Mother's index in Kazakhstan

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Outline

1. Executive summary

Mother's index was decided to be considered in order to reveal, which region of Kazakhstan is the most appropriate for being a mother. It has covered several crucial areas as demographical, ecological, social and economical conditions in the country. However, we have followed particular aims and determined measurable tasks to obtain results that will be described below.

The purpose of the research was an examination of conditions that affect lives and wealth of citizens to be a mother. As a basis for this comprehensive analysis Methodology of Mother's Index has been used. Main concepts and direction have been followed in this research. Moreover, our research was specified regarding to national features.

Before the research has started certain hypotheses have been defined. First of all, there is an expectation that cities with highly developed economical conditions are most likely to be in the top of the list. Secondly, essential factors such as high birth rates, low number of divorces and clean ecology will be most applicable for south regions.

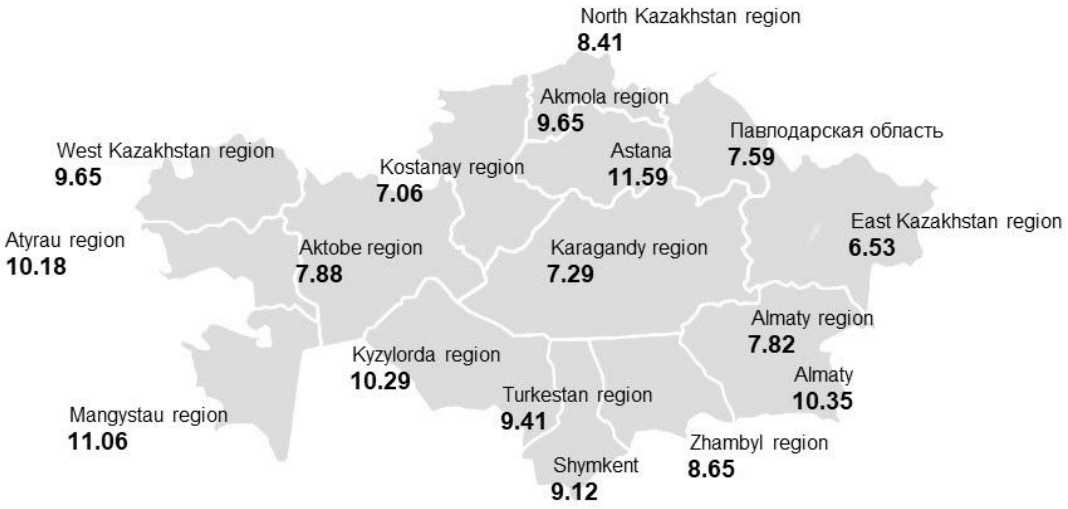

Figure 1: Index

2. Preface

Kazakhstan is a growing country with population of 18 million people. During almost 30 years of having independence it was populated by 16 million citizens. Such insignificant growth is related to periodic outflow of people from Kazakhstan to Russia and other countries. However, currently population of the country is growing by approximately 1.2% per year on average.

According to the Ministry of National Economy of Kazakhstan, our country will be populated by 20 million citizens by 2030. Moreover, this growth is highly correlated with level of urbanization that will achieve 60% level.

Those factors definitely relay crucial problems that may occur in the future. First of all, growing population will require systematic approach in all living aspects. Education, medicine and infrastructure should become the most important areas for consideration in the following years.

Secondly, extensive problems regarding mothers having 4 children or more under age 18 have been occuring during 2019 extremely sharply. As of 30th September 2019 there are 320 thousand such families in Kazakhstan. It has to be highlighted that the number of strikes had happened in Astana. The main requirements of mothers were providing housing and addressed social financial aids. Ministry of Labor and Social Protection of population of the Republic of Kazakhstan has stated that addressed social aid will be paid since 1st January 2020 in amount of 320 million.

Those two factors described above, challenged the research team in terms of deep analysis of roots of problems that had arisen during the year. Factors such as healthcare, ecology, education, economic and social conditions are the most relevant indicators reflecting areas that people are concerned in.

There was an idea to make quantitative analysis that will show major difference between regions. One region may be in the top of one aspect, in addition it can be represented as an outlier in another. Aggregate index will place regions relative to one another.

Thirdly, the last point was a case, when 5 little girls died in Astana due to the fire in “home” with coal burned oven. During the fire parent were at work. They even were not able to rescue their children. This case shows, that unknown number of families are not able to support own families in all aspects.

Reflecting arguments above decision for Mother’s Index calculation was made. The index that has been calculated will be a mirror of current situation in the country.

3. Challenges

Research team has faced with some significant challenges in index calculation. The most challenging are:

1. Data quality - for this research databases of Statistics committee of Ministry of National Economy of the Republic of Kazakhstan (http://stat.gov.kz/ has been used. One part of the data was represented on the committee's official website, another part was on Taldau (https://taldau.stat.gov.kz/) analytical service under this committee. It has to be taken into account that Statistics committee is not independent brunch, that is why there are a lot of possibilities for data changes and performance deviation.

2. Data consistency and completeness - lack of unified standard of data representation. Figures have different periodicity. For instance, one variable has all values from 1990 till today, while another might be represented only for the last period. There are a lot of opportunities to gather monthly, quarterly and yearly data where its appropriate and feasible. Furthermore, some cases where statistics of particular variable was not gathering periodically, if there are missing values in one year, they were not fulfilled later.

3. Yearly data was used in order to calculate Mother's index. There is an important issue that research team has faced with is a multicollinearity of variables. This occurred due to a limited time interval and correlation between several variables. According to this, regression analysis was not used in the research. However, correlation analysis will be presented in chapters below.

4. Shymkent & Turkestan splitting - main city of South Kazakhstan region, Shymkent city, received the status of a city of national significance, due to population exceeding 1 million citizens. South Kazakhstan region was renamed to Turkestan region. There is a problem that data of Shymkent and South Kazakhstan was considered together prior to 2017 year's data. In 2018 Shymkent and Turkestan regions have detailed and separated statistics. For that reason Shymkent city may have lower performance than expected due to the lack of information.

4. Methodology

For the index calculation variables were divided by main factors such as economic, healthcare, ecology, education and social conditions. Those factors play extremely important role in index calculation.

Healthcare factor includes:

- Number of citizens per one hospital
- Birth rate per 1000 citizens
- Mortality rate of children per 1000 citizens
- Number of hospital beds for children per 10000 citizens

Education factor includes:

- Number of children per 100 places in kindergarten
- Number of students per 1 school

Ecological factor includes:

- Volume of pollutant emissions into the atmosphere by enterprises that increased pollutant emissions (metric ton)
- Number of districts included in environmental disaster areas

Economic factor includes:

- Ratio of the Average monthly nominal income of the population to the Cost of Living
- Average monthly nominal wage of one employee among women (in KZT)
- Unemployment rate women (in %)
- CPI basket of consumer goods for children
- Primary and secondary housing market price per 1 m2 (in KZT)

Social factor includes:

- Rate of marriages per 1000 citizens
- Rate of divorces per 1000 citizens
- Availability of housing per 1 citizen in (m2)
- Number of children admitted to the orphanage during the year

Variables described above were filtered out by highest to lowest values and classified by regions. If the performance region is positive it was ranked as first and 100% points were assigned for this region. It has allowed to identify weak and strong features of Kazakhstan's regions.

Finally, assigned points were summarized for obtaining aggregate score of index. Indices were calculated within 2012 - 2018 time frame. Only this period had sufficient quality and consistency of data.

VARIABLE	CRITERIA	HIGHER	LOWER
Birth rate per 1000 citizens	HEALTHCARE	BETTER	WORSE
Mortality rate of children per 1000 citizens	HEALTHCARE	WORSE	BETTER
Number of citizens per one hospital	HEALTHCARE	WORSE	BETTER
Number of hospital beds for children per 10000 citizens	HEALTHCARE	BETTER	WORSE

Number of children per 100 places in kindergarten	EDUCATION	WORSE	BETTER
Number of students per 1 school	EDUCATION	WORSE	BETTER
Volume of pollutant emissions into the atmosphere by enterprises that increased pollutant emissions (metric ton)	ECOLOGICAL	WORSE	BETTER
Number of districts included in environmental disaster areas	ECOLOGICAL	WORSE	BETTER
Ratio of the Average monthly nominal income of the population to the Cost of Living	ECONOMIC	BETTER	WORSE
Unemployment rate women (in %)	ECONOMIC	WORSE	BETTER
Average monthly nominal wage of one employee among women (in KZT)	ECONOMIC	BETTER	WORSE
CPI basket of consumer goods for children	ECONOMIC	WORSE	BETTER
Primary and secondary housing market price per 1 m2 (in KZT)	ECONOMIC	WORSE	BETTER
Rate of marriages per 1000 citizens	SOCIAL	BETTER	WORSE
Rate of divorces per 1000 citizens	SOCIAL	WORSE	BETTER
Availability of housing per 1 citizen in (m2)	SOCIAL	BETTER	WORSE

Figure 2: Points appointment criteria

The table above illustrates the way how variables have been ranked for index calculation. For example, if the region has the highest birth rate it will be ranked on 1st place, because of relatively large number of children born, therefore 100% points will be assigned and visa versa.

	BETTER															WORSE	
Place	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**
Points	100%	94%	88%	82%	76%	71%	65%	59%	53%	47%	41%	35%	29%	24%	18%	12%	6%

Figure 3: Range line

This range line gives an opportunity to assign appropriate percentage for each region in scope. The research team ran a regression model in order to reveal interdependence between index performance and variables participated in calculation. The aim of this model was to identify beta coefficients of each variable. Beta coefficients show sensitivity of each variable relatively to index value. However, after regression was ran multicollinearity problem had been taken place.

Source	SS	df	MS	Number of obs	=	7
				F(6, 0)	=	.
Model	21.8250124	6	3.63750206	Prob > F	=	.
Residual	0	0	.	R-squared	=	1.0000
				Adj R-squared	=	.
Total	21.8250124	6	3.63750206	Root MSE	=	0

INDEX	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
R_MARRIAGES	0	(omitted)				
R_DIVORCES	0	(omitted)				
A_HOUSING	0	(omitted)				
N_HOSPITAL	-.0001047	.	.	.	.	.
R_BIRTH	0	(omitted)				
R_MORTALITY	0	(omitted)				
N_KINDERGARTEN	-.0037215	.	.	.	.	.
N_STUDENTS	.014064	.	.	.	.	.
RATIO	0	(omitted)				
R_UNEMPLOYMENT	0	(omitted)				
NOMINAL_WAGE	.0000605	.	.	.	.	.
N_BEDS	0	(omitted)				
N_ORPHANAGE	0	(omitted)				
V_POLLUTION	-.0000539	.	.	.	.	.
CPI_CHILDREN	0	(omitted)				
P_HOUSING	-.0042507	.	.	.	.	.
N_DISASTER	0	(omitted)				
_cons	6.371452	.	.	.	.	.

Figure 4: Regression model

```
. regress INDEX R_MARRIAGES R_DIVORCES A_HOUSING N_HOSPITAL R_BIRTH R_MORTALITY N_KINDERGARTEN N_STUDENTS RATIO R_UNEMPLOYMENT NOMINAL_WAGE N_BEDS N_ORPHANAGE
> V_POLLUTION  CPI_CHILDREN P_HOUSING N_DISASTER
note: R_MARRIAGES omitted because of collinearity
note: R_DIVORCES omitted because of collinearity
note: A_HOUSING omitted because of collinearity
note: R_BIRTH omitted because of collinearity
note: R_MORTALITY omitted because of collinearity
note: RATIO omitted because of collinearity
note: R_UNEMPLOYMENT omitted because of collinearity
note: N_BEDS omitted because of collinearity
note: N_ORPHANAGE omitted because of collinearity
note: CPI_CHILDREN omitted because of collinearity
note: N_DISASTER omitted because of collinearity
```

Figure 5: Collinearity problem

The figure above shows that values for several variables were omitted, however they are represented completely. There was decided to make standardization of variables, it was difficult to get rid off the problem of multicollinearity. Those actions were applied for all regression models by each region. Unfortunately, model for future forecasting was not feasible. The first fact is insufficiency and quality of data. At least 30 observations are required to conduct running. The second one is slight correlation among of couple of variables, which did not give option to proceed. In addition, several variables were removed from the model, however significant results has not been obtained.

