.7835dGDP+-2.362. Searching dependence annual variations of "Divorces" from GDP, we find that there is a dependence of Divorces from GDP offset by 1 year and the regression equation is:-1.8414dGDP+-4.906. Searching dependence annual variations of "Deaths under 1 year" from GDP, we find that there is not a dependence of the variation of GDP.

2.30. Analysis of Natural Movement of Neamt County Population

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

Table 175. The natural movement of Neamt 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	427	639	-212	262	129	6	ian,08	521	574	-53	132	107	4
feb,07	378	511	-133	492	131	5	feb,08	460	550	-90	147	157	2
mar,07	429	475	-46	225	94	7	mar,08	437	559	-122	131	130	8
apr,07	426	530	-104	264	119	5	apr,08	429	558	-129	88	153	3
mai,07	500	514	-14	340	87	8	mai,08	455	516	-61	252	153	4
iun,07	459	438	21	273	92	7	iun,08	455	529	-74	259	73	8
iul,07	552	501	51	622	70	7	iul,08	525	452	73	483	73	4
aug,07	494	478	16	967	104	6	aug,08	466	463	3	1151	90	7
sept,07	526	406	120	563	46	4	sept,08	527	451	76	415	65	5
oct,07	471	560	-89	312	71	5	oct,08	516	579	-63	286	84	6
nov,07	435	504	-69	184	61	7	nov,08	455	541	-86	166	46	6
dec,07	445	569	-124	153	62	6	dec,08	415	648	-233	90	115	3

Source: INSSE

Table 176. The natural movement of Neamt 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	430	595	-165	134	80	6	ian,10	387	615	-228	123	57	3
feb,09	375	602	-227	185	121	1	feb,10	388	563	-175	78	86	4
mar,09	431	600	-169	80	133	1	mar,10	432	617	-185	62	133	5
apr,09	398	547	-149	79	123	3	apr,10	390	597	-207	164	95	3
mai,09	432	464	-32	285	115	6	mai,10	399	552	-153	236	95	4
iun,09	475	536	-61	203	120	2	iun,10	475	482	-7	82	152	4
iul,09	556	486	70	516	90	2	iul,10	486	558	-72	510	39	9
aug,09	523	494	29	985	95	5	aug,10	574	498	76	931	142	4
sept,09	534	485	49	421	138	2	sept,10	470	506	-36	401	82	2
oct,09	495	577	-82	260	49	4	oct,10	431	564	-133	223	60	2
nov,09	373	591	-218	141	57	3	nov,10	367	576	-209	101	47	3
dec,09	425	566	-141	90	54	4	dec,10	397	630	-233	82	92	10

Source: INSSE

Table 177. The natural movement of Neamt 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	357	615	-258	85	95	8	ian,12	346	606	-260	88	90	4
feb,11	339	539	-200	99	105	6	feb,12	365	652	-287	107	115	6
mar,11	377	615	-238	55	75	5	mar,12	369	631	-262	37	83	1
apr,11	328	564	-236	61	243	5	apr,12	354	607	-253	97	70	5
mai,11	327	560	-233	188	123	1	mai,12	426	561	-135	181	87	4
iun,11	417	459	-42	195	110	5	iun,12	414	491	-77	187	66	6
iul,11	438	455	-17	455	39	2	iul,12	478	535	-57	426	74	4
aug,11	537	458	79	838	104	1	aug,12	577	476	101	797	84	8
sept,11	469	464	5	357	122	3	sept,12	450	387	63	369	65	1
oct,11	368	536	-168	183	38	5	oct,12	464	558	-94	182	61	4
nov,11	325	549	-224	95	78	5	nov,12	394	500	-106	117	42	5

Source: INSSE

Table 178. The natural movement of Neamt 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	440	575	-135	77	91	0	ian,14	374	583	-209	97	60	8
feb,13	341	455	-114	68	96	5	feb,14	339	531	-192	109	54	3
mar,13	342	588	-246	94	103	8	mar,14	418	591	-173	67	82	4
apr,13	356	624	-268	53	62	5	apr,14	365	582	-217	55	98	2
mai,13	417	557	-140	141	83	4	mai,14	395	525	-130	213	58	6
iun,13	353	490	-137	239	85	2	iun,14	429	514	-85	181	81	3
iul,13	479	580	-101	401	43	3	iul,14	530	464	66	415	49	1
aug,13	574	465	109	847	54	6	aug,14	543	495	48	908	51	6
sept,13	480	513	-33	329	96	2	sept,14	491	523	-32	290	59	4
oct,13	470	555	-85	182	58	4	oct,14	428	551	-123	201	77	4
nov,13	376	588	-212	90	40	0	nov,14	364	525	-161	107	73	3
dec,13	354	625	-271	81	64	5	dec,14	354	630	-276	80	50	3

Source: INSSE

Table 179. The population trends of Neamt County during 2007-2014

Year	Population	Year	Population
2007	593893	2011	588809
2008	592673	2012	586824
2009	591338	2013	584895
2010	590307	2014	582445

Source: INSSE

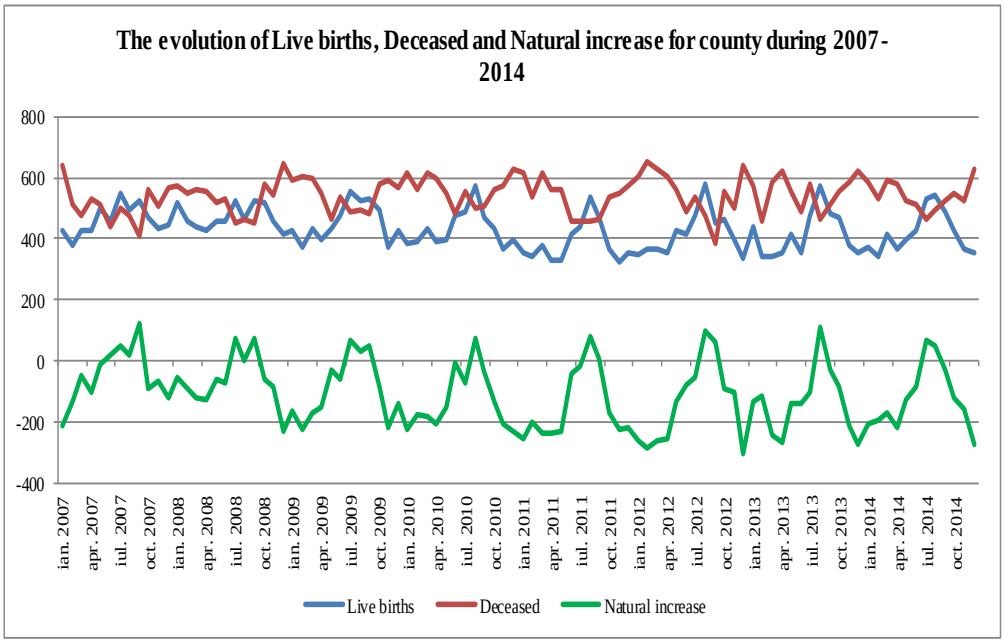

Figure 320

From figure 320 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, aug 2010, aug 2011, sept 2011, aug 2012, sept 2012, aug 2013, iul 2014, aug 2014 the natural increase was negative.

Regression analysis relative to indicator "Live births" gives us an equation: y=-0.665056972x+464.2135965 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=0.252651926x+529.4859649 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=-0.917708899x+-65.27236842 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 429, for "Deceased" is 551 and for "Natural increase": -123. 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": (325,374.75,429,475,577), for "Deceased": (387,497.25,550.5,582.25,652) and for "Natural increase": (-303,-209,-122.5,-35.25,120).

The arithmetic mean and the standard deviation for "Live births" are: (432,65.27), for "Deceased": (542,58.07) and for "Natural increase": (-110,108.12). This means that with a probability greather than 0.68 "Live births" are in the range [367,497], for "Deceased" in [484,600] and for "Natural increase" in [-218,-2].

Percentiles length indicators analysis (Figure 321) show that, indeed the concentration is around the middle of the data.

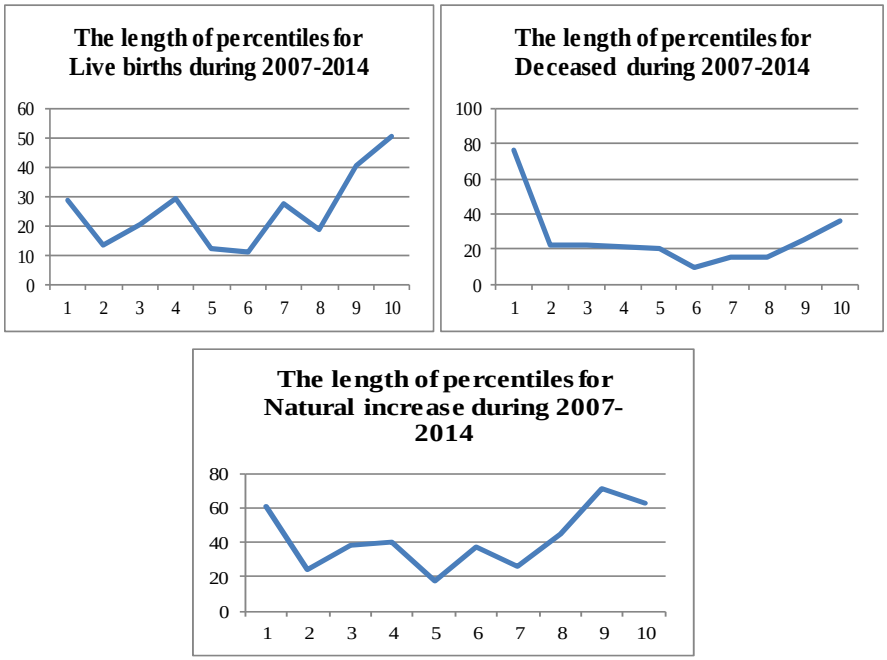

Figure 321

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 322.

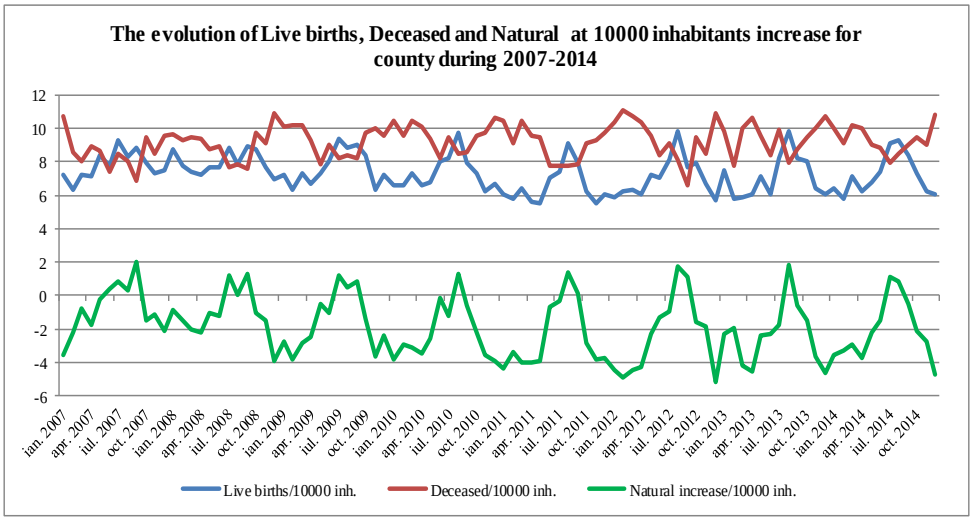

Figure 322

Regression analysis relative to indicator "Live births/10000 inh." gives us an equation: y=-0.00961191x+7.799719298 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=0.006316739x+8.893846491 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=-0.015944995x+-1.09364693 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 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.": (5.52,6.355,7.28,8.0425,9.83), for "Deceased/10000 inh.": (6.59,8.44,9.335,9.99,11.11) and for "Natural increase/10000 inh.": (-5.16,-3.5475,-2.075,-0.5975,2.02).

The arithmetic mean and the standard deviation for "Live births/10000 inh." are: (7,1.1), for "Deceased/10000 inh.": (9,0.99) and for "Natural increase/10000 inh.":

(-2,1.84). 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 [-4,0].

Percentiles length indicators analysis (Figure 323) show that, indeed the concentration is around the middle of the data.

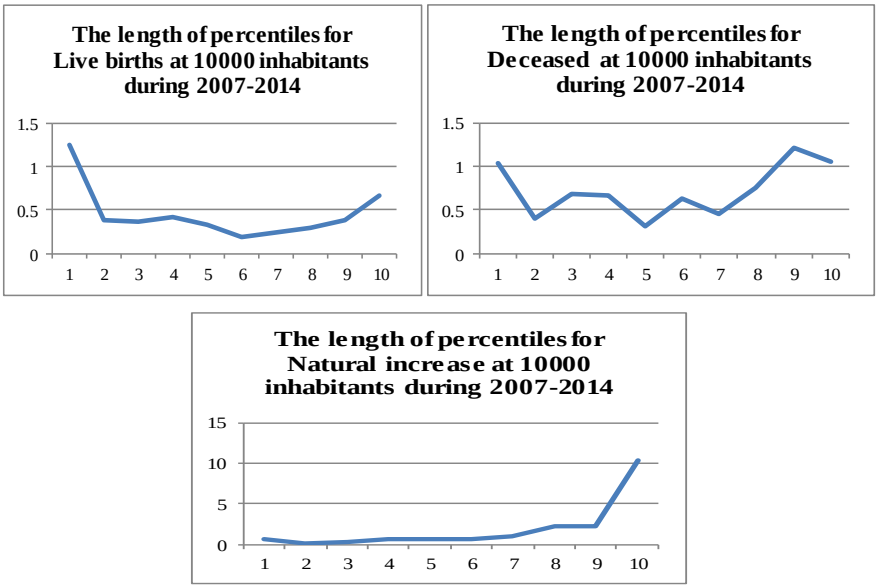

Figure 323

A comparison of the indicator “Live births” with the national level shows that it is worse than the national, being better only in 25% cases. For “Deceased” the indicator is about the same with the national, being better in 59.38% cases. Finally, for “Natural increase”, the indicator is worse than the national, being better only in 36.46% cases.

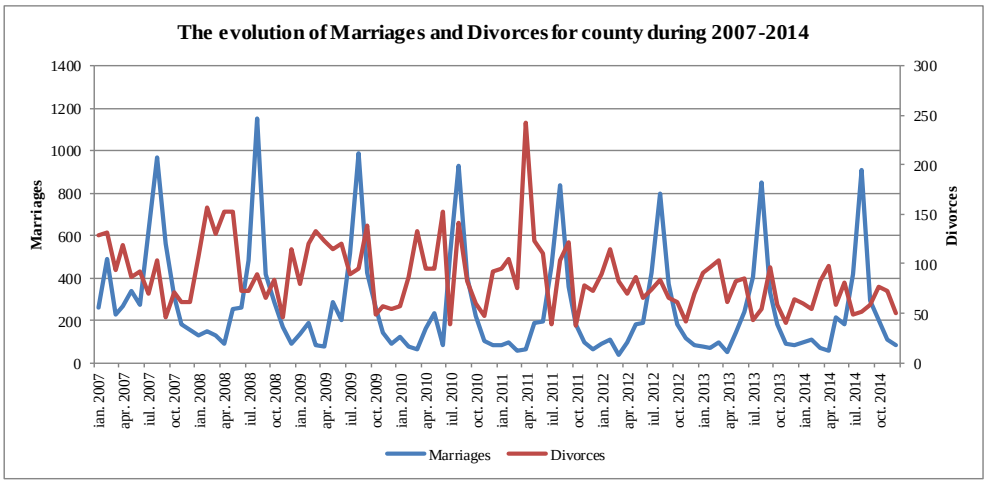

Figure 324

Regression analysis relative to indicator "Marriages" gives us an equation: y=-1.486950624x+335.6796053 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=-0.427177157x+107.6451754 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 183 and for "Divorces" is 83. Also, the distribution of quartiles is for "Marriages": (37,93,182.5,331.75,1151) and for "Divorces": (38,61,83,104.25,243). The arithmetic mean and the standard deviation for "Marriages" are: (264,241.91) and for "Divorces": (87,33.79). This means that with a probability greather than 0.68 "Marriages" are in the range [22,506] and for "Divorces" in [53,121].

Percentiles length indicators analysis (Figure 325) show that, indeed the concentration is around the middle of the data.

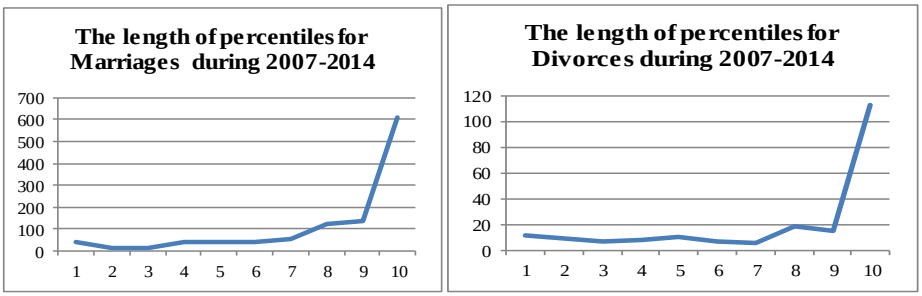

Figure 325

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 326.

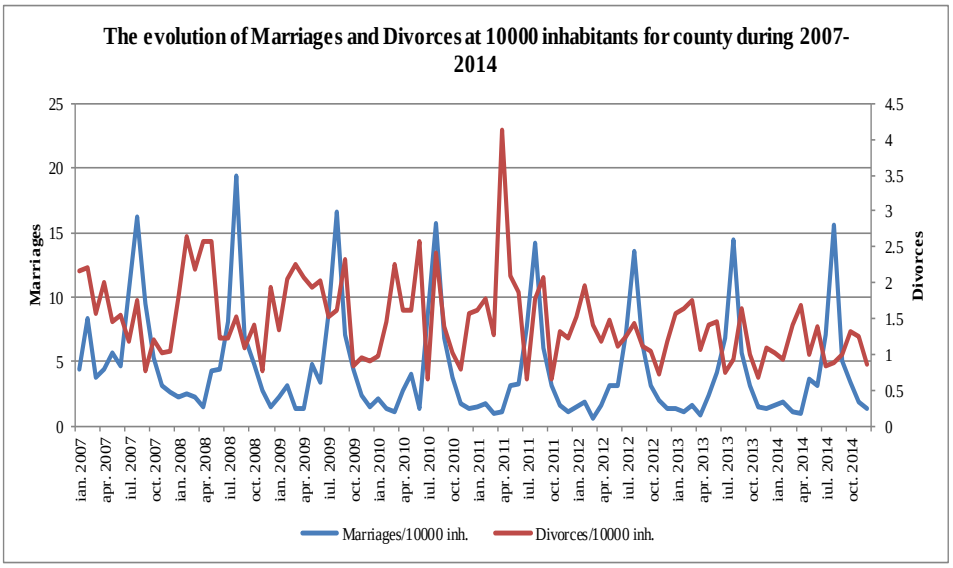

Figure 326

Regression analysis relative to indicator "Marriages/10000 inh." gives us an equation: y=-0.024184889x+5.643800439 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=-0.006949878x+1.811756579 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.": (0.63,1.5925,3.11,5.645,19.42) and for "Divorces/10000 inh.": (0.65,1.0375,1.415,1.7725,4.13). The arithmetic mean and the standard deviation for "Marriages/10000 inh." are: (4,4.1) and for "Divorces/10000 inh.": (1,0.57). 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 327) show that, indeed the concentration is around the middle of the data.

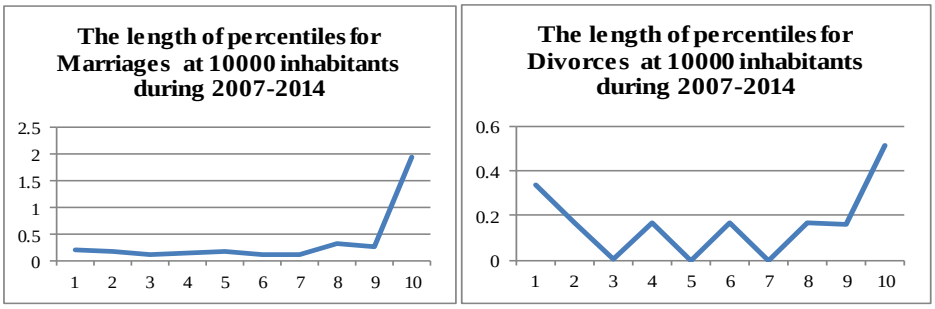

Figure 327

A comparison of the indicator "Marriages" with the national level shows that it is worse than the national, being better only in 18.75% cases. For "Divorces" the indicator is worse than the national, being better only in 26.04% cases.

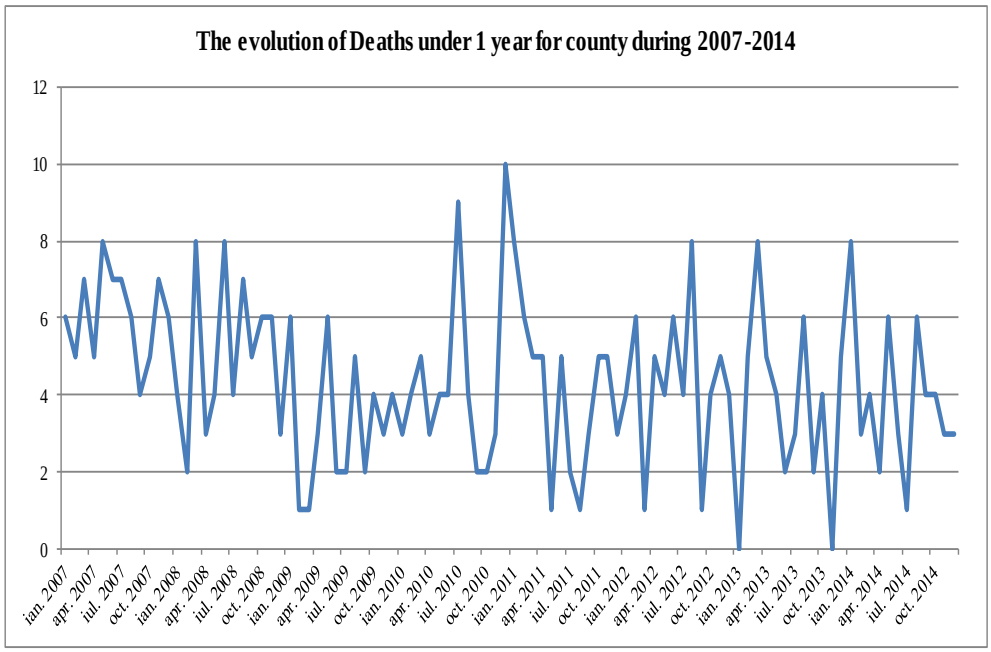

Figure 328

Regression analysis relative to indicator "Deaths under 1 year" gives us an equation: y=-0.018970429x+5.263815789 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": (0,3,4,6,10). The arithmetic mean and the standard deviation for "Deaths under 1 year" are: (4,2.1)

which means that with a probability greather than 0.68 "Deaths under 1 year" are in the range [2,6].

Percentiles length indicators analysis (Figure 329) show that, indeed the concentration is around the middle of the data.

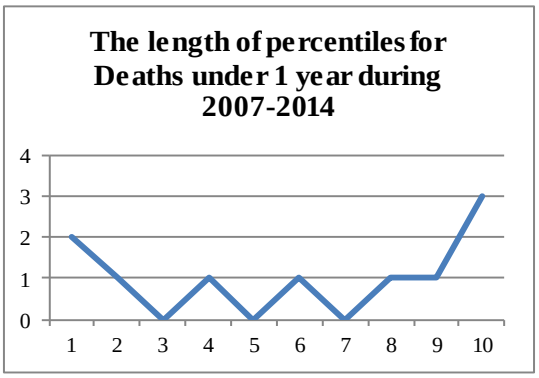

Figure 329

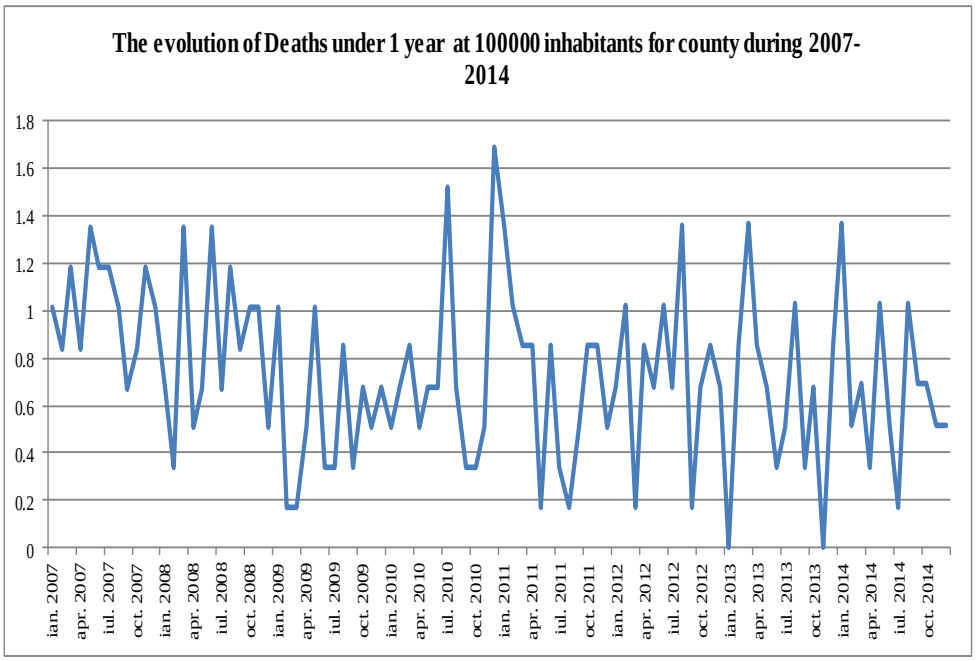

Figure 330

Regression analysis relative to indicator "Deaths under 1 year/100000 inh." gives us an equation: y=-0.003048426x+0.884932018 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.": (0,0.51,0.68,1.01,1.69). 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 about the same with the national, being better in 48.96% cases.