	INDEX	R_MARRIA	R_DIVORC	A_HOUSIN	N_HOSPIT	R_BIRTH	R_MORTA	N_KINDEF	N_STUDE	RATIO	R_UNEMP	NOMINAL_	N_BEDS	N_ORPHA	V_POLLU	CPI_CHIL	P_HOUSIN
INDEX	1,00																
R_MARRIA	-0,75	1,00															
R_DIVORC	0,30	0,34	1,00														
A_HOUSIN	0,89	-0,83	0,12	1,00													
N_HOSPIT	0,44	-0,80	-0,27	0,59	1,00												
R_BIRTH	-0,88	0,91	0,01	-0,97	-0,63	1,00											
R_MORTA	-0,09	0,42	0,24	-0,26	-0,60	0,35	1,00										
N_KINDEF	0,88	-0,84	-0,07	0,76	0,53	-0,79	0,04	1,00									
N_STUDE	0,93	-0,86	0,06	0,81	0,59	-0,85	-0,12	0,97	1,00								
RATIO	0,72	-0,93	-0,24	0,72	0,75	-0,84	-0,58	0,75	0,84	1,00							
R_UNEMP	-0,89	0,92	0,06	-0,97	-0,61	0,99	0,31	-0,83	-0,87	-0,84	1,00						
NOMINAL_	0,71	-0,93	-0,23	0,77	0,84	-0,85	-0,68	0,70	0,79	0,96	-0,85	1,00					
N_BEDS	0,78	-0,64	0,20	0,93	0,37	-0,85	0,00	0,63	0,64	0,44	-0,85	0,51	1,00				
N_ORPHA	0,74	-0,81	0,02	0,71	0,83	-0,73	-0,18	0,83	0,87	0,76	-0,72	0,76	0,55	1,00			
V_POLLU	-0,75	0,27	-0,64	-0,70	0,02	0,60	-0,35	-0,50	-0,55	-0,17	0,58	-0,15	-0,82	-0,38	1,00		
CPI_CHIL	0,13	-0,12	0,02	0,04	-0,09	-0,12	0,50	0,26	0,27	0,11	-0,09	-0,12	0,10	0,24	-0,32	1,00	
P_HOUSIN	0,62	-0,88	-0,32	0,65	0,62	-0,80	-0,31	0,72	0,78	0,89	-0,78	0,77	0,47	0,70	-0,25	0,51	1,00

Figure 6: Correlation matrix

5. Results

Finally, assigned points were summarized for obtaining aggregate score of index. Indices were calculated within 2012 - 2018 time frame. Only this period had sufficient quality and consistency of data.

According to the results represented below the most appropriate city to be a mother is a capital of Kazakhstan - Astana city. Index 11.59 reflects all factors described in the methodology and illustrates that conditions of life are high. The city has high salaries, competitive education, technologically equipped hospitals compared to other cities and regions.

Place	Region	Index
1	Astana	11,59
2	Mangystau region	11,06
3	Almaty	10,35
4	Kyzylorda region	10,29
5	Atyrau region	10,18
6	Akmola region	9,65
7	West Kazakhstan region	9,65
8	Turkestan region	9,41
9	Shymkent	9,12
10	Zhambyl region	8,65
11	North Kazakhstan region	8,41
12	Aktobe region	7,88
13	Almaty region	7,82
14	Pavlodar region	7,59
15	Karagandy region	7,29
16	Kostanay region	7,06
17	East Kazakhstan region	6,53

Figure 7: Mother's index in 2018 by regions

Mangystau region has very good performances in high birth rate and citizens' wealth. High performance is mostly related to economic specification of Oil & Gas production. While, the lowest performance of East Kazakhstan region is determined by the poor performance in social, healthcare and ecological factors. Weak figures in social and healthcare is usual for northern regions which is resulted in low places for Kostanay and Pavlodar regions.

HEALTHCARE

If pregnancy is not always a planned act, then having a baby is a choice that you have a certain amount of time to make, depending on the circumstances. Many factors can influence this choice, and we will start with the general situation in the healthcare sector.

Birth rate per 1000 citizens

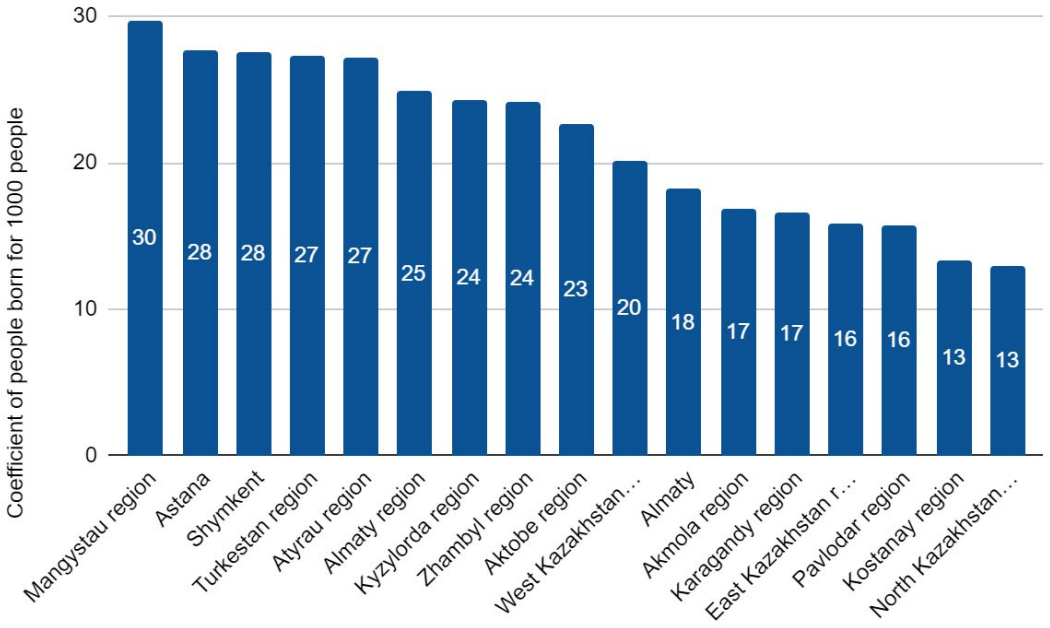

Figure 8: Birth rate per 1000 citizens

One of the main variables for calculation of mother index is the birth rate in Kazakhstan. The figure above shows the birth rate per 1000 citizens in 2018. Mangystau region and Astana has the highest birth rate in the country. Northern regions have the lowest birth rate, especially Kostanay with birth rate 13,3 children born per 1000 citizens and North Kazakhstan region with the birth rate 12,93 children born per 1000 citizens. At the same time all southern regions keep high birth date. This difference in birth rate occurs at least for the last 6 years. It is probably related to migrational mood in Northern regions and difference in regional distinctions between North and South where traditionally southern families have more babies in family in comparison with northern families.

It is systematic question that government tries to handle by initiating programs of resettling population from southern Kazakhstan to northern regions.

Mortality rate of children per 1000 citizens

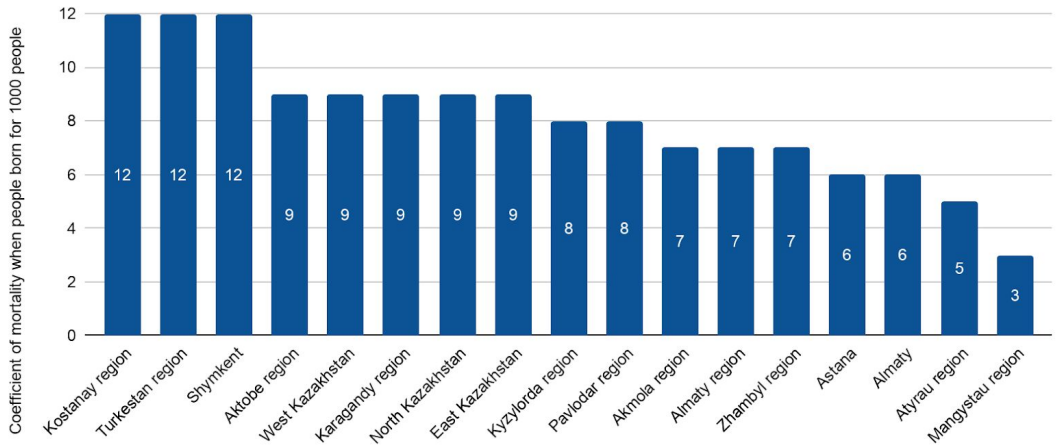

Figure 9: Mortality rate of children per 1000 citizens

In contrast to the birth rate, we also used the infant mortality rate per 1,000 people in our calculations. These statistics reflect the sad but necessary information about the level of child mortality in the regions, which can act as an indicator of the level of prenatal and postnatal care for newborns, as well as the level of medical services in the regions.

Kostanay and newly created Turkestan and Shymkent regions have the highest level of mortality rate of children per 1000 citizens equal to 12. The situation of Turkestan and especially Shymkent occurs due to the high birth rate and and lack of infrastructure. Further in our work we wrote about the number of citizens per hospital by regions where Shymkent has one of the largest amount of citizens per one hospital but Turkestan has the smallest amount. Turkestan is newly created region which is mostly rural where there is not enough qualified medical specialists and people still go for medical care to big city such as Shymkent. Especially people who live in small towns close to Shymkent somehow have local registration in order to have medical care in Shymkent

In situation with Kostanay everything is sad. Having the lowest birth rate and the highest mortality rate of children per 1000 citizens at the same time cause negative effect in natural increase in population in this region. At the same time Kostanay has low level of citizens per hospital. We can't understand this situation and we assume that Kostanay region does not have enough qualified medical specialists. Government has to solve this situation by increasing the quality of medical care for pregnant women and newborn children.

Mangystau and Atyrau regions have mortality rate of children per 1000 citizens 3 and 5 respectively. Which is the lowest indicator. We assume that it was possible due to

the fact that these regions are very rich of oil and government provided region with good medical infrastructure and qualified personnel.

Number of citizens per one hospital

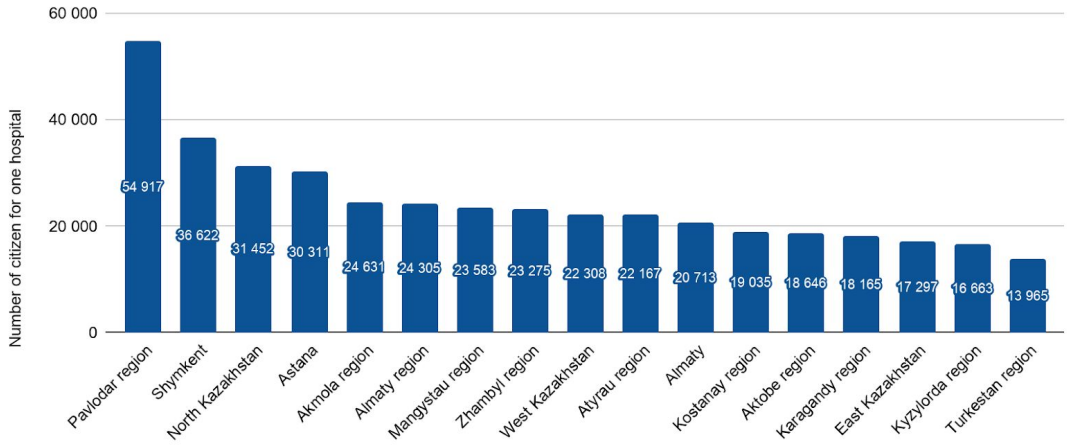

Figure 10: Number of citizens per one hospital

Also we included in our index calculation variable that shows the number of citizens per one hospital. It provides us with information on occupancy of hospitals in regions and availability of medical services to population.

In accordance with the above chart Pavlodar region has the highest number of citizens per one hospital. Such a big load for hospitals may bring to situation where sick people may be left without medical care especially if pregnant women need medical care. This situation may increase mortality rate of children. In case of Pavlodar region this region is “lucky” to have one of the lowest birth rate among other regions and this may be one of the reasons that Pavlodar has lower mortality rate.

Turkestan region has the lowest number of citizens per one hospital which is equals to 13965 people per hospital. Taking into consideration large population on rural areas of Turkestan region and small number of towns with well developed medical infrastructure we assume that people of Turkestan region have official registration in Shymkent. This may explain overload of Shymkent`s indicator of number of citizens per hospital.

Number of hospital beds for children per 10000 citizens

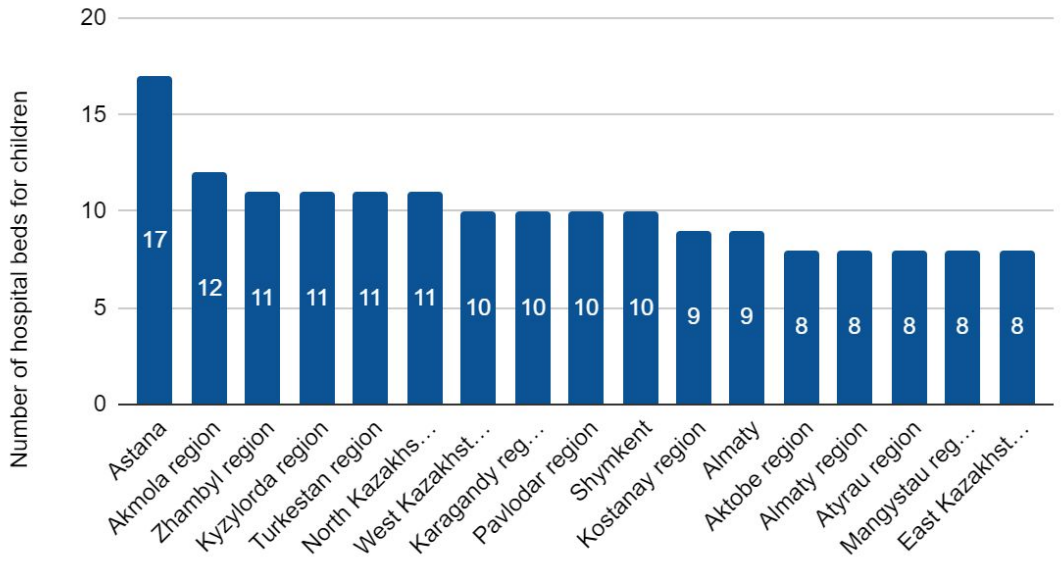

Figure 11: Number of hospital beds for children per 10000 citizens in 2018

The variable has been chosen in order to reflect sufficiency of hospital beds for children in case of sickness and emergency. It is important to know current capacity of hospitals within regions and number of little patients that hospitals are ready to accept. In case of emergency hospitals should be ready to provide highly-qualified treatment and services for children.