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

Table 180. The evolution of Neamt County GDP during 2007-2014

Year	GDP (in mil. lei 2007)	Variation (%)
2007	6517	-
2008	6592	1.16
2009	6177	-6.3
2010	5701	-7.69
2011	5722	0.36
2012	5942	3.85
2013	6093	2.54
2014	6013	-1.31

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 1 year and the regression equation is:0.8859dGDP+-0.8957. 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:1.0502dGDP+-3.3141. 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.

2.31. Analysis of Natural Movement of Olt County Population

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

Table 181. The natural movement of Olt 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	334	660	-326	376	43	6	ian,08	382	740	-358	82	4	5
feb,07	329	578	-249	576	34	4	feb,08	302	583	-281	125	48	4
mar,07	328	576	-248	300	63	3	mar,08	309	558	-249	121	63	4
apr,07	275	550	-275	273	44	5	apr,08	282	586	-304	68	86	8
mai,07	274	521	-247	267	50	8	mai,08	331	517	-186	293	68	4
iun,07	307	488	-181	274	59	1	iun,08	291	502	-211	264	33	1
iul,07	356	504	-148	370	39	5	iul,08	377	457	-80	313	19	5
aug,07	322	432	-110	402	28	5	aug,08	316	460	-144	530	75	4
sept,07	302	415	-113	427	89	1	sept,08	368	470	-102	367	19	4
oct,07	291	536	-245	438	83	1	oct,08	320	555	-235	360	57	1
nov,07	303	552	-249	248	67	3	nov,08	298	640	-342	183	87	4
dec,07	335	634	-299	135	32	4	dec,08	369	634	-265	84	58	5

Source: INSSE

Table 182. The natural movement of Olt 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	305	629	-324	67	6	6	ian,10	264	656	-392	73	0	5
feb,09	295	567	-272	117	54	3	feb,10	295	589	-294	69	58	2
mar,09	324	633	-309	71	52	3	mar,10	341	585	-244	59	54	5
apr,09	301	545	-244	114	54	5	apr,10	266	591	-325	154	50	1
mai,09	285	531	-246	257	73	3	mai,10	256	532	-276	199	71	2
iun,09	331	497	-166	198	60	3	iun,10	307	520	-213	79	58	3
iul,09	381	470	-89	320	22	5	iul,10	309	484	-175	322	24	3
aug,09	393	419	-26	423	91	2	aug,10	372	465	-93	365	89	5
sept,09	372	443	-71	338	10	3	sept,10	312	413	-101	320	13	3
oct,09	353	517	-164	342	7	6	oct,10	301	545	-244	292	31	2
nov,09	305	600	-295	156	43	1	nov,10	340	505	-165	81	36	5
dec,09	323	671	-348	77	87	3	dec,10	266	615	-349	48	115	4

Source: INSSE

Table 183. The natural movement of Olt 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	258	592	-334	59	0	4	ian,12	268	612	-344	55	3	2
feb,11	266	588	-322	58	51	1	feb,12	260	608	-348	53	35	4
mar,11	266	647	-381	43	85	0	mar,12	290	691	-401	44	30	1
apr,11	221	549	-328	58	62	2	apr,12	203	605	-402	104	45	6
mai,11	274	523	-249	174	50	4	mai,12	304	493	-189	131	51	3
iun,11	257	475	-218	155	43	0	iun,12	245	495	-250	161	57	3
iul,11	319	472	-153	308	18	4	iul,12	301	542	-241	266	15	4
aug,11	340	397	-57	353	73	5	aug,12	316	461	-145	393	64	4
sept,11	302	440	-138	301	18	0	sept,12	369	422	-53	345	27	3
oct,11	284	505	-221	224	21	0	oct,12	365	434	-69	230	27	1
nov,11	274	518	-244	84	42	1	nov,12	279	508	-229	87	21	2
dec,11	251	545	-294	60	44	2	dec,12	229	586	-357	47	35	1

Source: INSSE

Table 184. The natural movement of Olt 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	324	568	-244	58	6	2	ian,14	278	590	-312	69	1	3
feb,13	240	561	-321	48	42	3	feb,14	243	568	-325	55	44	1
mar,13	250	544	-294	62	32	3	mar,14	223	594	-371	55	52	4
apr,13	229	513	-284	63	59	3	apr,14	267	609	-342	104	44	1
mai,13	230	486	-256	162	46	3	mai,14	230	541	-311	171	42	5
iun,13	229	447	-218	178	32	3	iun,14	282	484	-202	156	25	2
iul,13	305	460	-155	230	3	1	iul,14	304	450	-146	268	15	1
aug,13	307	437	-130	386	50	2	aug,14	286	479	-193	432	60	2
sept,13	320	449	-129	278	18	4	sept,14	323	397	-74	278	10	0
oct,13	292	547	-255	218	31	2	oct,14	345	573	-228	236	25	2
nov,13	253	492	-239	105	39	5	nov,14	277	526	-249	103	35	2
dec,13	257	641	-384	45	33	1	dec,14	292	627	-335	62	21	3

Source: INSSE

Table 185. The population trends of Olt County during 2007-2014

Year	Population	Year	Population
2007	488146	2011	472009
2008	484604	2012	467951
2009	480287	2013	463568
2010	476608	2014	459212

Source: INSSE

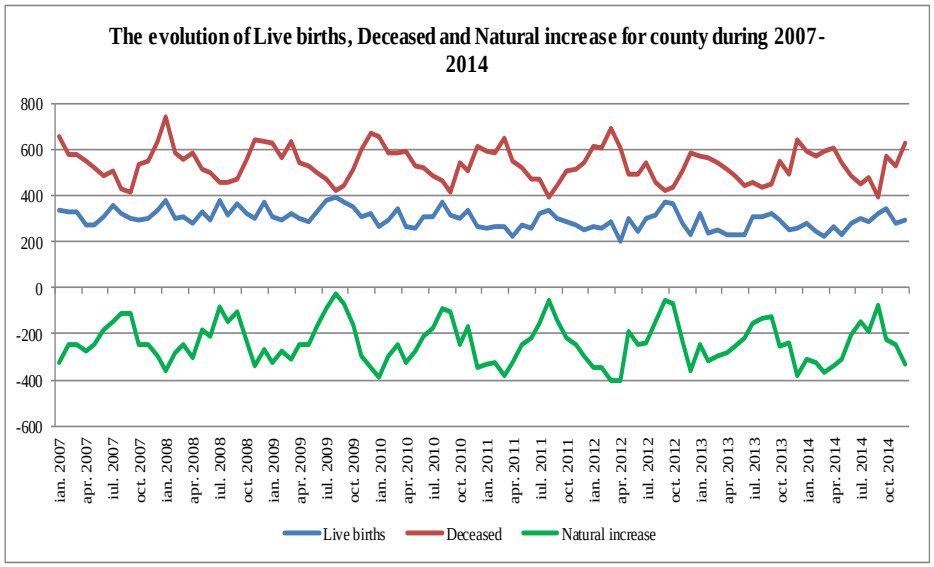

Figure 331

From figure 331 we can see a sinusoidal evolution of the indicator. #VALUE!

Regression analysis relative to indicator "Live births" gives us an equation: y=-0.634122355x+328.9320175 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=-0.371819045x+554.085307 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=-0.26230331x+-225.1532895 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 301, for "Deceased" is 539 and for "Natural increase": -247. 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": (203,266.75,301,323.25,393), for "Deceased": (397,482.75,538.5,588.25,740) and for "Natural increase": (-402,-311.25,-246.5,-165.75,-26).

The arithmetic mean and the standard deviation for "Live births" are: (298,41.63), for "Deceased": (536,72.33) and for "Natural increase": (-238,91.36). This means that with a probability greather than 0.68 "Live births" are in the range [256,340], for "Deceased" in [464,608] and for "Natural increase" in [-329,-147].

Percentiles length indicators analysis (Figure 332) show that, indeed the concentration is around the middle of the data.

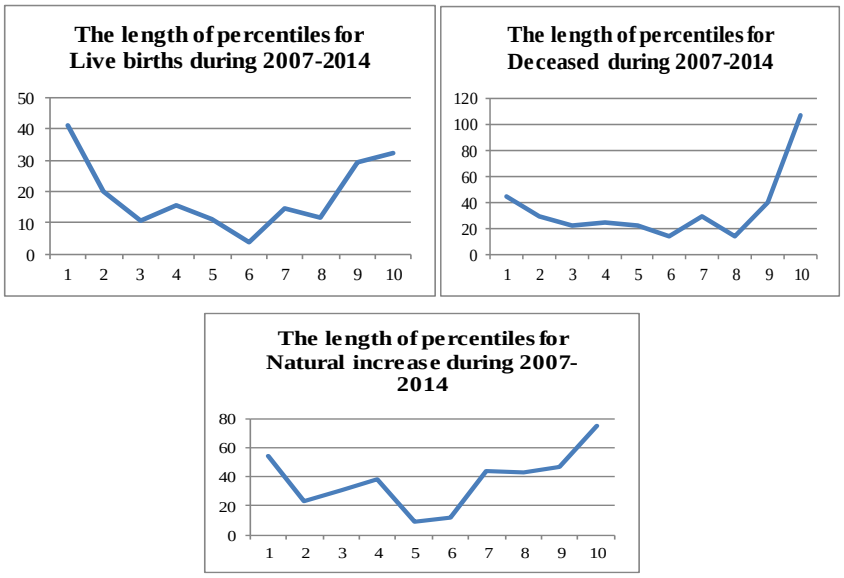

Figure 332

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 333.

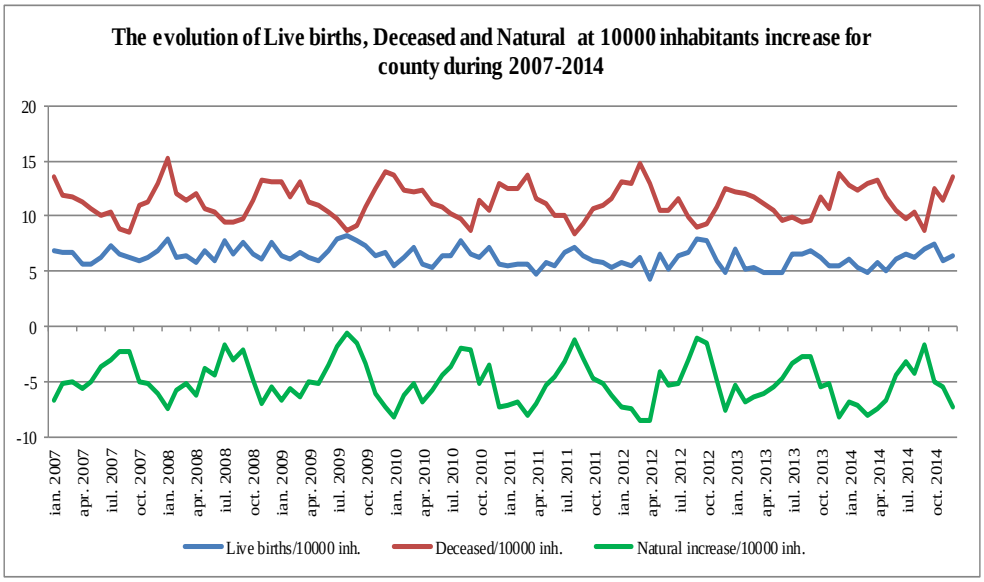

Figure 333

Regression analysis relative to indicator "Live births/10000 inh." gives us an equation: y=-0.008842037x+6.713109649 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=0.000318638x+11.29392105 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=-0.00915681x+-4.580269737 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 11 and for "Natural increase/10000 inh.": -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/10000 inh.": (4.34,5.6375,6.28,6.7525,8.18), for "Deceased/10000 inh.": (8.41,10.135,11.29,12.465,15.27) and for "Natural increase/10000 inh.": (-8.59,-6.6975,-5.13,-3.46,-0.54).

The arithmetic mean and the standard deviation for "Live births/10000 inh." are: (6,0.83), for "Deceased/10000 inh.": (11,1.52) and for "Natural increase/10000 inh.": (-5,1.95). 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 [9,13] and for "Natural increase/10000 inh." in [-7,-3].

Percentiles length indicators analysis (Figure 334) show that, indeed the concentration is around the middle of the data.

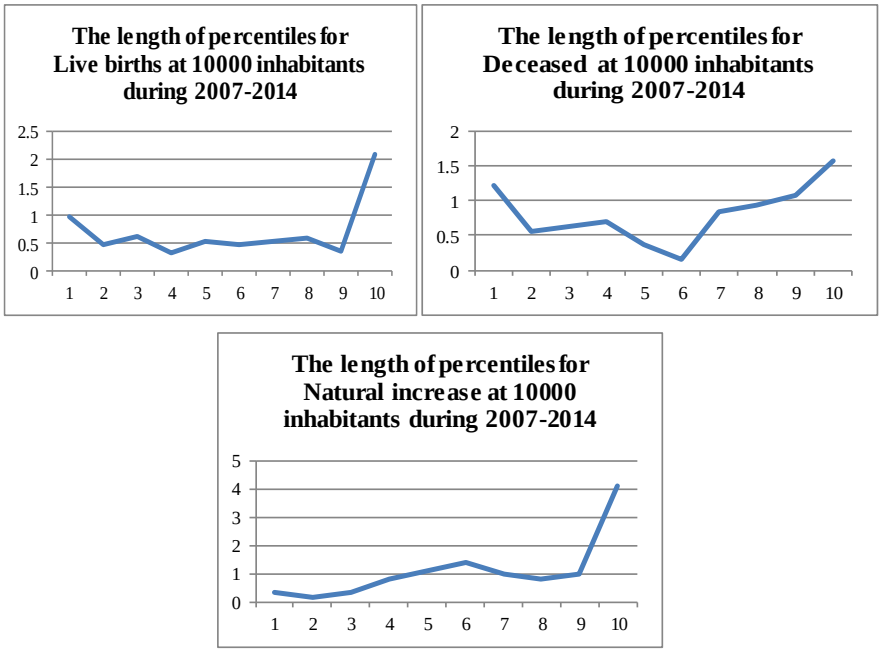

Figure 334

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 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.

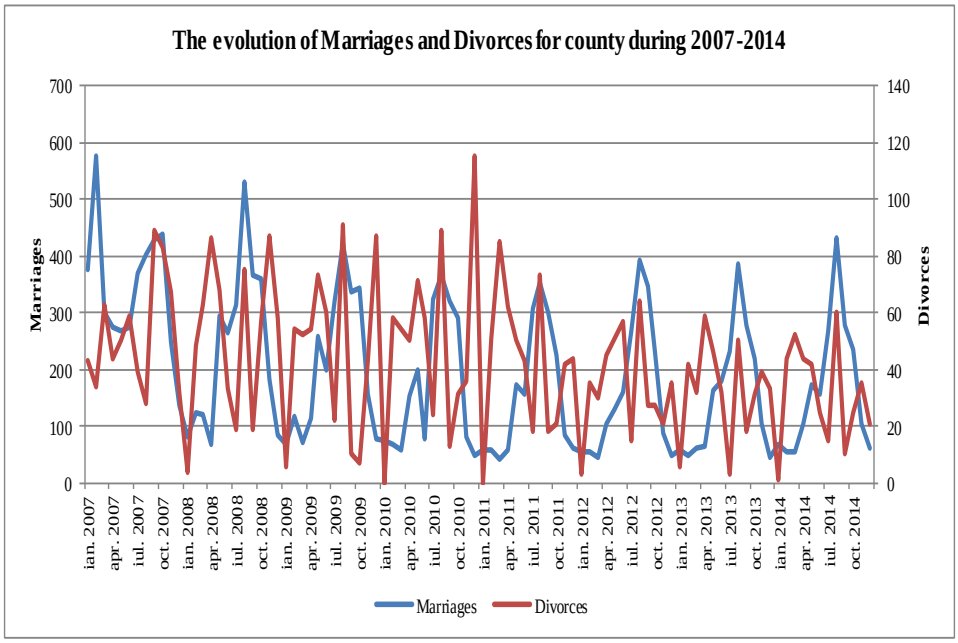

Figure 335

Regression analysis relative to indicator "Marriages" gives us an equation: y=-1.58817146x+275.2763158 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=-0.270048833x+55.68070175 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 167 and for "Divorces" is 43. Also, the distribution of quartiles is for "Marriages": (43,72.5,166.5,300.25,576) and for "Divorces": (0,24.75,43,58,115). The arithmetic mean and the standard deviation for "Marriages" are: (198,130.83) and for "Divorces": (43,24.4). This means that with a probability greather than 0.68 "Marriages" are in the range [67,329] and for "Divorces" in [19,67].

Percentiles length indicators analysis (Figure 336) show that, indeed the concentration is around the middle of the data.

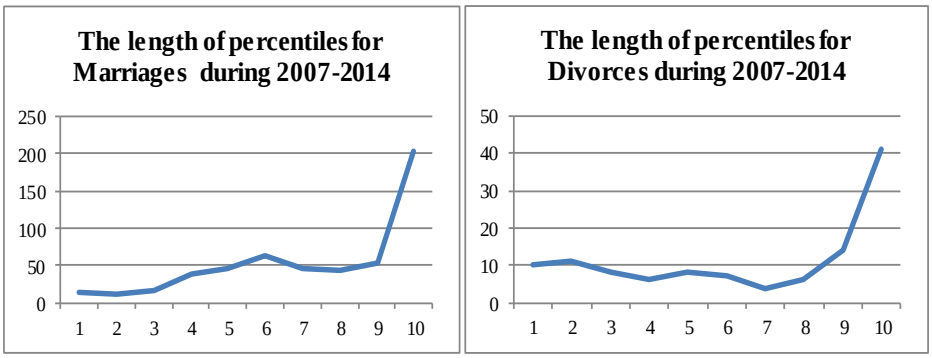

Figure 336

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 337.

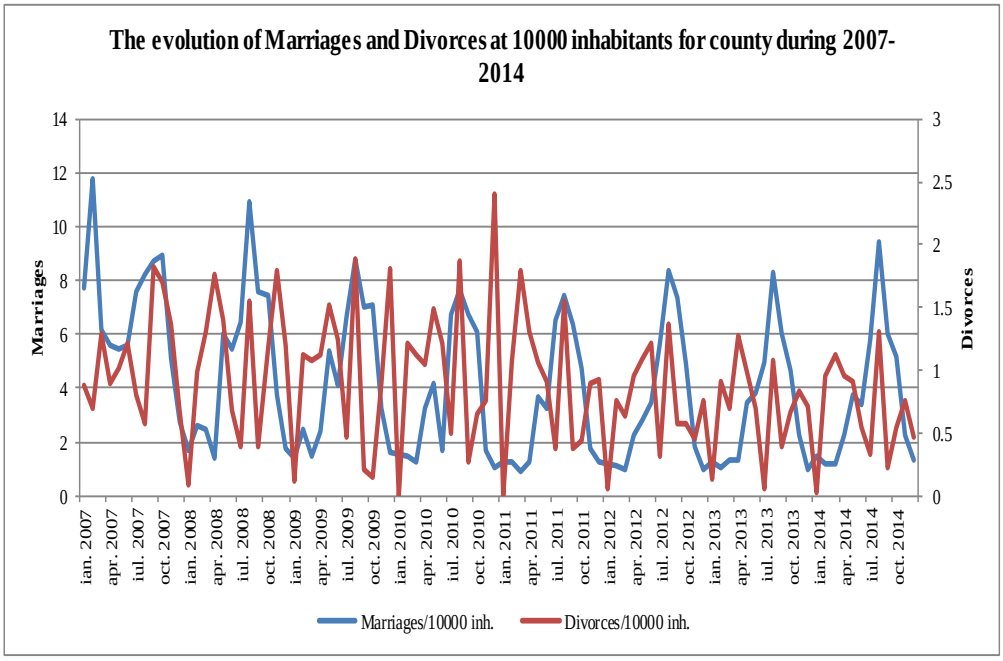

Figure 337

Regression analysis relative to indicator "Marriages/10000 inh." gives us an equation: y=-0.030085458x+5.623311404 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=-0.005066196x+1.140710526 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.": (0.91,1.5225,3.59,6.2075,11.8) and for "Divorces/10000 inh.": (0,0.53,0.905,1.22,2.41). The arithmetic mean and the standard deviation for "Marriages/10000 inh." are: (4,2.72) and for "Divorces/10000 inh.": (1,0.51). 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 338) show that, indeed the concentration is around the middle of the data.

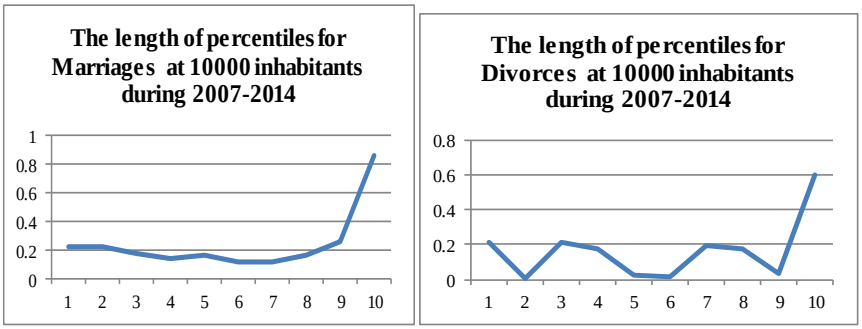

Figure 338

A comparison of the indicator "Marriages" with the national level shows that it is worse than the national, being better only in 17.71% cases. For "Divorces" the indicator is better than the national, being better in 73.96% cases.

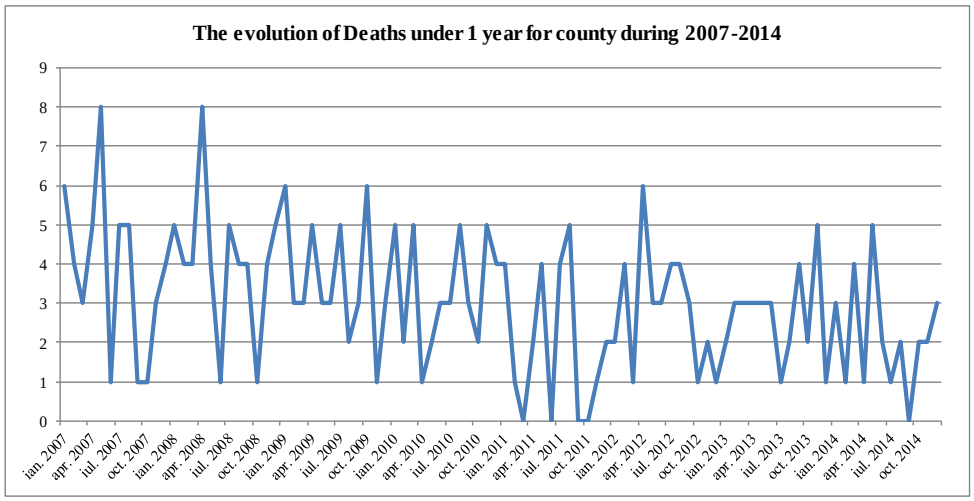

Figure 339

Regression analysis relative to indicator "Deaths under 1 year" gives us an equation: y=-0.023379002x+4.185964912 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": (0,2,3,4,8). The arithmetic mean and the standard deviation for "Deaths under 1 year" are: (3,1.74) 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 340) show that, indeed the concentration is around the middle of the data.

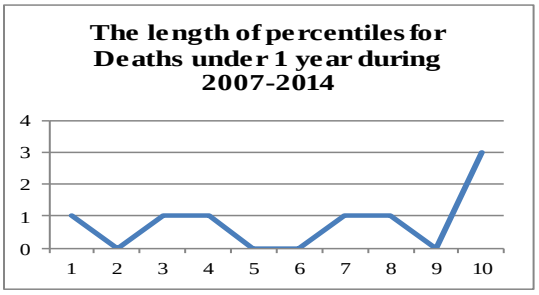

Figure 340

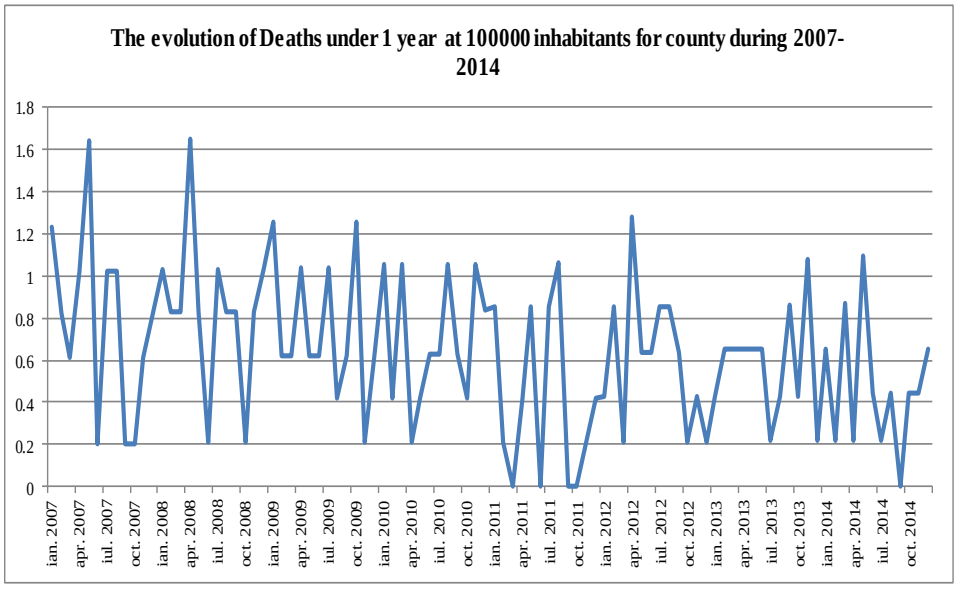

Figure 341

Regression analysis relative to indicator "Deaths under 1 year/100000 inh." gives us an equation: y=-0.004434685x+0.856436404 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.": (0,0.42,0.635,0.85,1.65). 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 better than the national, being better in 64.58% cases.

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

Table 186. The evolution of Olt County GDP during 2007-2014

Year	GDP (in mil. lei 2007)	Variation (%)
2007	5453	-
2008	5769	5.8
2009	5050	-12.47
2010	5618	11.26
2011	5439	-3.19
2012	5558	2.18
2013	5572	0.26
2014	5752	3.23

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 in the current year and the regression equation is: 0.7436dGDP+1.4146. 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.