The figure above shows the number of hospital beds for children per 10000 citizens in 2018. Astana has the highest number of hospital beds compared to others, there are 18 beds for 10000 children. It is reinforced with the fact that Astana is populated by over 1 million citizens. Unfortunately, Almaty city has twice less hospital beds for children per 10000 citizens while population of Almaty is 1.85 million. Last 4 years East, West Kazakhstan and Mangystau region had more than 15 hospital beds, such reduction is caused by substantial reduction in number of hospital beds for children. It is probably related to reducing number of sickness among children and reallocation of hospital beds.

It can be seen that average number of hospital beds for children per 10000 is equal 10. According to the data of World Health Organization, Kazakhstan had 67.18 hospital beds per 10000 population (https://www.who.int/data/) in 2013, while average number of hospital beds worldwide is 26.07.

This variable describes the only capacity of hospitals and does not relate to the number of children sick. However, increasing population may affect that more places will be required in the future. It is systematic question that need to be considered by government during the budget planning. Summarizing all this performance is changed over the last 6 years and has average trend within regions.

EDUCATION

Being a mother means not only giving birth, but also raising a child. Government has to provide assistance in this, both directly through allowances and benefits, and indirectly, through infrastructure.

Number of children per 100 places in kindergarten

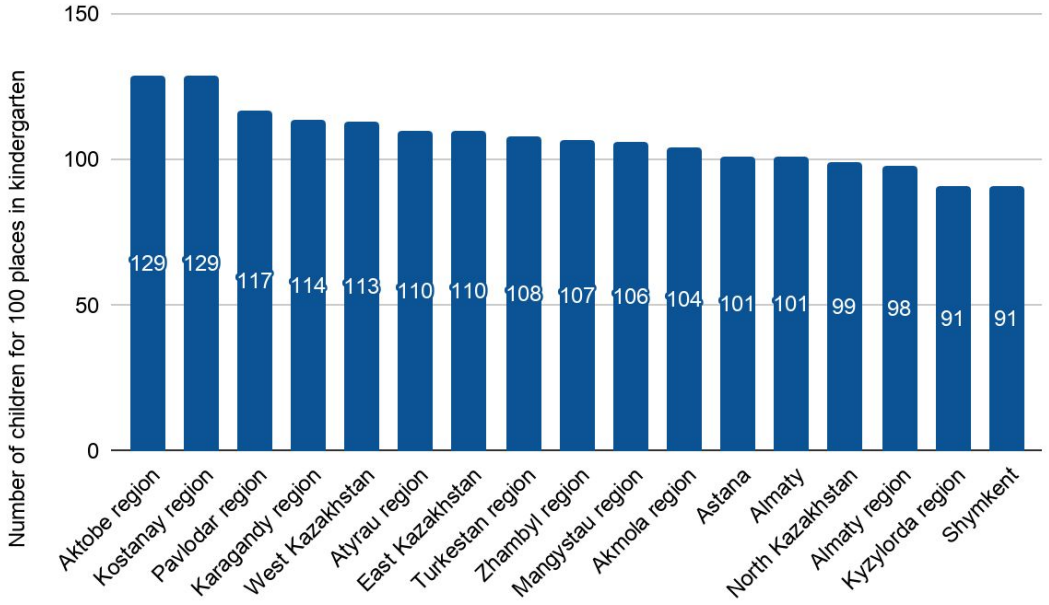

Figure 12: Number of children per 100 places in kindergarten

Pre-school education or simply kindergarten is the beginning of continuous education that plays a very important role in the development of children and preparation for systematic education. For this reason parents seek places in kindergartens.

When analyzing the number of children per 100 places by regions, there was a scarcity of places in Aktobe, Kostanay, Pavlodar and Karagandy regions. At the same time kindergartens in Kyzylorda, Shymkent, Almaty and North Kazakhstan are not loaded.

In 2018, Aktobe and Kostanay regions have the highest number of children per 100 places in kindergarten which mean that these regions has the highest demand for pre-school educational establishments

Number of students per 1 school

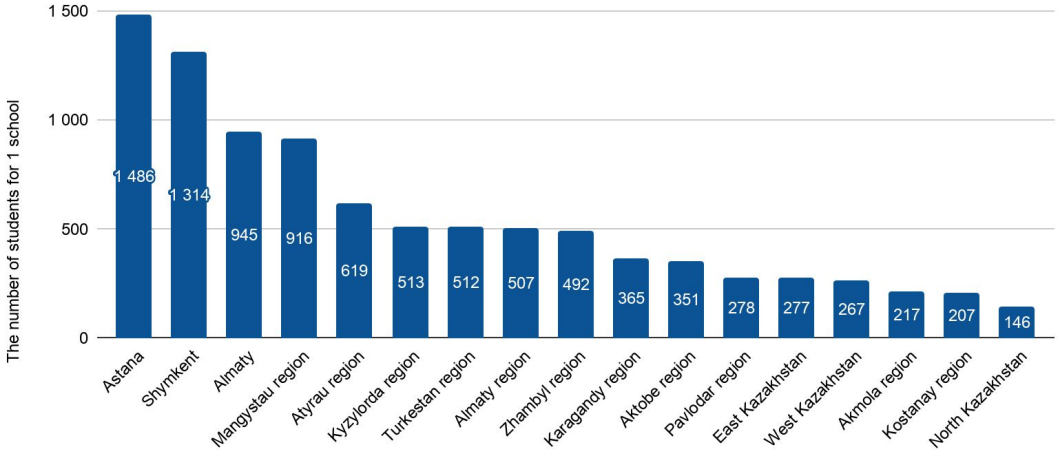

Figure 13: Number of students per 1 school

As the continuation of education parents seek places in schools for their children and availability of places in good schools motivate parents to move from rural areas to big towns or even to other regions.

Astana, Almaty and Mangistau regions as magnets for young people are very attractive for this reason many young people move there in order to build a career or simply improve their living conditions, As a result large number of young couples forms in that regions as well as migrates from other regions. This brings to high level of birth rate which creates higher demand for schools. For this reason, seeing these three regions in top in indicator of number of students per 1 school is not a surprise.

At the same time northern regions of Kazakhstan such as Akmola, Kostanay and North Kazakhstan have the lowest number of students per 1 school such as 217 students, 207 students and 146 students respectively. Main reason is that these three regions have the lowest birth rate. Also Kostanay and North Kazakhstan region have higher abroad migration mood in comparison with other regions. As a result, northern regions have lower demand for places in schools.

ECOLOGY

Ecology is another factor that influences a family's decision to have a baby. This is especially important in a country where on the one hand there was a nuclear test site, on the other, one of the largest lakes in the world had dried up.

Volume of pollutant emissions into the atmosphere by enterprises that increased pollutant emissions (metric ton)

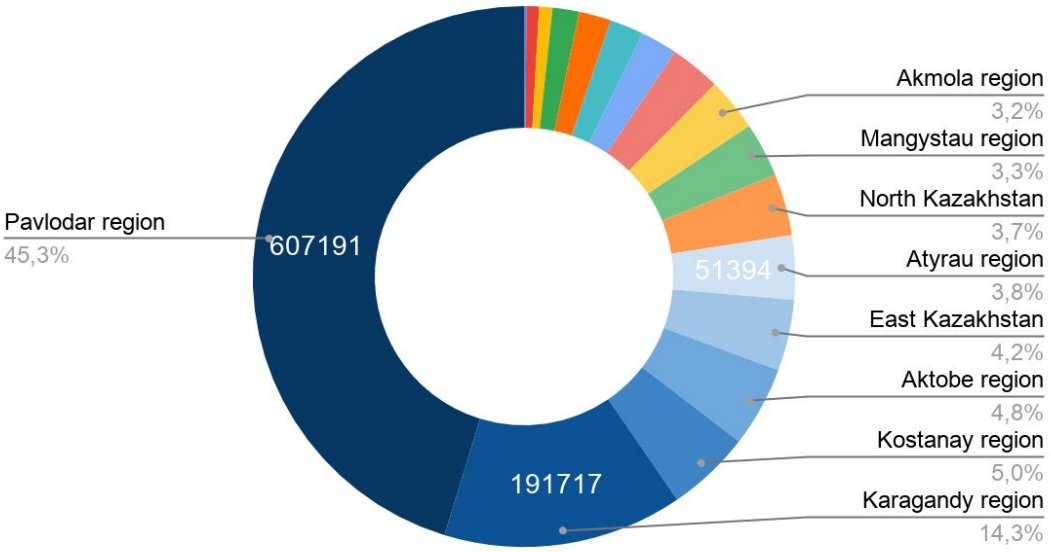

Figure 14: Volume of pollutant emissions into the atmosphere by enterprises that increased pollutant emissions (metric ton) in 2018

As ecological factor we have used statistics of Volume of pollution in atmosphere by regions made by large enterprises in 2018. It is significant problem directly related to the health of citizens of Kazakhstan. It has to be taken into account that north and central regions have production plants and manufacturing, which required to burn coal for energy generating purposes. If economy will grow it is clearly understandable that country will increase production of energy therefore pollution will be increased respectively.

According to the official statistics, pollutant emission into the atmosphere by enterprises was amounted at 1.34 million metric ton in 2018. 45.4 % of pollution was made by Pavlodar region which had received the lowest point 0.06 in overall index especially by this criteria. 2nd place from the end is taken by Karagandy region, which emitted 191.72 thousand metric tons of harmful substances. The cleanest region in Kazakhstan is Astana, that has received 1.00 point in aggregate index. Moreover, regions such as Turkestan, Kyzylorda, Zhambyl and Shymkent have clean air compare to others. Those regions are concentrated on agricultural production, trading and services.

All regions were ranked by emission volume, the lowest performance has been nominate for maximum point, which is 1.00. If region makes low emissions it is a great performance. However, the Ministry of Ecology of the Republic of Kazakhstan has to be concerned about this problem and increase requirements for producers.

Number of districts included in environmental disaster areas

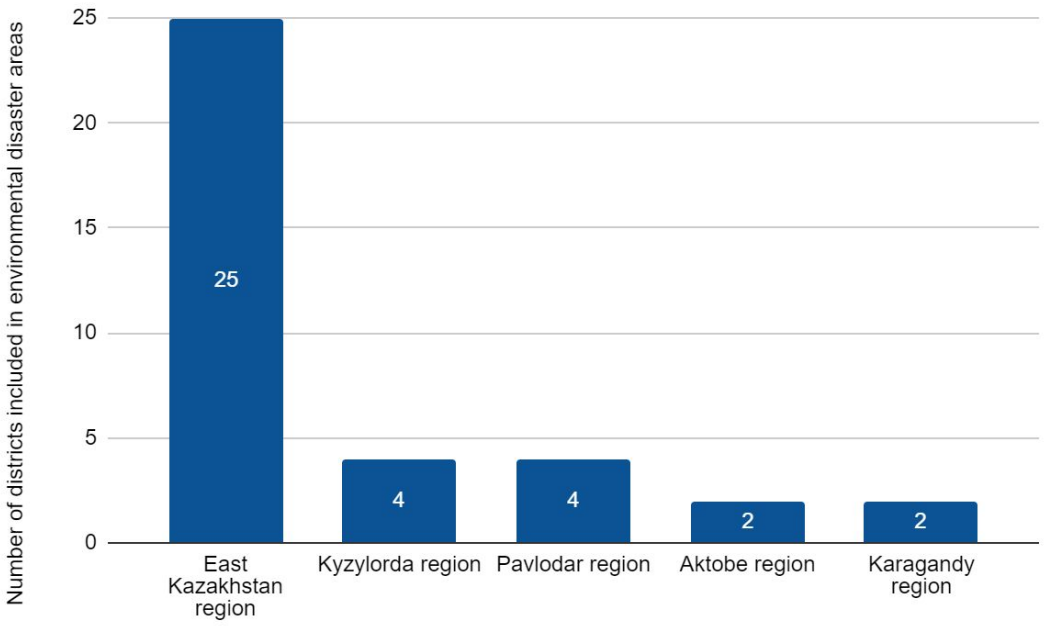

Figure 15: Number of districts included in environmental disaster areas

The chart above shows the number of districts that have been occupied by ecological disaster in Kazakhstan. There are 37 districts classified by different levels of criticality. [1] Classification is represented as follows:

1) Radiation Risk Zone (Extreme, Maximum, High and Minimal radiation level);
2) Environmental Zone (Disaster, Crisis, Pre Crisis).