2.32. Analysis of Natural Movement of Prahova County Population

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

Table 187. The natural movement of Prahova 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	615	967	-352	290	176	10	ian,08	712	874	-162	146	23	3
feb,07	551	818	-267	534	133	3	feb,08	619	865	-246	236	204	5
mar,07	585	855	-270	335	101	6	mar,08	599	799	-200	241	139	5
apr,07	562	854	-292	470	159	7	apr,08	555	878	-323	147	74	8
mai,07	603	796	-193	305	147	9	mai,08	580	781	-201	390	103	3
iun,07	638	694	-56	579	153	7	iun,08	586	733	-147	548	127	9
iul,07	712	759	-47	871	69	4	iul,08	719	750	-31	744	98	5
aug,07	732	673	59	846	77	7	aug,08	635	744	-109	1024	61	8
sept,07	662	721	-59	893	92	9	sept,08	693	720	-27	723	48	8
oct,07	640	767	-127	641	127	2	oct,08	691	835	-144	600	89	7
nov,07	637	814	-177	326	206	2	nov,08	559	879	-320	310	242	9
dec,07	633	894	-261	209	133	4	dec,08	631	902	-271	157	307	11

Source: INSSE

Table 188. The natural movement of Prahova 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	619	993	-374	159	21	8	ian,10	596	918	-322	140	32	5
feb,09	635	812	-177	213	154	3	feb,10	568	846	-278	145	79	5
mar,09	631	985	-354	134	196	5	mar,10	614	962	-348	98	126	9
apr,09	571	845	-274	209	208	6	apr,10	540	792	-252	331	137	10
mai,09	581	827	-246	324	131	2	mai,10	567	821	-254	279	83	3
iun,09	640	812	-172	428	182	9	iun,10	613	819	-206	178	87	0
iul,09	765	738	27	728	129	5	iul,10	623	718	-95	689	40	4
aug,09	731	758	-27	784	141	10	aug,10	676	790	-114	616	86	6
sept,09	768	708	60	709	161	5	sept,10	631	750	-119	594	63	8
oct,09	753	845	-92	581	53	8	oct,10	553	826	-273	420	194	4
nov,09	585	815	-230	257	48	5	nov,10	637	808	-171	170	152	6
dec,09	628	974	-346	129	57	4	dec,10	579	913	-334	114	166	7

Source: INSSE

Table 189. The natural movement of Prahova 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	548	927	-379	122	14	7	ian,12	538	919	-381	125	24	6
feb,11	492	833	-341	147	158	5	feb,12	529	1029	-500	124	143	2
mar,11	527	962	-435	87	162	6	mar,12	484	981	-497	108	82	4
apr,11	432	865	-433	169	142	4	apr,12	449	855	-406	222	97	7
mai,11	529	821	-292	210	190	2	mai,12	584	827	-243	205	133	5
iun,11	567	733	-166	361	95	5	iun,12	509	817	-308	391	81	8
iul,11	537	778	-241	617	163	7	iul,12	615	847	-232	529	62	7
aug,11	676	747	-71	593	104	5	aug,12	653	747	-94	648	97	7
sept,11	577	687	-110	569	65	0	sept,12	560	670	-110	682	77	3
oct,11	591	801	-210	374	65	7	oct,12	600	792	-192	399	57	4
nov,11	505	767	-262	162	74	10	nov,12	501	814	-313	188	71	5
dec,11	517	875	-358	114	133	9	dec,12	456	859	-403	115	90	4

Source: INSSE

Table 190. The natural movement of Prahova 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	564	864	-300	98	11	4	ian,14	568	900	-332	114	11	7
feb,13	444	834	-390	130	85	5	feb,14	459	847	-388	148	93	1
mar,13	454	903	-449	151	139	4	mar,14	463	915	-452	139	94	5
apr,13	507	905	-398	102	112	2	apr,14	535	791	-256	162	125	1
mai,13	473	742	-269	171	147	3	mai,14	503	802	-299	280	104	1
iun,13	460	794	-334	461	72	2	iun,14	534	690	-156	362	110	2
iul,13	626	725	-99	494	67	3	iul,14	682	722	-40	614	149	11
aug,13	588	689	-101	762	107	5	aug,14	583	700	-117	757	53	5
sept,13	580	767	-187	485	60	4	sept,14	602	785	-183	547	50	6
oct,13	628	887	-259	419	69	5	oct,14	586	865	-279	419	59	9
nov,13	492	775	-283	211	64	4	nov,14	497	788	-291	238	106	3
dec,13	475	895	-420	137	70	2	dec,14	460	964	-504	132	86	2

Source: INSSE

Table 191. The population trends of Prahova County during 2007-2014

Year	Population	Year	Population
2007	840017	2011	830370
2008	838485	2012	826511
2009	836146	2013	821879
2010	833823	2014	817954

Source: INSSE

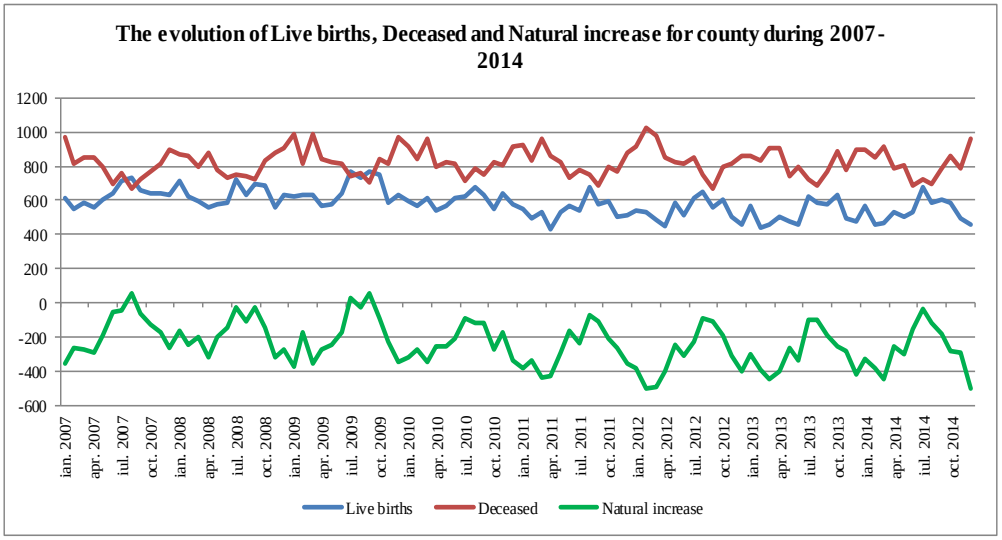

Figure 342

From figure 342 we can see a sinusoidal evolution of the indicator. Except months aug 2007, iul 2009, sept 2009 the natural increase was negative.

Regression analysis relative to indicator "Live births" gives us an equation: y=-1.490721649x+655.55 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=-0.017722463x+823.2449561 where x is the number of month (Jan, 2007=1), therefore a very small downward trend.

Regression analysis relative to indicator "Natural increase" gives us an equation: y=-1.472999186x+-167.6949561 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 584, for "Deceased" is 818 and for "Natural increase": -255. 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": (432,532.75,583.5,631,768), for "Deceased": (670,765,817.5,874.25,1029) and for "Natural increase": (-504,-332.5,-255,-146.25,60).

The arithmetic mean and the standard deviation for "Live births" are: (583,77.18), for "Deceased": (822,80.71) and for "Natural increase": (-239,128.15). This means that with a probability greather than 0.68 "Live births" are in the range [506,660], for "Deceased" in [741,903] and for "Natural increase" in [-367,-111].

Percentiles length indicators analysis (Figure 343) show that, indeed the concentration is around the middle of the data.

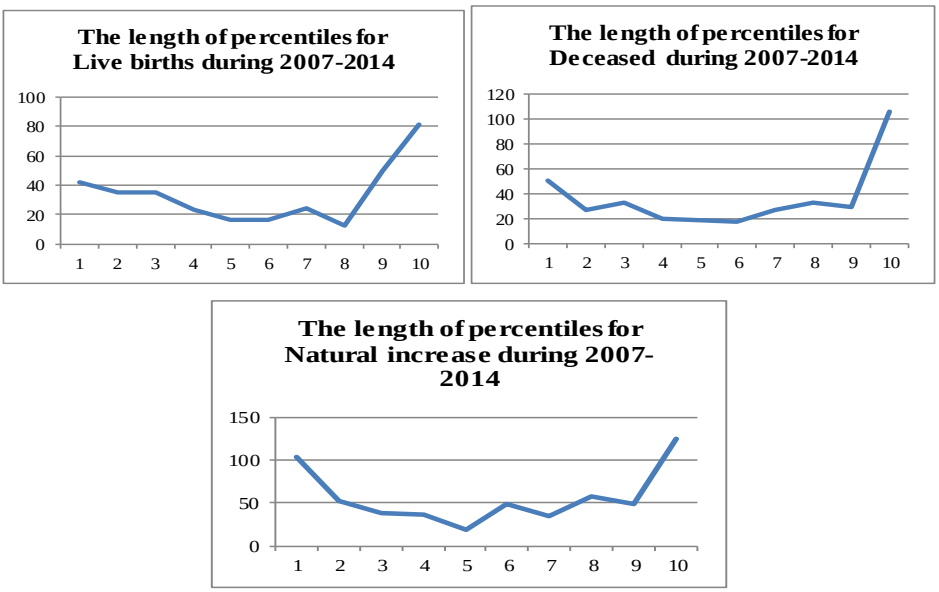

Figure 343

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 344.

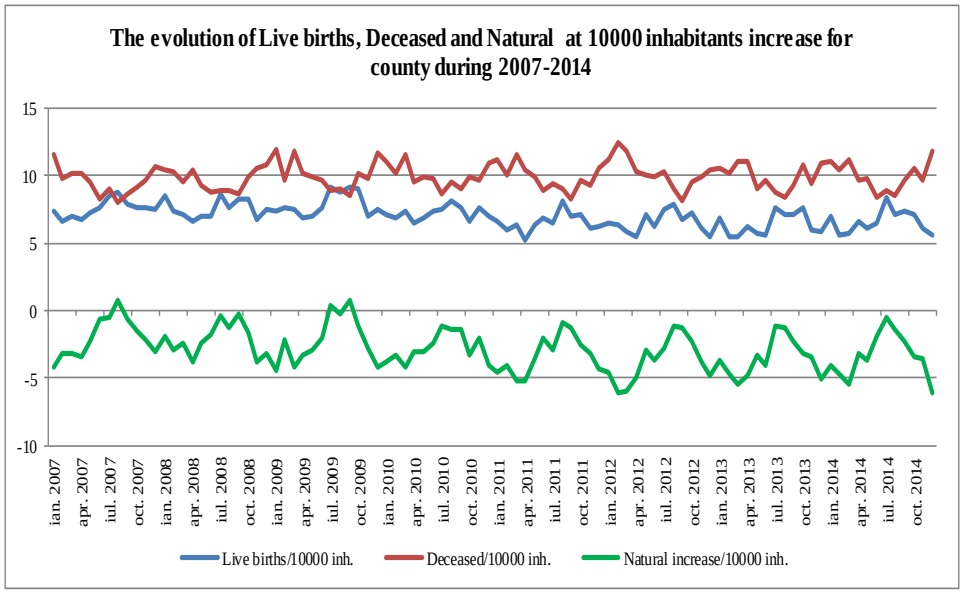

Figure 344

Regression analysis relative to indicator "Live births/10000 inh." gives us an equation: y=-0.015716766x+7.779971491 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=0.002910404x+9.760824561 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=-0.018633003x+-1.980361842 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.": (5.2,6.4525,6.995,7.57,9.18), for "Deceased/10000 inh.": (8.01,9.115,9.835,10.4875,12.45) and for "Natural increase/10000 inh.": (-6.16,-4.0225,-3.08,-1.7425,0.72).

The arithmetic mean and the standard deviation for "Live births/10000 inh." are: (7,0.9), for "Deceased/10000 inh.": (10,0.98) and for "Natural increase/10000 inh.": (-3,1.55). 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 345) show that, indeed the concentration is around the middle of the data.

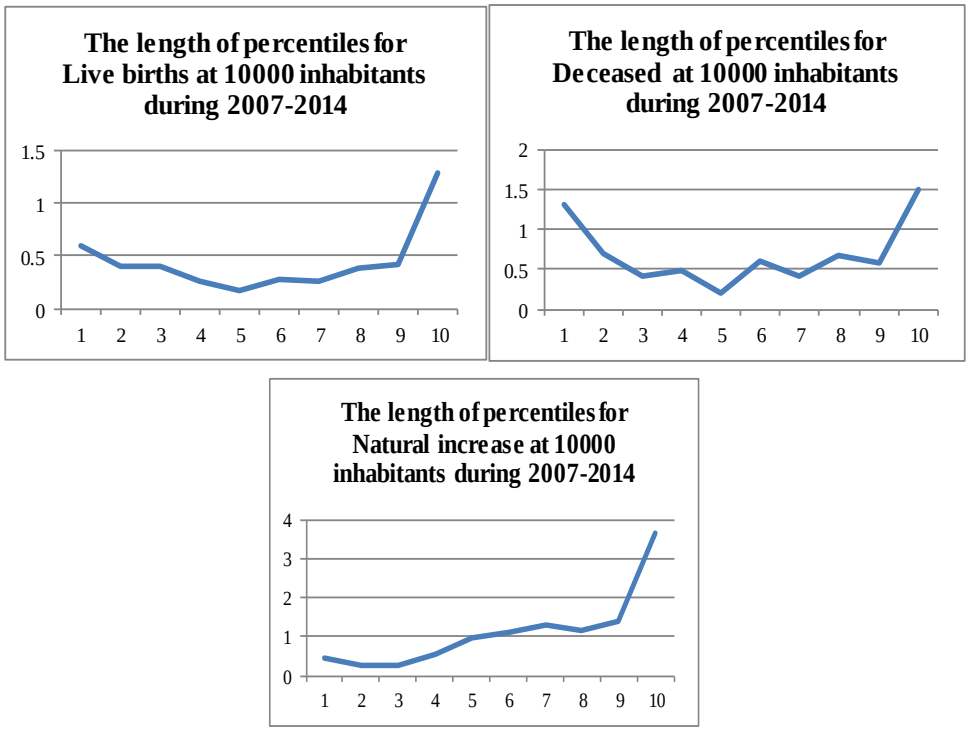

Figure 345

A comparison of the indicator "Live births" with the national level shows that it is worse than the national, being better only in 5.21% cases. For "Deceased" the indicator is worse than the national, being better only in 10.42% cases. Finally, for "Natural increase", the indicator is worse than the national, being better only in 4.17% cases.

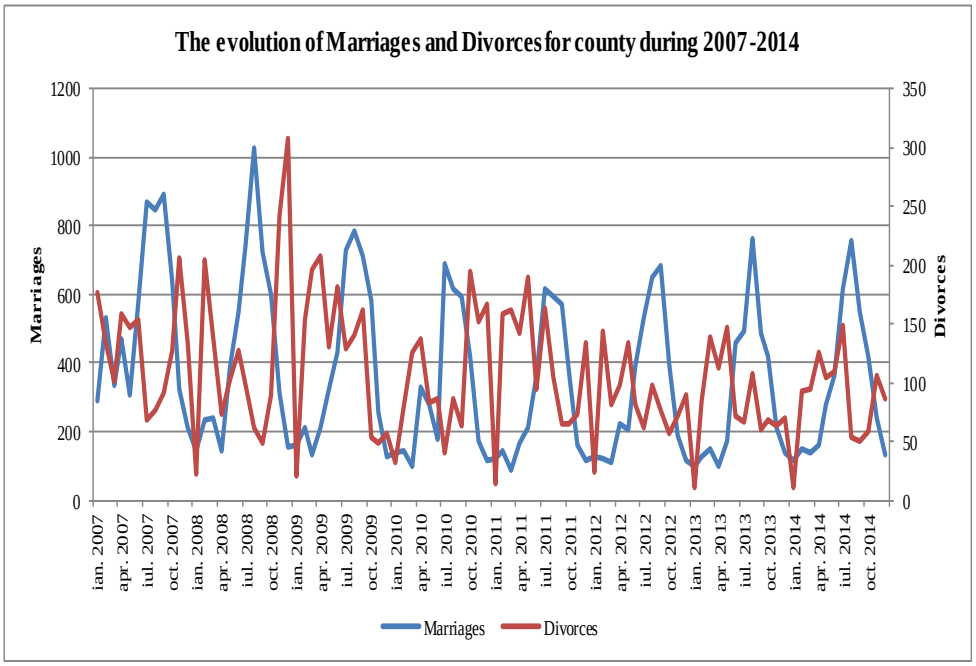

Figure 346

Regression analysis relative to indicator "Marriages" gives us an equation: y=-1.940626696x+456.4953947 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=-0.60462561x+135.9493421 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 298 and for "Divorces" is 97. Also, the distribution of quartiles is for "Marriages": (87,150.25,297.5,553.25,1024) and for "Divorces": (11,68.5,97,141.25,307). The arithmetic mean and the standard deviation for "Marriages" are: (362,234.63) and for "Divorces": (107,53.57). This means that with a probability greather than 0.68 "Marriages" are in the range [127,597] and for "Divorces" in [53,161].

Percentiles length indicators analysis (Figure 347) show that, indeed the concentration is around the middle of the data.

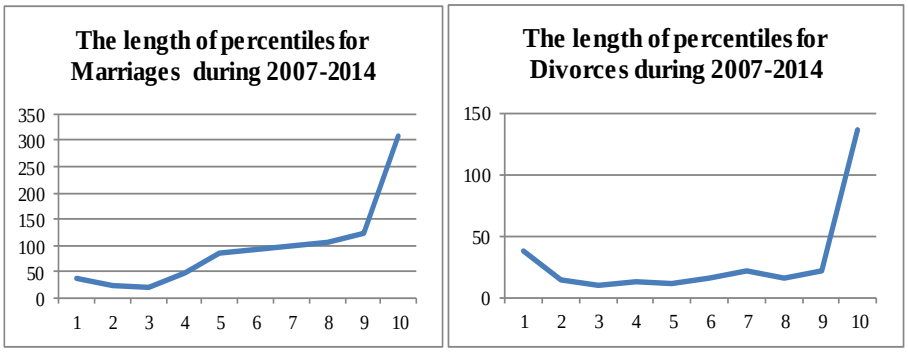

Figure 347

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 348.

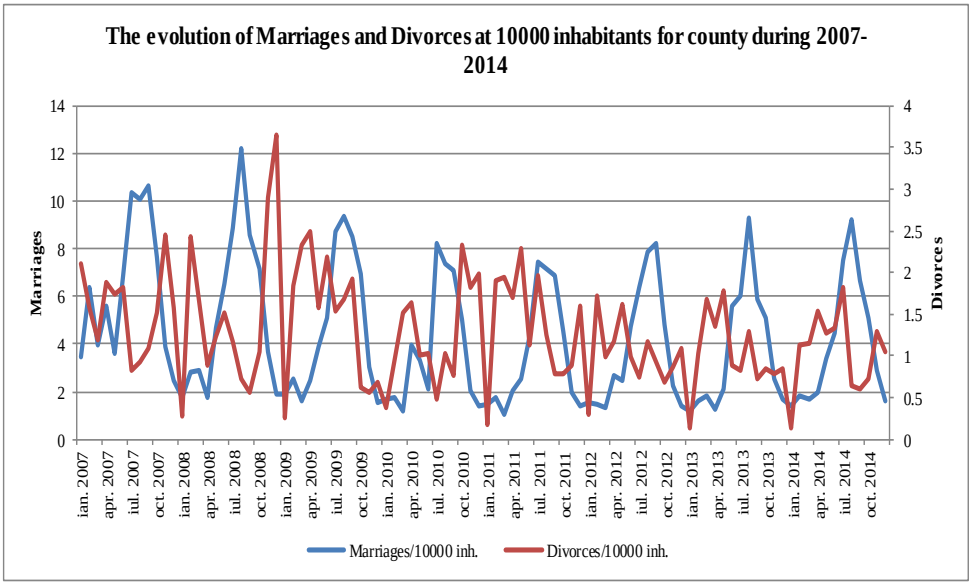

Figure 348

Regression analysis relative to indicator "Marriages/10000 inh." gives us an equation: y=-0.021872423x+5.417583333 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=-0.006878663x+1.614969298 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.": (1.05,1.8325,3.54,6.73,12.21) and for "Divorces/10000 inh.": (0.13,0.82,1.17,1.695,3.66). The arithmetic mean and the standard deviation for "Marriages/10000 inh." are: (4,2.81) and for "Divorces/10000 inh.": (1,0.64). 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 349) show that, indeed the concentration is around the middle of the data.

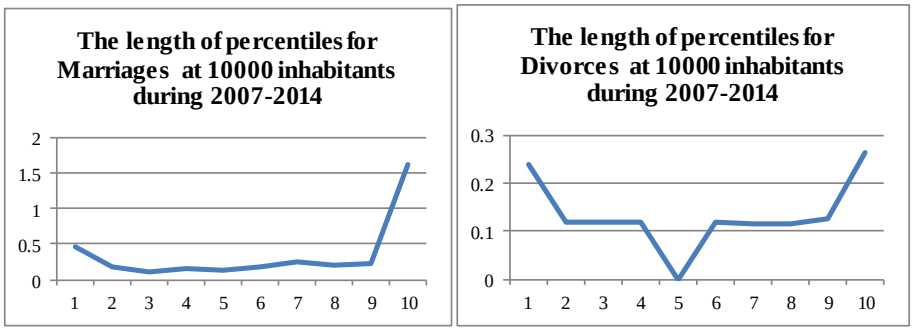

Figure 349

A comparison of the indicator "Marriages" with the national level shows that it is worse than the national, being better only in 31.25% cases. For "Divorces" the indicator is about the same with the national, being better in 46.88% cases.

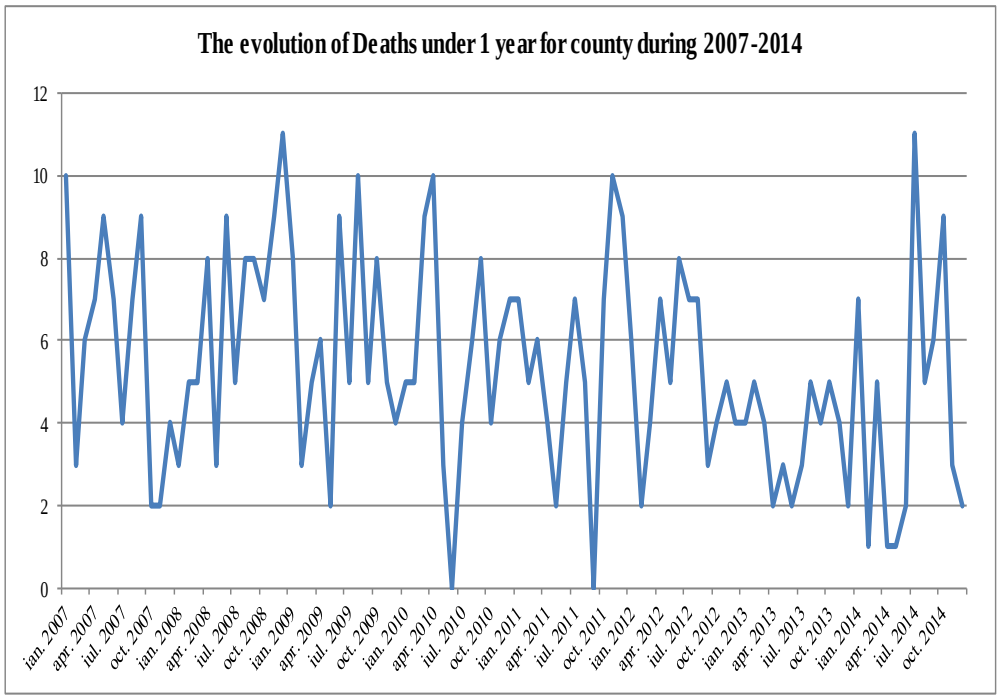

Figure 350

Regression analysis relative to indicator "Deaths under 1 year" gives us an equation: y=-0.026146229x+6.611842105 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": (0,3.75,5,7,11). The arithmetic mean and the standard deviation for "Deaths under 1 year" are: (5,2.59) 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 351) show that, indeed the concentration is around the middle of the data.

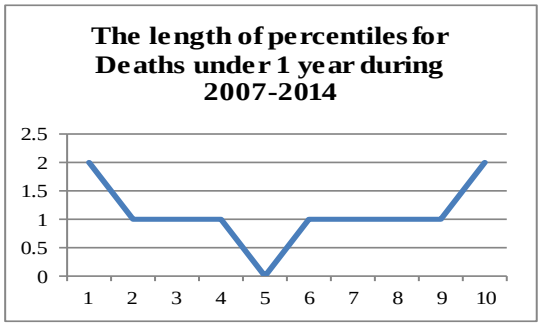

Figure 351

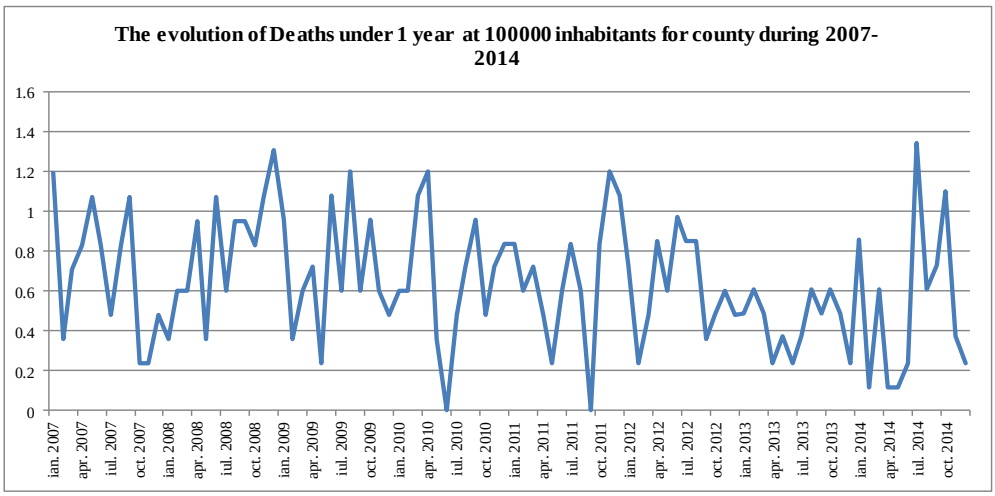

Figure 352

Regression analysis relative to indicator "Deaths under 1 year/100000 inh." gives us an equation: y=-0.002965003x+0.786094298 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.": (0,0.4525,0.6,0.85,1.34). The arithmetic mean and the standard deviation for "Deaths under 1 year/100000 inh." are: (1,0.31) 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 69.79% cases.