Radiation Risk Zone includes mostly East Kazakhstan region, partially Pavlodar and Karagandy regions. Radiation is caused by nuclear tests of Soviet Union. 456 nuclear tests were made on Semipalatinsk polygon.

The second Environmental zone of critical disasters is related to Aral sea ecological problem. This catastrophe affects Kyzylorda, Aktobe and Karagandy regions by salt and sand storms. Reduction of water level in the sea caused by irrational use of water for irrigation agro purposes.

According to the statistics mentioned, regions had received deduction points for overall index value. If the region has inceint amount of districts involved in ecological disaster is priority reason to reduce points.

[1] https://egov.kz/cms/ru/articles/for_unemployed/ecological_disaster_zones

ECONOMIC

It is obvious that the economic issue is one of the most important, and certainly the most important from a rational point of view, which, however, is not so trivial for women. Below is a list of economic factors that we have chosen to calculate the index.

Ratio of the Average monthly nominal income of the population to the Cost of Living

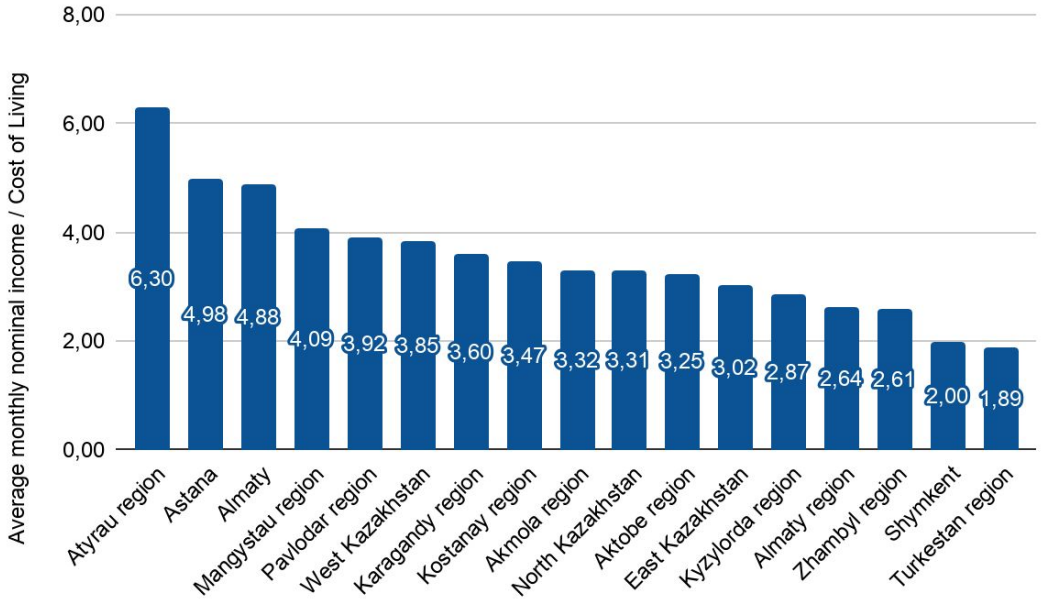

Figure 16: Average monthly nominal income of the population to the Cost of Living in 2018

The main indicator of the economic component is earnings. However, absolute or nominal income indicators excluding expenses distort the understanding of the real value of money earned. Therefore, in order to determine the difference between incomes between regions, we adjusted the nominal income of the region by the cost of living of this region. This should smooth out the difference between, for example, the Atyrau and Turkestan regions. The cost of living is calculated in accordance with the rules jointly approved by the ministries of health and the national economy. Also, despite the fact that in the future we will take into account the fact that women can give birth to children without a family, in this variable we took into account profitability indicators for the entire population, men and women.

The first places in this indicator were expectedly taken by the Atyrau region, Astana and Almaty, and the last places by the southern regions. Average is 3,62 and it is the same as in 2017 and a little less than 2016, where average indicator was 3,65.

The dynamics of the indicator are consistent and without sharp fluctuations since 2012, however, we expect that in the future Shymkent will show growth at least to the level of average figures.

Average monthly nominal wage of one employee among women

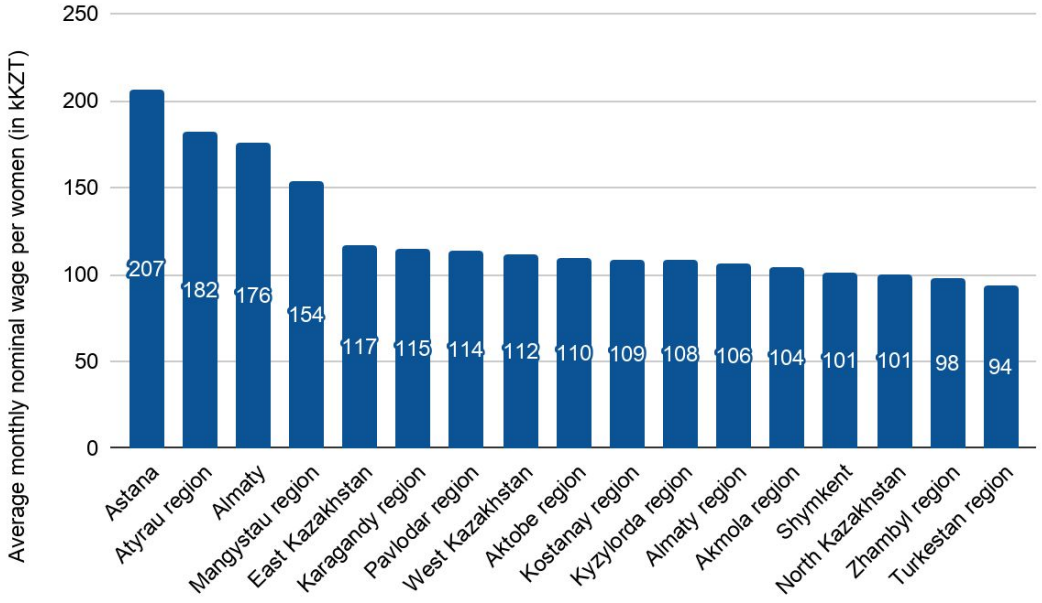

Figure 17: Average monthly nominal wage of one employee among women in 2018 in thousands tenge

Next, we want to look more deeply at the spread in salaries by region directly for women. Since we are interested in the income spread rather than the absolute values, we did not adjust our income to a cost of living. Our assumption was that the adjusted incomes of the population and the nominal incomes of women did not correlate strongly, so we used both indicators to calculate the index. Unfortunately, after modeling the regression, the variables turned out to be highly correlated (96%), as indicated on the correlation matrix.

The first 4 places are occupied by the same regions as in the previous variable, while the gap between them by the remaining regions only widened, these regions did not even reach the average salary of 124k tenge. Compared with the previous variable, Astana and Atyrau swapped places, while Atyrau is more likely to compete with Almaty than trying to get closer to Astana. It is also worth noting the relatively high earnings of women in the East Kazakhstan region, and the surprising low positions of the Akmola and North Kazakhstan regions

Additionally, we notice that women's incomes are growing on average higher than the total incomes of the population since 2012.

Unemployment rate women

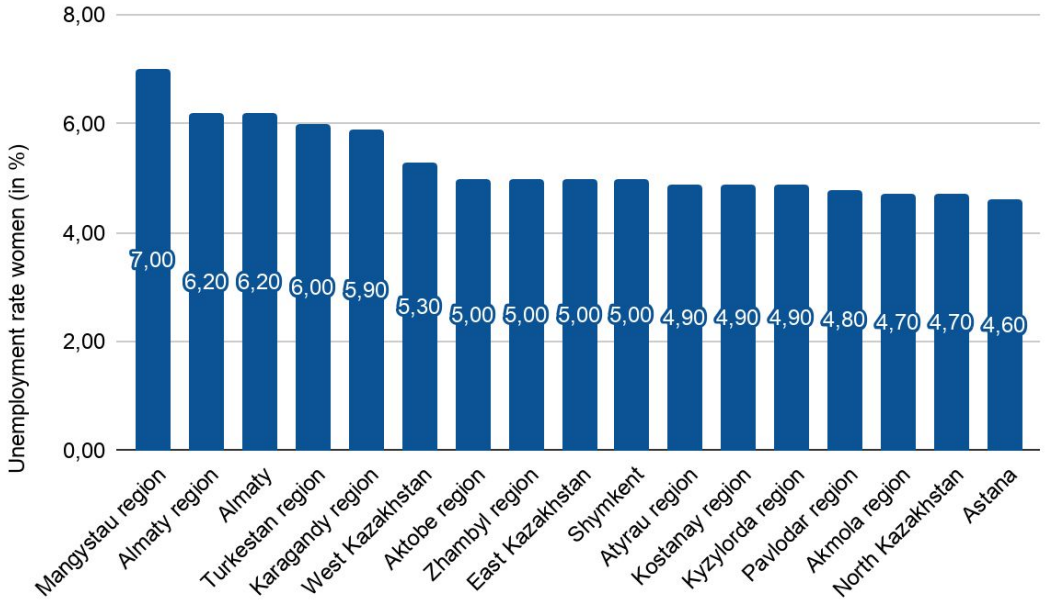

Figure 18: Unemployment rate women in 2018 in %

In addition to the size of the salary, the possibility of finding work itself must be taken into account. Difficulties in finding work affect decision-making in the life of a person, especially when it is about having a baby. We understand that no one is studying detailed and narrowly targeted unemployment statistics when planning a family and/or giving birth to a child, but we believe that this indicator is intuitively perceived by women and reflects some concern.

The highest unemployment rate in the Mangystau region, Almaty and Almaty region, the smallest percentage is as anticipated in Astana and the northern regions. Average rate is 5,3% which means that 11 of 17 regions are below the average. This further underlines the high share of unemployment among women in the Mangystau region. At the same time, 7% is the lowest figure since 2012, when the unemployment rate was 6.5%. The rating reflects the national characteristics of each of the regions, so women from the south and west are more likely to housekeeping, unlike the northern and eastern women.

Globally, according to World Bank researches women's unemployment in Kazakhstan is slightly lower than the global average, which was 5.42% in 2018.[2]

[2] https://data.worldbank.org/indicator/SL.UEM.TOTL.FE.ZS

CPI basket of consumer goods for children

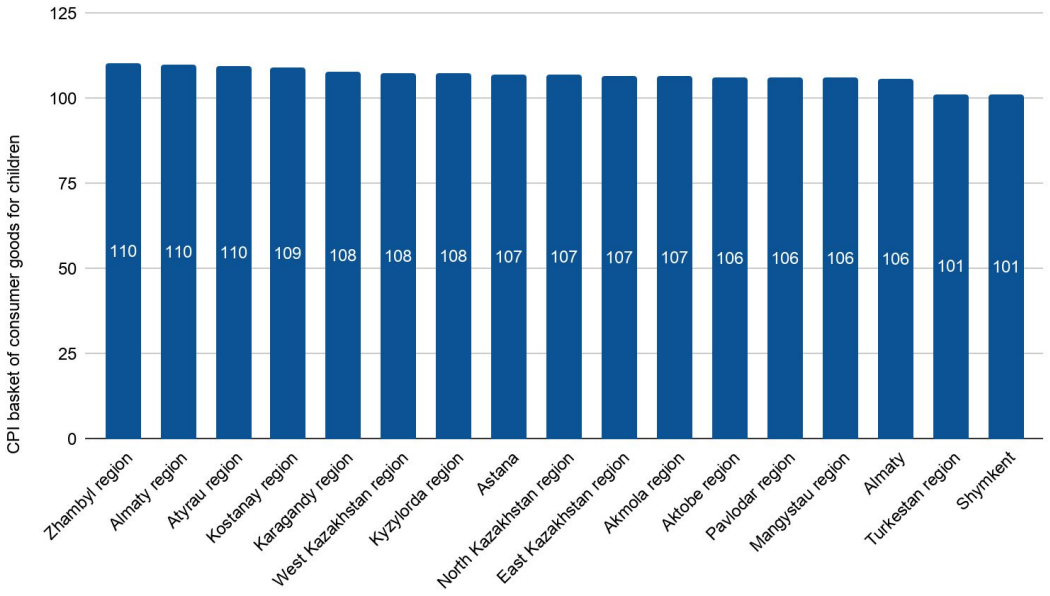

Figure 19: CPI basket of consumer goods for children

Even if citizens have high salaries there is always concern about the way how they will spend it. Increase in prices for daily goods decreases consumption and people try to save money. This may affect their daily behavior and constant increase in prices for goods used for baby care may bring people to idea to limit the number of children or delay baby birth to future periods. For this reason we also included CPI basket of consumer goods for children. The basket include baby soap, child nutrition, children's knitwear and hosiery, baby socks, baby underpants, baby tights, children's trousers made of cotton, wool and blended fabrics, pram and baby diapers.

According to the figure 19 highest CPI basket of consumer goods for children is in Zhambyl, Almaty and Atyrau regions which is equal to 110.

At the same time two newly created regions Shymkent and Turkestan have lowest CPI. We assume that prices for goods in these two regions are artificially held by local and republican authorities in order two have good view in the eyes of citizens and show us that decision on separation of these two regions was right and that they can coexist independently from each other without negative effect on population such as increase in prices for daily goods.