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

Table 192. The evolution of Prahova County GDP during 2007-2014

Year	GDP (in mil. lei 2007)	Variation (%)
2007	15689	-
2008	17154	9.34
2009	16784	-2.16
2010	14466	-13.81
2011	15628	8.03
2012	15350	-1.78
2013	18076	17.76
2014	22170	22.65

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 1 year and the regression equation is:0.4717dGDP+-3.813. Searching dependence annual variations of "Deceased" from GDP, we find that there is a dependence of Deceased from GDP offset by 2 years and the regression equation is:-0.2596dGDP+-0.6757. 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.

2.33. Analysis of Natural Movement of Salaj County Population

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

Table 193. The natural movement of Salaj 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	204	318	-114	169	26	4	ian,08	228	282	-54	70	3	1
feb,07	187	247	-60	336	32	1	feb,08	233	276	-43	72	16	4
mar,07	209	303	-94	191	25	4	mar,08	239	277	-38	74	30	2
apr,07	180	311	-131	158	41	2	apr,08	183	262	-79	53	23	2
mai,07	216	270	-54	147	31	5	mai,08	210	241	-31	180	24	4
iun,07	218	227	-9	144	24	2	iun,08	218	224	-6	105	26	1
iul,07	213	228	-15	209	19	0	iul,08	242	224	18	190	21	3
aug,07	229	210	19	236	20	1	aug,08	217	230	-13	267	22	4
sept,07	236	228	8	237	15	1	sept,08	238	258	-20	185	22	2
oct,07	217	259	-42	179	15	1	oct,08	243	275	-32	153	19	3
nov,07	207	282	-75	128	13	3	nov,08	213	248	-35	101	26	1
dec,07	198	269	-71	62	19	4	dec,08	257	315	-58	40	28	4

Source: INSSE

Table 194. The natural movement of Salaj 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	233	298	-65	59	14	4	ian,10	201	279	-78	66	23	1
feb,09	182	285	-103	83	42	3	feb,10	180	236	-56	57	33	4
mar,09	191	312	-121	51	50	1	mar,10	218	263	-45	51	39	4
apr,09	187	285	-98	34	39	0	apr,10	182	264	-82	104	37	3
mai,09	191	254	-63	175	43	4	mai,10	190	281	-91	164	39	0
iun,09	221	250	-29	96	30	7	iun,10	210	264	-54	51	28	2
iul,09	249	239	10	190	27	1	iul,10	245	252	-7	190	19	2
aug,09	263	241	22	251	27	5	aug,10	238	232	6	241	16	2
sept,09	245	219	26	201	11	3	sept,10	229	212	17	181	17	2
oct,09	198	288	-90	152	15	4	oct,10	223	253	-30	150	10	1
nov,09	195	262	-67	65	27	5	nov,10	205	249	-44	75	30	0
dec,09	195	312	-117	29	22	3	dec,10	219	288	-69	24	40	3

Source: INSSE

Table 195. The natural movement of Salaj 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	197	297	-100	36	41	2	ian,12	197	265	-68	40	33	2
feb,11	203	289	-86	46	35	0	feb,12	192	280	-88	54	34	4
mar,11	196	279	-83	29	32	3	mar,12	197	303	-106	36	32	2
apr,11	193	238	-45	46	24	0	apr,12	205	255	-50	57	35	3
mai,11	209	279	-70	140	30	3	mai,12	253	244	9	115	29	3
iun,11	194	211	-17	102	20	6	iun,12	178	234	-56	100	29	2
iul,11	205	207	-2	172	14	4	iul,12	252	257	-5	169	30	2
aug,11	242	221	21	229	19	4	aug,12	262	230	32	235	24	2
sept,11	229	222	7	169	20	5	sept,12	202	207	-5	187	22	1
oct,11	193	261	-68	119	23	1	oct,12	203	221	-18	138	32	1
nov,11	201	236	-35	48	39	3	nov,12	217	252	-35	58	27	2
dec,11	193	297	-104	27	30	0	dec,12	191	285	-94	37	34	4

Source: INSSE

Table 196. The natural movement of Salaj 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	227	285	-58	53	43	0	ian,14	209	273	-64	40	24	3
feb,13	157	256	-99	39	32	3	feb,14	189	246	-57	62	23	2
mar,13	184	261	-77	65	35	3	mar,14	203	257	-54	56	32	1
apr,13	196	262	-66	51	25	2	apr,14	185	254	-69	56	27	3
mai,13	217	251	-34	113	28	3	mai,14	176	237	-61	179	18	3
iun,13	179	195	-16	145	23	2	iun,14	217	235	-18	110	23	2
iul,13	256	244	12	168	20	1	iul,14	256	236	20	164	31	3
aug,13	262	210	52	251	11	2	aug,14	265	205	60	250	20	2
sept,13	238	224	14	134	14	1	sept,14	234	231	3	132	12	3
oct,13	207	275	-68	126	21	2	oct,14	194	252	-58	131	27	1
nov,13	195	238	-43	67	22	2	nov,14	190	244	-54	56	19	3
dec,13	225	308	-83	28	29	2	dec,14	188	280	-92	25	18	0

Source: INSSE

Table 197. The population trends of Salaj County during 2007-2014

Year	Population	Year	Population
2007	255794	2011	252234
2008	254828	2012	251166
2009	254246	2013	250344
2010	253210	2014	249405

Source: INSSE

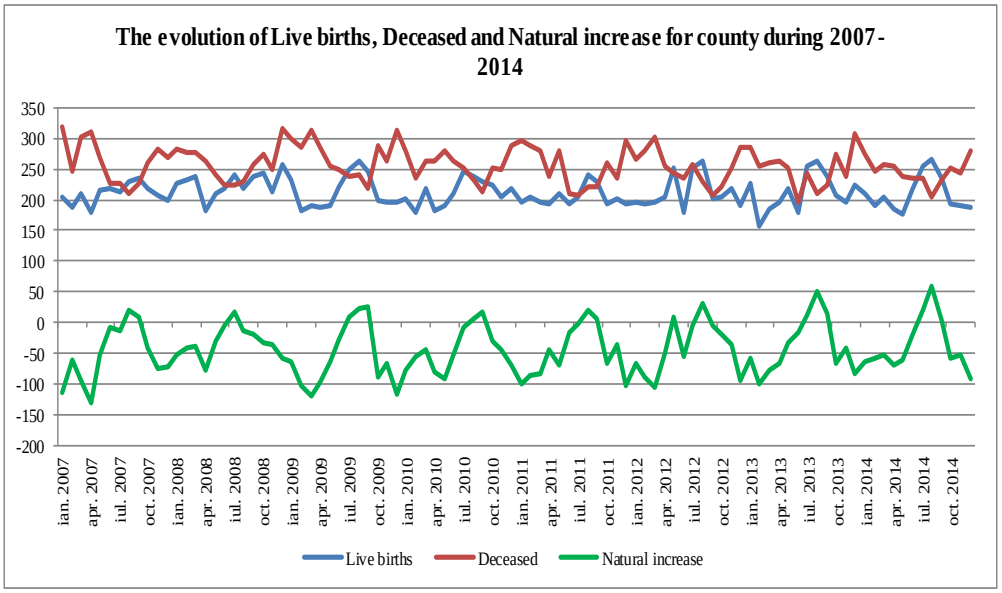

Figure 353

From figure 353 we can see a sinusoidal evolution of the indicator. Except months aug 2007, sept 2007, iul 2008, iul 2009, aug 2009, sept 2009, aug 2010, sept 2010, aug 2011, sept 2011, mai 2012, aug 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=-0.05846446x+215.1063596 where x is the number of month (Jan, 2007=1), therefore a very small downward trend.

Regression analysis relative to indicator "Deceased" gives us an equation: y=-0.238435974x+267.9287281 where x is the number of month (Jan, 2007=1), therefore a downward trend.

Regression analysis relative to indicator "Natural increase" gives us an equation: y=0.179971514x+-52.82236842 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 208, for "Deceased" is 255 and for "Natural increase": -54. 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": (157,193.75,208,229,265), for "Deceased": (195,235.75,254.5,279,318) and for "Natural increase": (-131,-72,-54,-12,60).

The arithmetic mean and the standard deviation for "Live births" are: (212,24.04), for "Deceased": (256,28.83) and for "Natural increase": (-44,41.97). This means that with a probability greather than 0.68 "Live births" are in the range [188,236], for "Deceased" in [227,285] and for "Natural increase" in [-86,-2].

Percentiles length indicators analysis (Figure 354) show that, indeed the concentration is around the middle of the data.

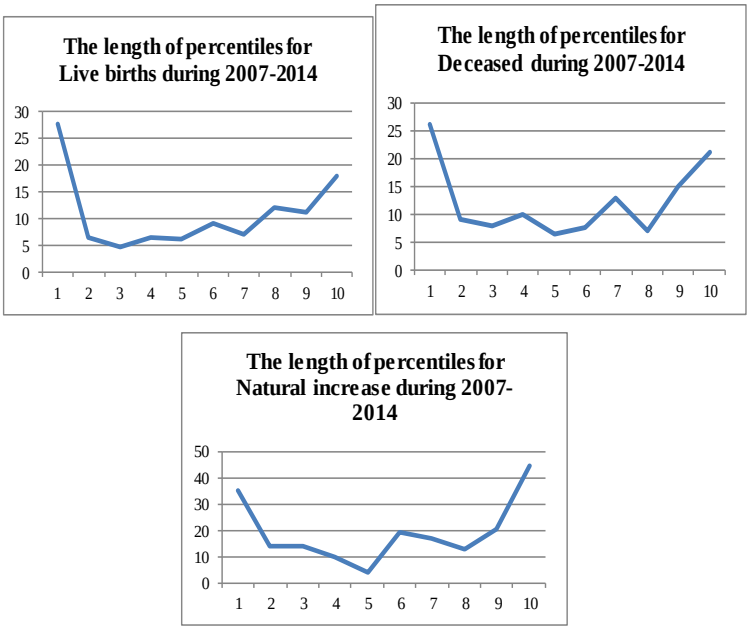

Figure 354

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 355.

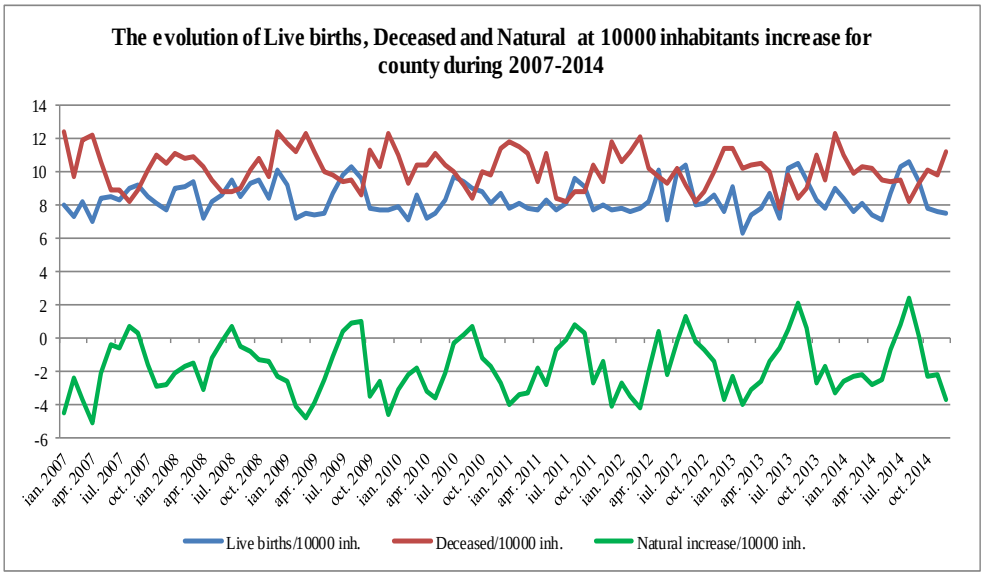

Figure 355

Regression analysis relative to indicator "Live births/10000 inh." gives us an equation: y=0.000207406x+8.391607456 where x is the number of month (Jan, 2007=1), therefore a very small upward trend.

Regression analysis relative to indicator "Deceased/10000 inh." gives us an equation: y=-0.006422273x+10.45689693 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=0.006600312x+-2.064802632 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 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.": (6.27,7.665,8.205,9.0725,10.63), for "Deceased/10000 inh.": (7.79,9.35,10.125,11.03,12.43) and for "Natural increase/10000 inh.": (-5.12,-2.8175,-2.115,-0.47,2.41).

The arithmetic mean and the standard deviation for "Live births/10000 inh." are: (8,0.95), for "Deceased/10000 inh.": (10,1.12) and for "Natural increase/10000 inh.": (-2,1.66). 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 [-4,0].