Primary and secondary housing market price per 1 m^2

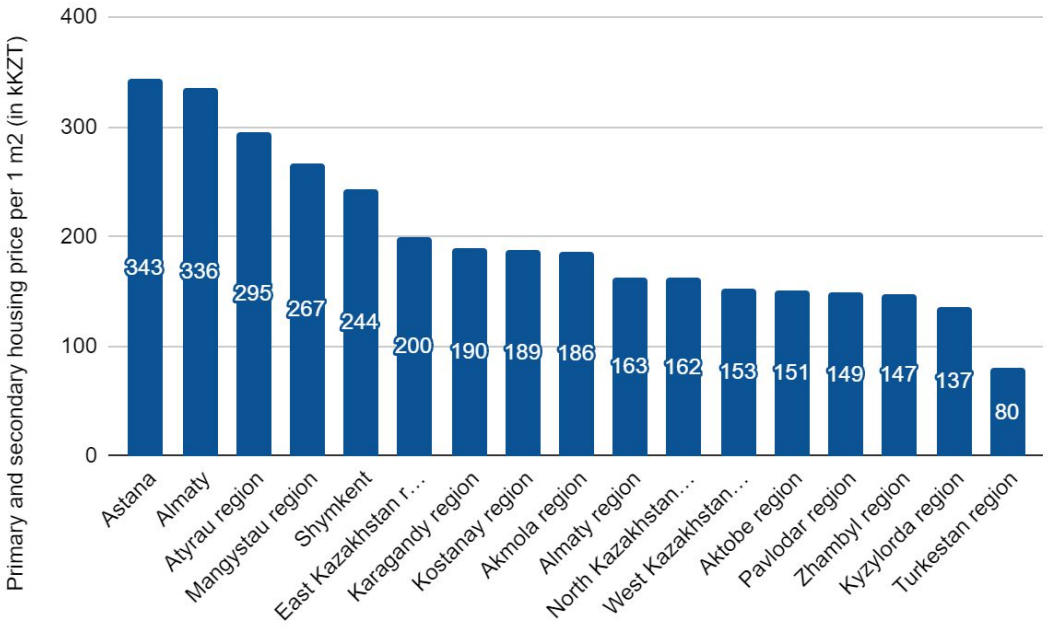

Figure 20: Primary and secondary housing market price per 1 m2 in 2018 in thousand tenge

Another basic need for a family is the presence of their own home, as its absence or constant moving to rented apartments does not add a desire to have children. It is especially relevant to our country with high mortgage rates, it is hard for people to think about tomorrow when they are not sure about the present. We did not add the cost of renting apartments to the rating, since we believe that rented apartments are not a solution. We also took the average cost of primary and secondary housing, since, firstly, this does not play a big role for families, and secondly, the cost of new and secondary apartments is not much different.

In the top of the rating are Astana, Almaty and western regions. The presence of Shymkent in 5th place is not due to the fact that it received the status of a city of republican significance, since it has been on it for the last 5 years. At the same time, we expect that in the near future it will overtake the Mangystau region, in which the cost of housing has continued to fall since 2015, when it was approximately at the price level of Almaty. We also expect an increase in the cost of apartments in the Turkestan region to the level of the Zhambyl and Kyzylorda regions.

The average cost of apartments has been growing since 2016 and amounts to 199.5k tenge. Here we also see the stratification between Astana, Almaty, the western regions and other regions of the country.

SOCIAL

In order to have and raise a child, the family needs to interact with society, and this society also affects decision-making of the family.

Rate of marriages and divorces per 1000 citizens

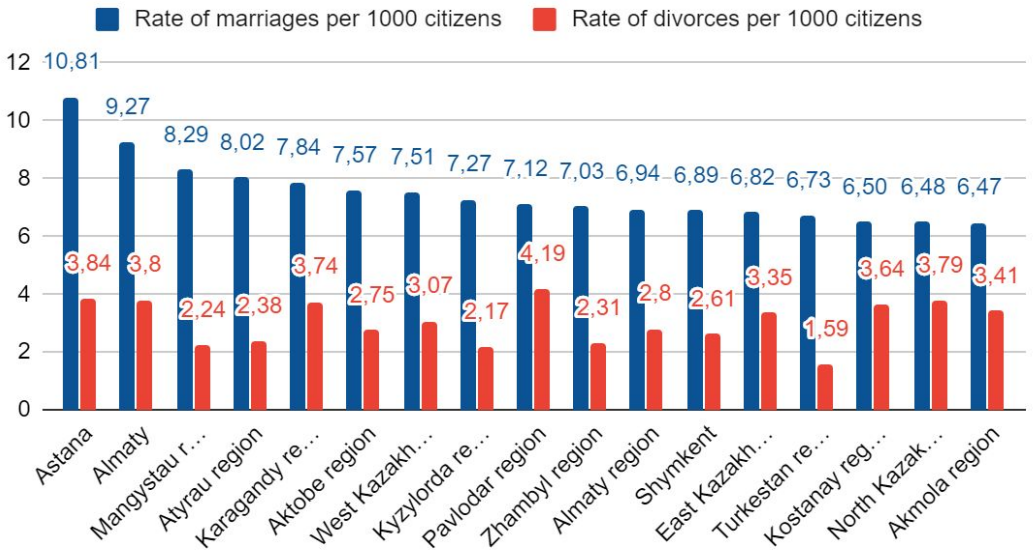

Figure 21: Rate of marriages and divorces per 1000 citizens in 2018

Rate of marriages variable was included in Mother's Index calculation. We describe the results of marriages rates, which show that the highest number of marriages are in Astana. 10.81 marriages per 1000 citizens is observed in the capital of Kazakhstan. It is important to highlight the fact that economically flourishing regions such as Almaty, Mangystau and Atyrau have the highest number of couples married. Nevertheless, north regions such as Kostanay, North Kazakhstan and Akmola have extremely low rates.

Rate of divorces has been also considered in this research. The lowest number of divorces are represented in Turkestan, Kyzylorda, Mangystau, Zhambyl and Atyrau regions. The rate is below 2.5 per 1000 citizens, which illustrates relatively good picture of strengths of family institution. Moreover, it might be highlighted that south regions are very strict in divorces matters, there is high probability to save family.

North Kazakhstan, Pavlodar and Kostanay regions have high number of marriages and high number of divorces. This problem is quite predictable. The average trend is reducing rate of marriages and slightly increasing number of divorces among couples in Kazakhstan.

Availability of housing per 1 citizen

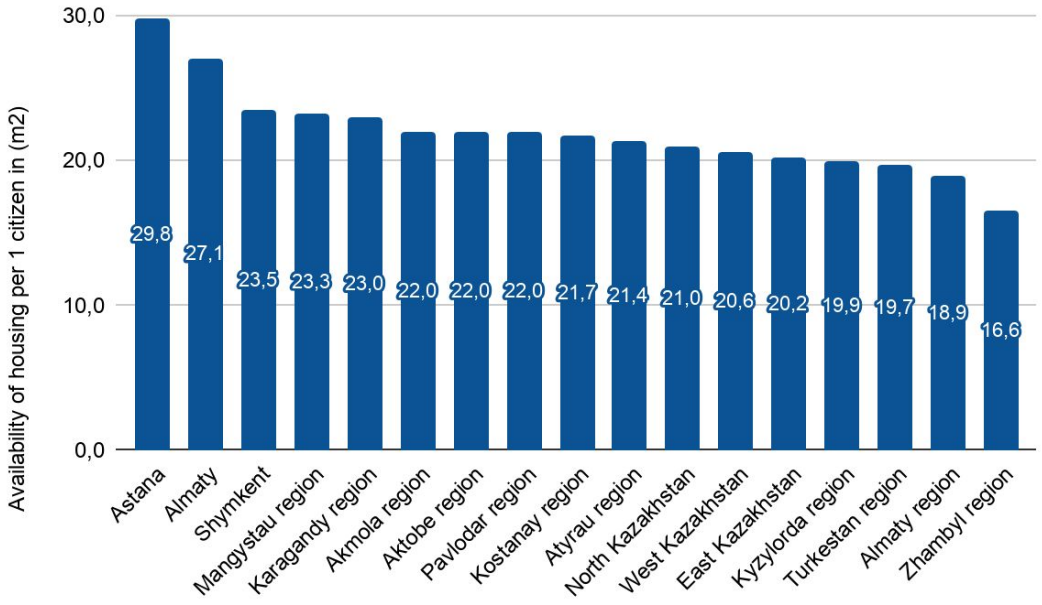

Figure 22: Availability of housing per 1 citizen per 1m2 in 2018

The availability of housing, which is defined as the ratio of the total area of dwellings (in square meters) to the number of people living in them, is also an important factor in the birth of a child. This is especially true after the fire in Koktal this winter.

Despite the large population, the leaders are Astana, Almaty and Shymkent. The average figure is 21.9 square meters, and this figure has been steadily growing since 2012. The southern regions of the country are located at the end of the rating, which is probably due to the fact that in a warm climate it is cheaper and more convenient for the population to build their own cottages. Square of these houses is difficult to truly measure and in such houses usually several families live at once, that is, the number of residents is higher.

Number of children admitted to the orphanage during the year

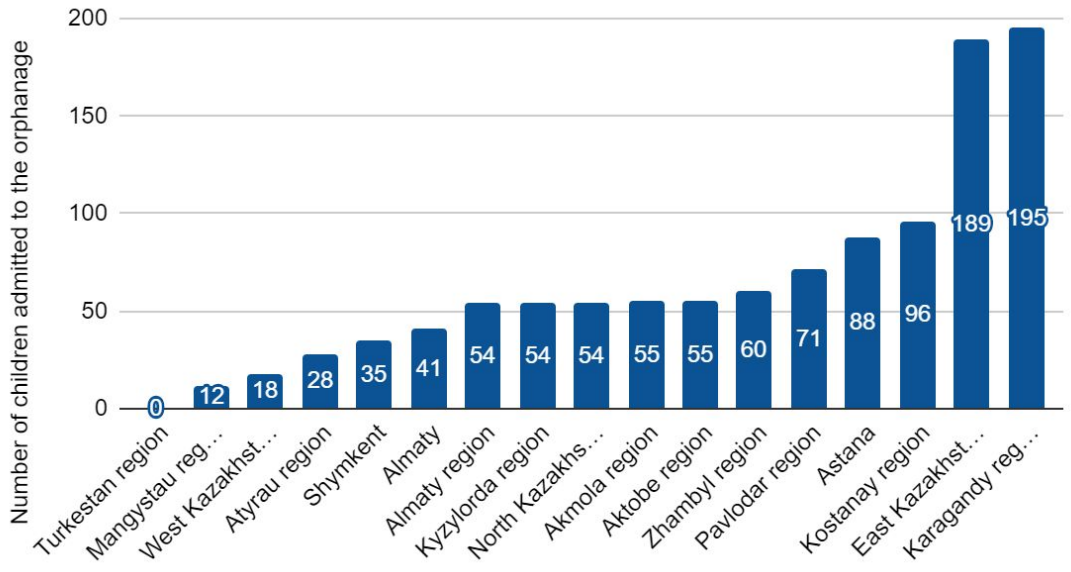

Figure 23: Number of children admitted to the orphanage in 2018

This variable shows how much children are admitted to the orphanage. The team has decided to add this variable into index in order to reveal,in which regions the children are the most likely to be rejected from their parents. 195 children were admitted to orphanage in Karagandy region, while 189 children in East-Kazakhstan region. Those regions are leading anti record positions.

Turkestan region is in the top of this rating due to the fact that all children are living with their parents in families. Mangystau, West-Kazakhstan regions have low numbers, which tend to zero. According to the UNICEF Kazakhstan, around 80% of children admitted to orphanage have parents and relatives. Due to several reasons, parents were limited in parent's rights, they rejected from their children or died. Nevertheless, during the last 10 years number of such children dramatically reduced from 10 thousand to 5 thousand currently.

The government is aimed to make children happy by moving them to patronage families that will care and support them. This approach will show great results in the future, if program will be completed.

ALTERNATIVE CALCULATION

Since we could not allocate the weights for the variables through regression, we wanted to find out how strongly each cluster affects the overall rating of the region. It is clear that economic factors have a greater impact than environmental ones, since with the equal weight of each variable in the index there are 5 economic variables and only 2 environmental ones. Therefore, we calculated the rating for the regions within separate cluster in order to see the champions in each of them.

We added the values of variables in each cluster and divided by the number of variables in this cluster. For example, we summed values of the variables “Number of children per 100 places in kindergarten” and “Number of students per 1 school” from the education factors and divided resulting number by 2 - number of variables in education cluster.

We get sub-indexes (tables are presented in the Appendix) and assigned ranking places from 1 to 17 for each region in each of the ratings. Next, we added up these serial numbers and divided on the number of clusters (5) and got a new index with an alternative calculation method.

Place	Region	Index	Alternative
1	Astana	5.40	=
2	Almaty	6.60	+1
3	Akmola region	6.60	+3
4	West Kazakhstan region	6.60	+3
5	Mangystau region	6.80	-3
6	Kyzylorda region	7.40	-2
7	Atyrau region	7.60	-2
8	Zhambyl region	8.20	2
9	Shymkent	8.60	=
10	Turkestan region	9.20	-2
11	Almaty region	9.40	+2
12	North Kazakhstan region	10.40	-1
13	Aktobe region	11.00	-1
14	Pavlodar region	11.60	=
15	Karagandy region	12.00	=
16	Kostanay region	12.80	=
17	East Kazakhstan region	12.80	=

Figure 24: Alternative calculation for Mother’s Index in 2018

In this method, the lower the index, the higher the position of the region in the ranking. For example, Astana index 5.4 is calculated from 8th position in the sub-index of social factors, 1st places in the health and environmental clusters, 2nd place in the economic sub-index and 15th place in education.

SURVEY

No matter how you consider the index, Astana confidently takes first place in Kazakhstan. In order to understand whether Astana is so desirable for expectant mothers, we decided to interview friends of women who were born in another city and had the opportunity to give birth in another place, but they gave birth in Astana. Total number of respondents is 31 women.

We understand that this will be a very narrow sample, since they are all respondents from the same social (have work, education, at the time of birth, everyone was married) and age (25 - 35) group, which is why the sample is unlikely to be representative. But this is how we learn the factors of influence for at least part of the population.

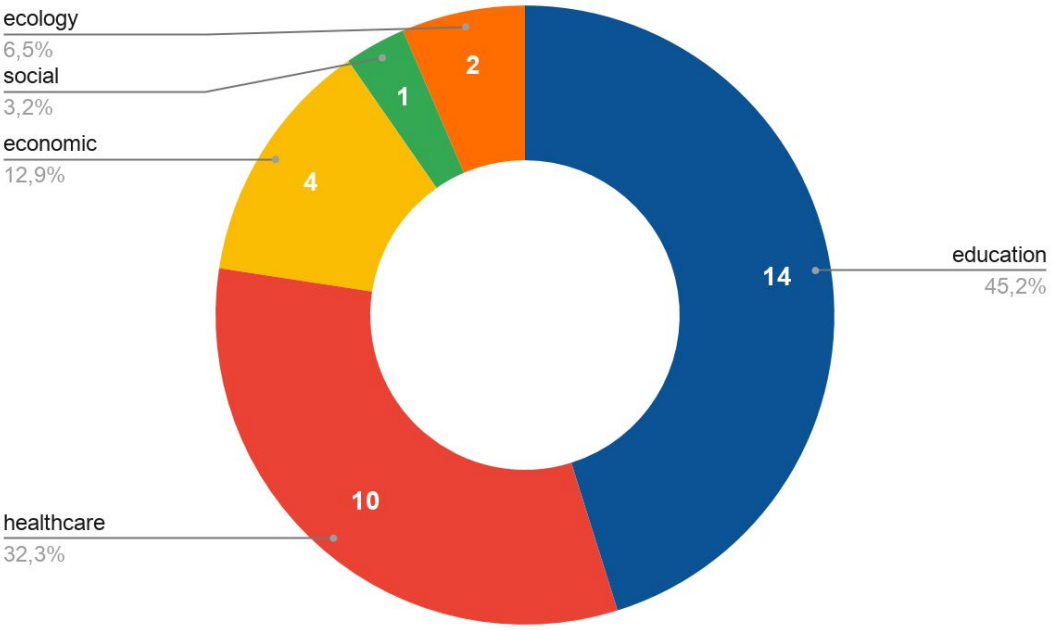

Figure 25: Share of influencing factors of respondents

Mostly girls moved to Astana because of infrastructure, the quality of local schools and hospitals outweigh its relative high cost and density. Particularly indicative is the example of the girl named Gaziza, who lived and worked with her husband in Beijing, but she came to give birth in Astana. According to her, the main reason was the poor quality of maternity hospitals in China. It should also be noted that Gaziza was from Almaty, and her parents lived there at that time.

For 2 girls from Semey, the main factor was the ecology. Both could have a baby there, but were waiting for the opportunity to move to Astana.

6. Conclusion

Summarizing all Mother's Index reflects the most appropriate region for being a mother. Factors that has been included into consideration fully describe advantages and disadvantages of all regions. It is a significant indicator for current mothers who are currently on maternity or planning to take care and bring up young generation of Kazakhstan.

The first hypothesis was confirmed that cities with highly developed economical conditions are most likely to be in the top of the list: Astana and Almaty are in the top of the ranking, Shymkent is in the middle, but if current trends continue, it will most likely rise to the top five in the coming years.

The second hypothesis that essential factors such as high birth rates, low number of divorces and clean ecology will be most applicable for south regions was just partially confirmed. High birth rate and low divorce rates are inherent in the southern regions, however, this is also true for the western regions, and the southern regions are inferior in birth rates not only to the west, but also to Astana. Also, Astana, unlike the southern and western regions, has a more favorable ecological environment, which refutes our hypothesis.

Region	Index Ranking	Birth rate Ranking	Difference
Astana	1	2.00	-1
Mangystau region	2	1.00	1
Almaty	3	11.00	-8
Kyzylorda region	4	7.00	-3
Atyrau region	5	5.00	=
Akmola region	6	12.00	-6
West Kazakhstan region	7	10.00	-3
Turkestan region	8	4.00	4
Shymkent	9	3.00	6
Zhambyl region	10	8.00	2
North Kazakhstan region	11	17.00	-6
Aktobe region	12	9.00	3
Almaty region	13	6.00	7
Pavlodar region	14	15.00	-1
Karagandy region	15	13.00	2
Kostanay region	16	16.00	=
East Kazakhstan region	17	14.00	3

Figure 26: Difference between Index and birth rate

We expected that our index would be consistent to the birth rate by region, as people consciously or intuitively feel how favorable the environment is for the birth of a child, even if this is not always a planned event.

As a result, the positions in the index approximately coincide with those in the birth rate rating, however, there are several regions where the indicators vary widely. The difference in the positions of Shymkent we explained earlier in the report. Demographic problems of the northern regions, in this case, the Akmola and North Kazakhstan regions, have long been known. Despite the good conditions for having a baby, the actual rates are much lower. There are a number of reasons, but the basis is population migration to Russia. The difference between the indicators of Almaty and Almaty region is most likely mutually exclusive: the population works and creates good conditions in the city, but go to their regions to have a baby, primarily because of the high cost of living in the city.

In the future, if there is enough data to build regression, we will be able to sort through the variables, allocate the weight for each of them, and forecast the indicators. Data obtained will be useful not only for those who want to have a baby, but also for government agencies, for which the index will be a kind of guideline for making decisions in this area.

APPENDIXES

1. Variable dynamics:

(a)

REGION	VARIABLE	CRITERIA	2012	2013	2014	2015	2016	2017	2018
Akmola region	Rate of marriages per 1000 citizens	SOCIAL	8.85	8.37	8.04	7.38	6.59	7.09	6.47
Aktobe region	Rate of marriages per 1000 citizens	SOCIAL	11.14	10.65	9.81	8.63	8.05	7.86	7.57
Almaty region	Rate of marriages per 1000 citizens	SOCIAL	9.83	9.73	8.73	8.35	7.90	7.48	6.94
Atyrau region	Rate of marriages per 1000 citizens	SOCIAL	11.50	10.81	9.65	8.67	8.13	8.04	8.02
West Kazakhstan region	Rate of marriages per 1000 citizens	SOCIAL	10.05	9.94	9.22	8.33	7.87	7.74	7.51
Zhambyl region	Rate of marriages per 1000 citizens	SOCIAL	9.69	9.63	8.81	7.54	7.25	7.02	7.03
Karagandy region	Rate of marriages per 1000 citizens	SOCIAL	9.63	9.60	8.98	8.31	7.77	7.94	7.84
Kostanay region	Rate of marriages per 1000 citizens	SOCIAL	8.14	8.08	7.48	7.27	6.38	6.85	6.50
Kyzylorda region	Rate of marriages per 1000 citizens	SOCIAL	9.63	9.97	8.81	7.69	7.36	7.26	7.27
Mangystau region	Rate of marriages per 1000 citizens	SOCIAL	11.98	11.12	10.09	9.41	8.78	8.48	8.29
Turkestan region	Rate of marriages per 1000 citizens	SOCIAL	9.02	9.70	8.60	7.76	7.70	7.14	6.73
Pavlodar region	Rate of marriages per 1000 citizens	SOCIAL	9.38	9.18	8.63	8.09	6.83	7.47	7.12
North Kazakhstan region	Rate of marriages per 1000 citizens	SOCIAL	8.27	8.19	7.81	7.26	6.30	6.83	6.48
East Kazakhstan region	Rate of marriages per 1000 citizens	SOCIAL	9.31	9.40	8.80	8.00	7.35	7.30	6.82

Astana	Rate of marriages per 1000 citizens	SOCIAL	13.06	13.28	13.67	13.00	12.25	11.45	10.81
Almaty	Rate of marriages per 1000 citizens	SOCIAL	10.34	11.07	11.15	10.34	9.64	9.67	9.27
Shymkent	Rate of marriages per 1000 citizens	SOCIAL	0.00	0.00	0.00	0.00	0.00	0.00	6.89

(b)

REGION	VARIABLE	CRITERIA	2012	2013	2014	2015	2016	2017	2018
Akmola region	Rate of divorces per 1000 citizens	SOCIAL	3.40	3.48	3.65	3.49	3.23	3.57	3.41
Aktobe region	Rate of divorces per 1000 citizens	SOCIAL	2.90	2.91	2.96	2.89	2.92	3.06	2.75
Almaty region	Rate of divorces per 1000 citizens	SOCIAL	2.41	2.62	2.56	2.82	2.63	2.78	2.80
Atyrau region	Rate of divorces per 1000 citizens	SOCIAL	2.85	2.71	2.80	2.55	2.37	2.39	2.38
West Kazakhstan region	Rate of divorces per 1000 citizens	SOCIAL	2.92	3.13	3.13	2.85	2.87	3.09	3.07
Zhambyl region	Rate of divorces per 1000 citizens	SOCIAL	2.08	2.29	2.38	2.27	2.22	2.25	2.31
Karagandy region	Rate of divorces per 1000 citizens	SOCIAL	3.82	4.14	4.05	3.83	3.65	3.81	3.74
Kostanay region	Rate of divorces per 1000 citizens	SOCIAL	3.88	3.88	3.79	3.67	3.55	3.72	3.64
Kyzylorda region	Rate of divorces per 1000 citizens	SOCIAL	2.09	2.21	2.13	2.27	2.37	2.23	2.17
Mangystau region	Rate of divorces per 1000 citizens	SOCIAL	2.63	2.52	2.61	2.28	2.30	2.33	2.24
Turkestan region	Rate of divorces per 1000 citizens	SOCIAL	1.38	1.54	1.60	1.76	1.84	1.88	1.59
Pavlodar region	Rate of divorces per 1000 citizens	SOCIAL	4.10	4.32	4.34	4.32	3.90	4.19	4.19
North Kazakhstan region	Rate of divorces per 1000 citizens	SOCIAL	3.48	3.57	3.76	3.60	3.62	3.58	3.79
East Kazakhstan region	Rate of divorces per 1000 citizens	SOCIAL	3.38	3.58	3.59	3.66	3.50	3.64	3.35
Astana	Rate of divorces per 1000 citizens	SOCIAL	3.70	4.06	4.25	4.39	4.00	3.66	3.84
Almaty	Rate of divorces per 1000 citizens	SOCIAL	3.86	3.80	3.79	3.71	3.45	3.80	3.80
Shymkent	Rate of divorces	SOCIAL	0.00	0.00	0.00	0.00	0.00	0.00	2.61

	per 1000 citizens								

(c)

REGION	VARIABLE	CRITERIA	2012	2013	2014	2015	2016	2017	2018
Akmola region	Availability of housing per 1 citizen in (m2)	SOCIAL	20.20	21.40	21.60	21.60	21.80	22.00	22.00
Aktobe region	Availability of housing per 1 citizen in (m2)	SOCIAL	18.70	20.10	20.80	21.30	21.70	22.00	22.00
Almaty region	Availability of housing per 1 citizen in (m2)	SOCIAL	16.10	17.10	17.60	18.10	18.50	18.90	18.90
Atyrau region	Availability of housing per 1 citizen in (m2)	SOCIAL	19.50	19.90	20.00	20.10	20.60	21.40	21.40
West Kazakhstan region	Availability of housing per 1 citizen in (m2)	SOCIAL	18.40	19.10	19.50	19.80	20.20	20.60	20.60
Zhambyl region	Availability of housing per 1 citizen in (m2)	SOCIAL	15.70	15.60	15.90	16.10	16.30	16.60	16.60
Karagandy region	Availability of housing per 1 citizen in (m2)	SOCIAL	21.90	22.40	22.60	22.70	22.90	23.00	23.00
Kostanay region	Availability of housing per 1 citizen in (m2)	SOCIAL	20.90	21.50	21.90	21.80	21.80	21.70	21.70
Kyzylorda region	Availability of housing per 1 citizen in (m2)	SOCIAL	19.10	19.50	19.10	19.30	19.60	19.90	19.90
Mangystau region	Availability of housing per 1 citizen in (m2)	SOCIAL	17.50	20.10	20.90	21.80	22.40	23.30	23.30
Turkestan region	Availability of housing per 1 citizen in (m2)	SOCIAL	19.10	20.70	20.30	18.90	19.40	19.70	19.70
Pavlodar region	Availability of housing per 1 citizen in (m2)	SOCIAL	21.60	22.60	22.80	21.90	21.90	22.00	22.00
North Kazakhstan region	Availability of housing per 1 citizen in (m2)	SOCIAL	20.20	20.70	20.90	20.80	21.00	21.00	21.00
East Kazakhstan region	Availability of housing per 1 citizen in (m2)	SOCIAL	19.00	19.40	19.50	19.70	20.00	20.20	20.20
Astana	Availability of housing per 1 citizen in (m2)	SOCIAL	25.40	27.70	28.50	29.00	29.60	29.80	29.80