Percentiles length indicators analysis (Figure 356) show that, indeed the concentration is around the middle of the data.

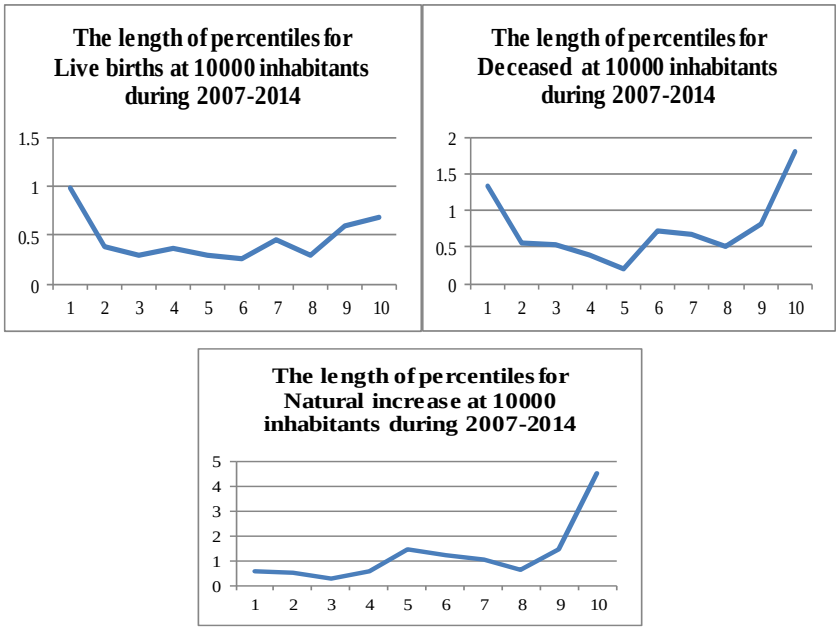

Figure 356

A comparison of the indicator "Live births" with the national level shows that it is better than the national, being better in 88.54% cases. For "Deceased" the indicator is worse than the national, being better only in 9.38% cases. Finally, for "Natural increase", the indicator is about the same with the national, being better in 59.38% cases.

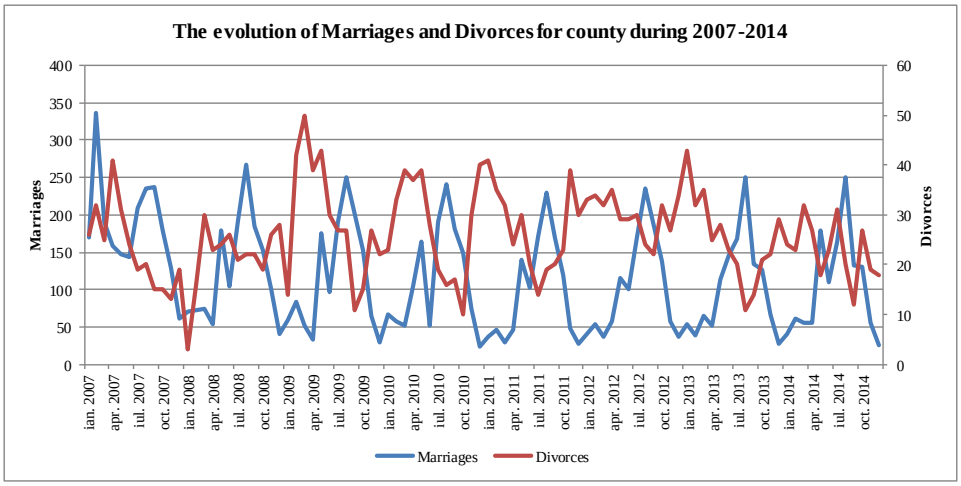

Figure 357

Regression analysis relative to indicator "Marriages" gives us an equation: y=-0.640816603x+148.9546053 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=0.004252577x+25.65833333 where x is the number of month (Jan, 2007=1), therefore an upward trend.

For the set of values above, the median indicator for "Marriages" is 108 and for "Divorces" is 26. Also, the distribution of quartiles is for "Marriages": (24,55.5,107.5,169.75,336) and for "Divorces": (3,20,25.5,32,50). The arithmetic mean and the standard deviation for "Marriages" are: (118,70.96) and for "Divorces": (26,8.67). This means that with a probability greather than 0.68 "Marriages" are in the range [47,189] and for "Divorces" in [17,35].

Percentiles length indicators analysis (Figure 358) show that, indeed the concentration is around the middle of the data.

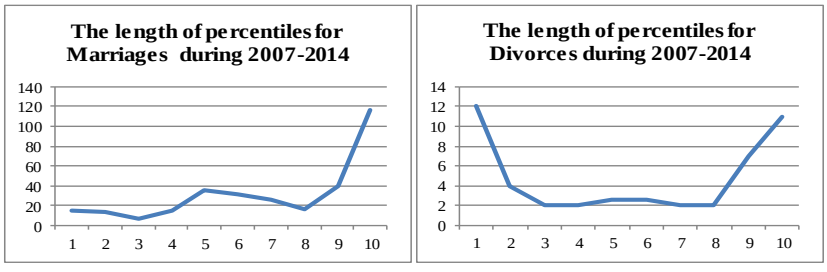

Figure 358

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 359.

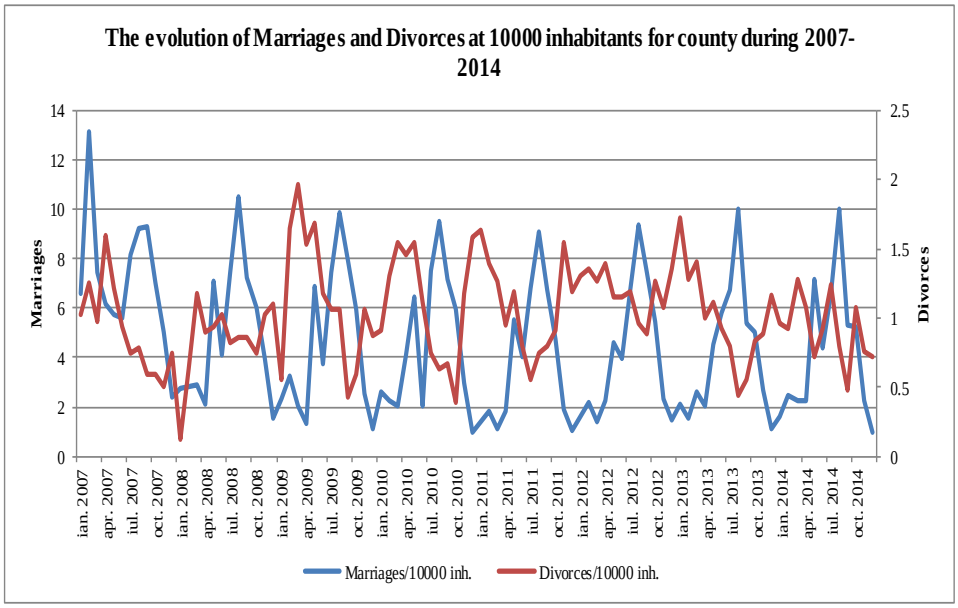

Figure 359

Regression analysis relative to indicator "Marriages/10000 inh." gives us an equation: y=-0.023821148x+5.815221491 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=0.000438416x+1.002070175 where x is the number of month (Jan, 2007=1), therefore a very small upward 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.": (0.95,2.225,4.265,6.7525,13.14) and for "Divorces/10000 inh.": (0.12,0.7875,1.01,1.255,1.97). The arithmetic mean and the standard deviation for "Marriages/10000 inh." are: (5,2.8) and for "Divorces/10000 inh.": (1,0.34). 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 360) show that, indeed the concentration is around the middle of the data.

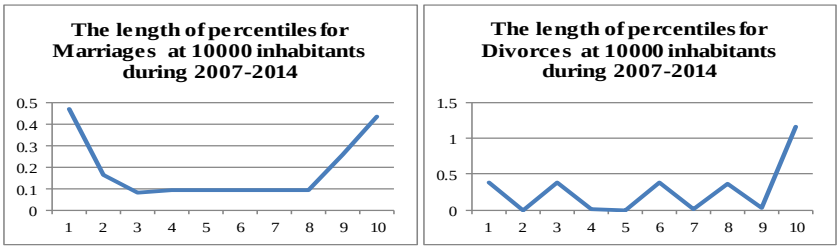

Figure 360

A comparison of the indicator "Marriages" with the national level shows that it is about the same with the national, being better in 47.92% cases. For "Divorces" the indicator is better than the national, being better in 66.67% cases.

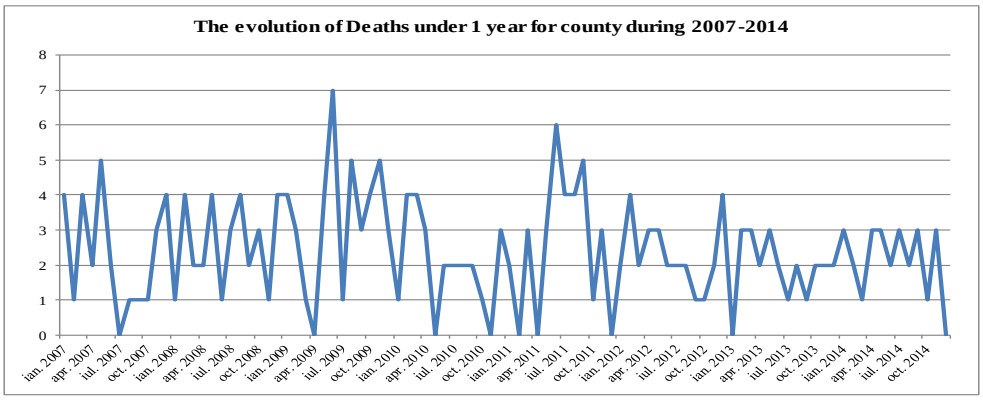

Figure 361

Regression analysis relative to indicator "Deaths under 1 year" gives us an equation: y=-0.00695198x+2.743421053 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": (0,1,2,3,7). The arithmetic mean and the standard deviation for "Deaths under 1 year" are: (2,1.45) 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 362) show that, indeed the concentration is around the middle of the data.

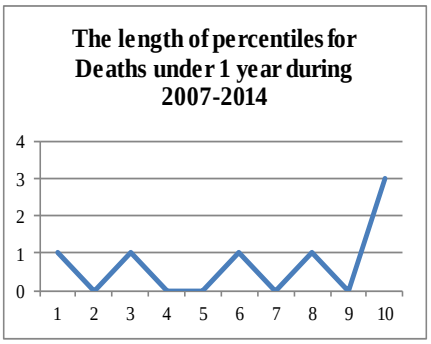

Figure 362

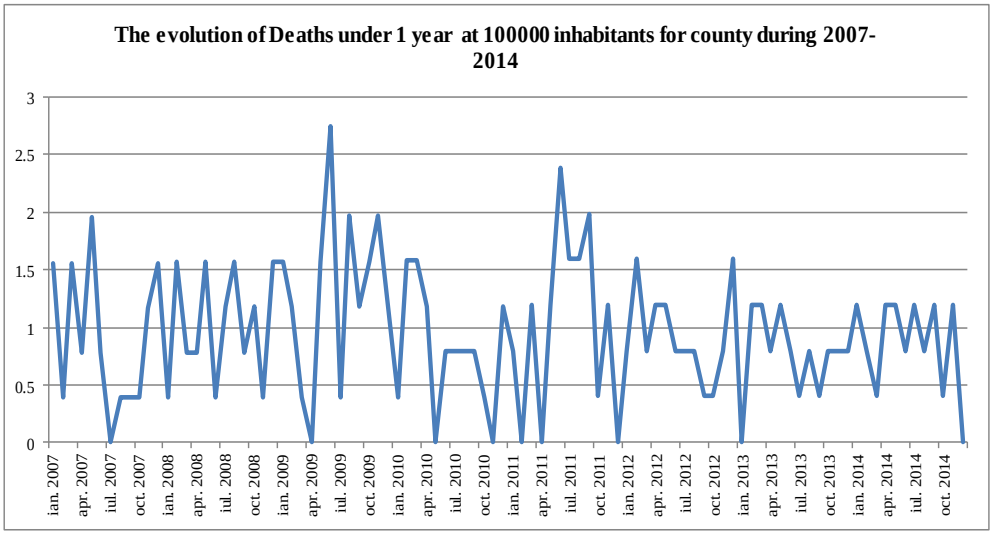

Figure 363

Regression analysis relative to indicator “Deaths under 1 year/100000 inh.” gives us an equation: y=-0.002456253x+1.070274123 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.”: (0,0.4,0.8,1.2,2.75). The arithmetic mean and the standard deviation for “Deaths under 1 year/100000 inh.” are: (1,0.57) 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 35.42% cases.

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

Table 198. The evolution of Salaj County GDP during 2007-2014

Year	GDP (in mil. lei 2007)	Variation (%)
2007	3751	-
2008	3829	2.08
2009	3690	-3.63
2010	3552	-3.73
2011	3418	-3.79
2012	3566	4.33
2013	3720	4.32
2014	3921	5.41

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 a dependence of Deceased from GDP offset by 2 years and the regression equation is:-0.3439dGDP+-2.1961. 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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