Almaty	Availability of housing per 1 citizen in (m2)	SOCIAL	24.40	27.60	26.70	27.00	27.60	27.10	27.10
Shymkent	Availability of housing per 1 citizen in (m2)	SOCIAL	0.00	0.00	0.00	0.00	0.00	0.00	23.50

(d)

REGION	VARIABLE	CRITERIA	2012	2013	2014	2015	2016	2017	2018
Akmola region	Number of citizens per one hospital	HEALTHCARE	17,839.00	18,319.20	18,390.30	19,383.16	20,119.46	19,847.81	24,631.40
Aktobe region	Number of citizens per one hospital	HEALTHCARE	15,122.88	15,605.31	16,853.85	17,501.21	17,761.87	18,792.87	18,645.89
Almaty region	Number of citizens per one hospital	HEALTHCARE	20,524.57	25,283.52	22,050.80	22,347.53	22,385.66	23,334.88	24,304.54
Atyrau region	Number of citizens per one hospital	HEALTHCARE	13,242.90	13,879.98	15,346.78	16,149.69	16,986.03	20,949.24	22,167.29
West Kazakhstan region	Number of citizens per one hospital	HEALTHCARE	15,314.53	15,066.71	16,423.29	17,028.54	19,905.63	20,693.97	22,307.83
Zhambyl region	Number of citizens per one hospital	HEALTHCARE	18,523.19	17,254.60	19,363.73	19,271.74	21,360.56	21,868.76	23,275.42
Karagandy region	Number of citizens per one hospital	HEALTHCARE	13,579.69	14,653.52	15,564.30	16,603.87	17,753.97	17,070.79	18,164.97
Kostanay region	Number of citizens per one hospital	HEALTHCARE	15,707.77	15,440.63	16,622.04	17,285.67	18,036.86	18,704.98	19,035.13
Kyzylorda region	Number of citizens per one hospital	HEALTHCARE	15,497.80	12,976.64	14,504.43	15,060.02	15,938.71	16,449.85	16,662.89
Mangystau region	Number of citizens per one hospital	HEALTHCARE	17,606.10	15,345.14	20,256.24	20,925.62	22,384.79	22,166.34	23,582.75
Turkestan region	Number of citizens per one hospital	HEALTHCARE	4,230.23	4,170.50	4,880.89	4,687.13	4,593.50	4,814.53	13,964.60
Pavlodar region	Number of citizens per one hospital	HEALTHCARE	44,431.73	52,524.29	63,559.37	66,378.71	67,639.79	75,753.58	54,917.39
North Kazakhstan region	Number of citizens per one hospital	HEALTHCARE	24,102.16	21,405.74	25,962.55	26,992.61	29,176.69	30,280.56	31,452.25
East	Number of	HEALTHC	13,812	14,081	15,156	15,857	17,234	17,369	17,296

Kazakhstan region	citizens per one hospital	ARE	.48	.49	.39	.57	.80	.60	.81
Astana	Number of citizens per one hospital	HEALTHC ARE	23,963 .48	33,832 .39	30,163 .67	27,509 .77	27,268 .25	30,396 .63	30,311 .09
Almaty	Number of citizens per one hospital	HEALTHC ARE	19,854 .33	15,689 .88	20,929 .15	21,597 .95	21,554 .00	22,168 .46	20,712 .56
Shymkent	Number of citizens per one hospital	HEALTHC ARE	0.00	0.00	0.00	0.00	0.00	0.00	36,621 .92

(e)

REGION	VARIABLE	CRITERIA	2012	2013	2014	2015	2016	2017	2018
Akmola region	Birth rate per 1000 citizens	HEALTHC ARE	18.35	17.51	17.39	17.12	16.90	16.71	16.82
Aktobe region	Birth rate per 1000 citizens	HEALTHC ARE	23.03	23.38	24.06	24.11	23.53	22.47	22.69
Almaty region	Birth rate per 1000 citizens	HEALTHC ARE	24.32	24.66	25.30	25.30	25.88	24.98	24.86
Atyrau region	Birth rate per 1000 citizens	HEALTHC ARE	28.39	28.61	28.52	27.93	27.84	26.78	27.16
West Kazakhstan region	Birth rate per 1000 citizens	HEALTHC ARE	20.20	20.49	20.80	20.48	20.62	19.96	20.11
Zhambyl region	Birth rate per 1000 citizens	HEALTHC ARE	26.76	26.82	27.10	25.72	25.27	23.71	24.18
Karagandy region	Birth rate per 1000 citizens	HEALTHC ARE	18.02	18.06	18.13	17.73	17.31	16.44	16.64
Kostanay region	Birth rate per 1000 citizens	HEALTHC ARE	14.90	14.80	14.48	14.47	13.94	13.38	13.30
Kyzylorda region	Birth rate per 1000 citizens	HEALTHC ARE	28.09	26.83	27.28	25.92	25.04	24.39	24.34
Mangystau region	Birth rate per 1000 citizens	HEALTHC ARE	30.46	31.72	31.98	31.30	31.18	29.74	29.72
Turkestan region	Birth rate per 1000 citizens	HEALTHC ARE	30.22	29.60	29.70	29.03	28.48	27.20	27.33
Pavlodar region	Birth rate per 1000 citizens	HEALTHC ARE	17.20	17.45	17.29	16.87	16.64	15.91	15.72
North Kazakhstan region	Birth rate per 1000 citizens	HEALTHC ARE	14.99	14.82	14.32	14.25	13.58	13.17	12.93
East Kazakhstan region	Birth rate per 1000 citizens	HEALTHC ARE	16.77	16.37	17.01	16.40	16.45	15.98	15.83
Astana	Birth rate per 1000 citizens	HEALTHC ARE	25.59	27.50	28.89	30.29	30.18	28.23	27.67
Almaty	Birth rate per	HEALTHC	18.36	18.32	19.15	18.63	18.36	17.69	18.19

	1000 citizens	ARE							
Shymkent	Birth rate per 1000 citizens	HEALTHCARE	0.00	0.00	0.00	0.00	0.00	0.00	27.53

(f)

REGION	VARIABLE	CRITERIA	2012	2013	2014	2015	2016	2017	2018
Akmola region	Mortality rate of children per 1000 citizens	HEALTHCARE	9.00	9.00	11.00	11.00	9.00	7.00	7.00
Aktobe region	Mortality rate of children per 1000 citizens	HEALTHCARE	9.00	8.00	7.00	7.00	9.00	9.00	9.00
Almaty region	Mortality rate of children per 1000 citizens	HEALTHCARE	6.00	5.00	4.00	6.00	7.00	7.00	7.00
Atyrau region	Mortality rate of children per 1000 citizens	HEALTHCARE	10.00	8.00	7.00	7.00	7.00	7.00	5.00
West Kazakhstan region	Mortality rate of children per 1000 citizens	HEALTHCARE	10.00	8.00	11.00	8.00	9.00	10.00	9.00
Zhambyl region	Mortality rate of children per 1000 citizens	HEALTHCARE	7.00	8.00	7.00	6.00	8.00	7.00	7.00
Karagandy region	Mortality rate of children per 1000 citizens	HEALTHCARE	8.00	8.00	8.00	7.00	8.00	11.00	9.00
Kostanay region	Mortality rate of children per 1000 citizens	HEALTHCARE	13.00	11.00	11.00	9.00	11.00	11.00	12.00
Kyzylorda region	Mortality rate of children per 1000 citizens	HEALTHCARE	10.00	10.00	11.00	10.00	9.00	10.00	8.00
Mangystau region	Mortality rate of children per 1000 citizens	HEALTHCARE	7.00	8.00	6.00	6.00	3.00	2.00	3.00
Turkestan region	Mortality rate of children per 1000 citizens	HEALTHCARE	11.00	10.00	11.00	11.00	11.00	12.00	12.00
Pavlodar region	Mortality rate of children per 1000 citizens	HEALTHCARE	10.00	9.00	10.00	9.00	9.00	8.00	8.00
North Kazakhstan region	Mortality rate of children per 1000 citizens	HEALTHCARE	9.00	10.00	9.00	9.00	9.00	7.00	9.00
East Kazakhstan region	Mortality rate of children per 1000 citizens	HEALTHCARE	10.00	9.00	10.00	9.00	9.00	10.00	9.00

Astana	Mortality rate of children per 1000 citizens	HEALTHCARE	7.00	7.00	6.00	7.00	7.00	7.00	6.00
Almaty	Mortality rate of children per 1000 citizens	HEALTHCARE	8.00	5.00	5.00	5.00	6.00	6.00	6.00
Shymkent	Mortality rate of children per 1000 citizens	HEALTHCARE	0.00	0.00	0.00	0.00	0.00	0.00	12.00

(g)

REGION	VARIABLE	CRITERIA	2012	2013	2014	2015	2016	2017	2018
Akmola region	Number of children per 100 places in kindergarten	EDUCATION	0.00	0.00	100.00	97.00	123.00	84.00	104.00
Aktobe region	Number of children per 100 places in kindergarten	EDUCATION	0.00	0.00	116.00	113.00	124.00	108.00	129.00
Almaty region	Number of children per 100 places in kindergarten	EDUCATION	0.00	0.00	103.00	99.00	67.00	86.00	98.00
Atyrau region	Number of children per 100 places in kindergarten	EDUCATION	0.00	0.00	123.00	121.00	123.00	102.00	110.00
West Kazakhstan region	Number of children per 100 places in kindergarten	EDUCATION	0.00	0.00	106.00	105.00	128.00	96.00	113.00
Zhambyl region	Number of children per 100 places in kindergarten	EDUCATION	0.00	0.00	109.00	107.00	89.00	95.00	107.00
Karagandy region	Number of children per 100 places in kindergarten	EDUCATION	0.00	0.00	107.00	107.00	122.00	95.00	114.00
Kostanay region	Number of children per 100 places in kindergarten	EDUCATION	0.00	0.00	100.00	100.00	163.00	87.00	129.00
Kyzylorda region	Number of children per 100 places in kindergarten	EDUCATION	0.00	0.00	99.00	97.00	104.00	85.00	91.00

Mangystau region	Number of children per 100 places in kindergarten	EDUCATION	0.00	0.00	105.00	102.00	104.00	116.00	106.00
Turkestan region	Number of children per 100 places in kindergarten	EDUCATION	0.00	0.00	108.00	104.00	98.00	96.00	108.00
Pavlodar region	Number of children per 100 places in kindergarten	EDUCATION	0.00	0.00	110.00	109.00	125.00	109.00	117.00
North Kazakhstan region	Number of children per 100 places in kindergarten	EDUCATION	0.00	0.00	97.00	98.00	107.00	63.00	99.00
East Kazakhstan region	Number of children per 100 places in kindergarten	EDUCATION	0.00	0.00	114.00	106.00	125.00	106.00	110.00
Astana	Number of children per 100 places in kindergarten	EDUCATION	0.00	0.00	170.00	113.00	122.00	111.00	101.00
Almaty	Number of children per 100 places in kindergarten	EDUCATION	0.00	0.00	114.00	109.00	105.00	103.00	101.00
Shymkent	Number of children per 100 places in kindergarten	EDUCATION	0.00	0.00	0.00	0.00	0.00	0.00	91.00

(h)

REGION	VARIABLE	CRITERIA	2012	2013	2014	2015	2016	2017	2018
Akmola region	Number of students per 1 school	EDUCATION	0.00	0.00	179.19	190.01	199.84	208.25	216.53
Aktobe region	Number of students per 1 school	EDUCATION	0.00	0.00	276.14	289.40	306.54	325.47	351.08
Almaty region	Number of students per 1 school	EDUCATION	0.00	0.00	422.72	443.74	471.59	487.24	506.95
Atyrau region	Number of students per 1 school	EDUCATION	0.00	0.00	510.57	530.80	557.92	585.33	619.36
West Kazakhstan	Number of students per 1	EDUCATION	0.00	0.00	221.62	233.33	245.15	256.68	267.46

region	school								
Zhambyl region	Number of students per 1 school	EDUCATION	0.00	0.00	419.63	440.27	455.71	469.56	492.11
Karagandy region	Number of students per 1 school	EDUCATION	0.00	0.00	321.95	330.77	342.00	353.20	364.76
Kostanay region	Number of students per 1 school	EDUCATION	0.00	0.00	180.50	186.80	192.12	199.90	206.70
Kyzylorda region	Number of students per 1 school	EDUCATION	0.00	0.00	434.92	454.18	476.80	492.84	512.88
Mangystau region	Number of students per 1 school	EDUCATION	0.00	0.00	772.50	809.15	829.68	876.87	916.29
Turkestan region	Number of students per 1 school	EDUCATION	0.00	0.00	544.36	564.72	588.46	603.74	512.02
Pavlodar region	Number of students per 1 school	EDUCATION	0.00	0.00	219.11	230.71	247.76	263.91	278.28
North Kazakhstan region	Number of students per 1 school	EDUCATION	0.00	0.00	128.11	131.54	137.20	142.43	145.51
East Kazakhstan region	Number of students per 1 school	EDUCATION	0.00	0.00	247.69	255.37	268.10	273.27	277.28
Astana	Number of students per 1 school	EDUCATION	0.00	0.00	1,153.96	1,232.92	1,301.68	1,429.88	1,485.95
Almaty	Number of students per 1 school	EDUCATION	0.00	0.00	783.44	829.99	890.65	921.17	945.33
Shymkent	Number of students per 1 school	EDUCATION	0.00	0.00	0.00	0.00	0.00	0.00	1,313.54

(i)

REGION	VARIABLE	CRITERIA	2012	2013	2014	2015	2016	2017	2018
Akmola region	Ratio of the Average monthly nominal income of the population to the Cost of Living	ECONOMIC	2.88	2.82	2.94	3.10	3.23	3.32	3.32
Aktobe region	Ratio of the Average monthly nominal income	ECONOMIC	3.38	3.49	3.51	3.38	3.26	3.25	3.25

	of the population to the Cost of Living								
Almaty region	Ratio of the Average monthly nominal income of the population to the Cost of Living	ECONOMIC	2.19	2.30	2.38	2.62	2.70	2.64	2.64
Atyrau region	Ratio of the Average monthly nominal income of the population to the Cost of Living	ECONOMIC	6.02	5.89	6.28	6.07	6.40	6.30	6.30
West Kazakhstan region	Ratio of the Average monthly nominal income of the population to the Cost of Living	ECONOMIC	3.36	3.41	3.58	3.58	3.86	3.85	3.85
Zhambyl region	Ratio of the Average monthly nominal income of the population to the Cost of Living	ECONOMIC	2.31	2.25	2.33	2.44	2.46	2.61	2.61
Karagandy region	Ratio of the Average monthly nominal income of the population to the Cost of Living	ECONOMIC	3.48	3.59	3.55	3.57	3.51	3.60	3.60
Kostanay region	Ratio of the Average monthly nominal income of the population to the Cost of Living	ECONOMIC	2.83	2.92	2.88	3.02	3.28	3.47	3.47
Kyzylorda region	Ratio of the Average monthly nominal income of the population to the Cost of Living	ECONOMIC	2.75	2.78	2.82	2.73	2.88	2.87	2.87
Mangystau region	Ratio of the Average monthly nominal income of the population to the Cost of Living	ECONOMIC	3.79	3.99	4.40	4.22	4.31	4.09	4.09

Turkestan region	Ratio of the Average monthly nominal income of the population to the Cost of Living	ECONOMIC	2.05	2.08	1.99	1.97	2.15	1.89	1.89
Pavlodar region	Ratio of the Average monthly nominal income of the population to the Cost of Living	ECONOMIC	3.48	3.57	3.66	3.77	4.02	3.92	3.92
East Kazakhstan region	Ratio of the Average monthly nominal income of the population to the Cost of Living	ECONOMIC	2.93	2.90	2.90	3.00	3.10	3.31	3.31
Astana	Ratio of the Average monthly nominal income of the population to the Cost of Living	ECONOMIC	2.70	2.75	2.79	2.81	2.94	3.02	3.02
Almaty	Ratio of the Average monthly nominal income of the population to the Cost of Living	ECONOMIC	4.37	4.51	5.08	5.68	5.19	4.98	4.98
Shymkent	Ratio of the Average monthly nominal income of the population to the Cost of Living	ECONOMIC	4.50	4.76	4.94	5.01	5.13	4.88	4.88
Shymkent	Ratio of the Average monthly nominal income of the population to the Cost of Living	ECONOMIC	0.00	0.00	0.00	0.00	0.00	0.00	2.00

(j)

REGION	VARIABLE	CRITERIA	2012	2013	2014	2015	2016	2017	2018
Akmola region	Unemployment rate women (in %)	ECONOMIC	6.60	5.60	5.30	5.10	4.60	4.60	4.70
Aktobe region	Unemployment	ECONOMI	6.90	6.60	6.00	6.00	4.90	4.80	5.00

	rate women (in %)	C							
Almaty region	Unemployment rate women (in %)	ECONOMIC	6.50	3.90	5.90	6.10	5.80	6.00	6.20
Atyrau region	Unemployment rate women (in %)	ECONOMIC	6.10	5.30	4.90	4.70	5.10	5.00	4.90
West Kazakhstan region	Unemployment rate women (in %)	ECONOMIC	5.10	6.00	5.60	6.00	5.20	5.30	5.30
Zhambyl region	Unemployment rate women (in %)	ECONOMIC	5.60	5.30	5.90	6.10	5.80	5.30	5.00
Karagandy region	Unemployment rate women (in %)	ECONOMIC	6.60	5.20	6.20	6.90	5.80	5.60	5.90
Kostanay region	Unemployment rate women (in %)	ECONOMIC	6.30	5.90	5.00	5.70	5.10	5.10	4.90
Kyzylorda region	Unemployment rate women (in %)	ECONOMIC	6.80	6.40	5.70	5.60	5.50	5.10	4.90
Mangystau region	Unemployment rate women (in %)	ECONOMIC	6.50	8.80	6.30	7.90	7.80	7.10	7.00
Turkestan region	Unemployment rate women (in %)	ECONOMIC	7.00	7.40	6.40	6.10	6.10	5.90	6.00
Pavlodar region	Unemployment rate women (in %)	ECONOMIC	5.80	5.80	5.00	5.10	5.00	4.90	4.80
North Kazakhstan region	Unemployment rate women (in %)	ECONOMIC	6.30	5.10	5.10	5.80	4.90	4.40	4.70
East Kazakhstan region	Unemployment rate women (in %)	ECONOMIC	5.70	5.40	6.30	5.80	5.60	5.00	5.00
Astana	Unemployment rate women (in %)	ECONOMIC	5.90	6.30	5.10	5.30	4.90	4.60	4.60
Almaty	Unemployment rate women (in %)	ECONOMIC	8.00	6.50	6.50	5.60	5.70	6.20	6.20
Shymkent	Unemployment rate women (in %)	ECONOMIC	0.00	0.00	0.00	0.00	0.00	0.00	5.00

(k)

REGION	VARIABLE	CRITERIA	2012	2013	2014	2015	2016	2017	2018
Akmola region	Average monthly nominal wage of one employee among women (in KZT)	ECONOMIC	64,448.00	67,884.00	73,431.00	76,021.00	92,427.00	97,007.00	103,879.00
Aktobe region	Average monthly nominal wage of one employee among women (in KZT)	ECONOMIC	72,162.00	75,840.00	84,250.00	85,591.00	98,597.00	104,213.00	109,863.00
Almaty region	Average monthly nominal wage of one employee among women (in KZT)	ECONOMIC	69,640.00	72,603.00	79,126.00	80,968.00	96,767.00	100,556.00	106,343.00
Atyrau region	Average monthly nominal wage of one employee among women (in KZT)	ECONOMIC	111,255.00	115,569.00	136,027.00	138,922.00	161,522.00	166,327.00	182,390.00
West Kazakhstan region	Average monthly nominal wage of one employee among women (in KZT)	ECONOMIC	71,103.00	75,447.00	82,398.00	87,416.00	102,878.00	108,478.00	111,815.00
Zhambyl region	Average monthly nominal wage of one employee among women (in KZT)	ECONOMIC	63,692.00	66,568.00	72,007.00	75,604.00	88,418.00	91,773.00	97,803.00
Karagandy region	Average monthly nominal wage of one employee among women (in KZT)	ECONOMIC	71,710.00	76,207.00	82,832.00	87,703.00	100,821.00	106,492.00	114,634.00
Kostanay region	Average monthly nominal wage of one employee among women (in KZT)	ECONOMIC	66,979.00	71,332.00	77,672.00	81,350.00	96,961.00	103,053.00	108,914.00
Kyzylorda region	Average monthly nominal wage of one employee among women (in KZT)	ECONOMIC	76,710.00	78,652.00	82,656.00	85,292.00	101,381.00	104,025.00	107,953.00
Mangystau region	Average monthly nominal wage of one employee among women	ECONOMIC	99,117.00	110,224.00	125,310.00	127,602.00	141,653.00	146,359.00	153,967.00

	(in KZT)								
Turkestan region	Average monthly nominal wage of one employee among women (in KZT)	ECONOMIC	65,994.00	67,523.00	72,774.00	74,708.00	90,095.00	92,165.00	93,588.00
Pavlodar region	Average monthly nominal wage of one employee among women (in KZT)	ECONOMIC	71,338.00	76,550.00	82,769.00	87,181.00	101,366.00	107,029.00	113,617.00
North Kazakhstan region	Average monthly nominal wage of one employee among women (in KZT)	ECONOMIC	64,499.00	68,298.00	73,087.00	76,040.00	91,201.00	95,726.00	100,534.00
East Kazakhstan region	Average monthly nominal wage of one employee among women (in KZT)	ECONOMIC	73,567.00	77,353.00	84,282.00	88,072.00	102,954.00	108,129.00	116,905.00
Astana	Average monthly nominal wage of one employee among women (in KZT)	ECONOMIC	128,607.00	140,199.00	154,218.00	158,339.00	184,251.00	196,080.00	206,658.00
Almaty	Average monthly nominal wage of one employee among women (in KZT)	ECONOMIC	119,549.00	126,110.00	138,641.00	143,169.00	160,576.00	169,694.00	175,818.00
Shymkent	Average monthly nominal wage of one employee among women (in KZT)	ECONOMIC	0.00	0.00	0.00	0.00	0.00	0.00	101,293.00

(l)

REGION	VARIABLE	CRITERIA	2012	2013	2014	2015	2016	2017	2018
Akmola region	Number of hospital beds for children per 10000 citizens	HEALTHCARE	0.00	12.00	12.00	12.00	12.00	12.00	12.00
Aktobe region	Number of hospital beds for children per 10000 citizens	HEALTHCARE	0.00	8.00	8.00	9.00	8.00	8.00	8.00
Almaty region	Number of hospital beds for	HEALTHCARE	0.00	8.00	8.00	8.00	8.00	8.00	8.00

	children per 10000 citizens								
Atyrau region	Number of hospital beds for children per 10000 citizens	HEALTHCARE	0.00	10.00	10.00	10.00	8.00	8.00	8.00
West Kazakhstan region	Number of hospital beds for children per 10000 citizens	HEALTHCARE	0.00	11.00	11.00	19.00	19.00	10.00	10.00
Zhambyl region	Number of hospital beds for children per 10000 citizens	HEALTHCARE	0.00	12.00	11.00	11.00	11.00	11.00	11.00
Karagandy region	Number of hospital beds for children per 10000 citizens	HEALTHCARE	0.00	10.00	10.00	5.00	4.00	10.00	10.00
Kostanay region	Number of hospital beds for children per 10000 citizens	HEALTHCARE	0.00	10.00	10.00	17.00	17.00	9.00	9.00
Kyzylorda region	Number of hospital beds for children per 10000 citizens	HEALTHCARE	0.00	11.00	11.00	11.00	11.00	11.00	11.00
Mangystau region	Number of hospital beds for children per 10000 citizens	HEALTHCARE	0.00	9.00	9.00	13.00	12.00	8.00	8.00
Turkestan region	Number of hospital beds for children per 10000 citizens	HEALTHCARE	0.00	10.00	10.00	2.00	2.00	11.00	11.00
Pavlodar region	Number of hospital beds for children per 10000 citizens	HEALTHCARE	0.00	11.00	11.00	11.00	11.00	10.00	10.00
North Kazakhstan region	Number of hospital beds for children per 10000 citizens	HEALTHCARE	0.00	12.00	12.00	12.00	12.00	11.00	11.00
East Kazakhstan region	Number of hospital beds for children per 10000 citizens	HEALTHCARE	0.00	10.00	9.00	21.00	22.00	8.00	8.00
Astana	Number of hospital beds for children per 10000 citizens	HEALTHCARE	0.00	20.00	21.00	18.00	17.00	17.00	17.00

Almaty	Number of hospital beds for children per 10000 citizens	HEALTHCARE	0.00	12.00	11.00	11.00	11.00	9.00	9.00
Shymkent	Number of hospital beds for children per 10000 citizens	HEALTHCARE	0.00	0.00	0.00	0.00	0.00	10.00	10.00

(m)

REGION	VARIABLE	CRITERIA	2012	2013	2014	2015	2016	2017	2018
Akmola region	Number of children admitted to the orphanage during the year	SOCIAL	0.00	0.00	28.00	35.00	25.00	25.00	55.00
Aktobe region	Number of children admitted to the orphanage during the year	SOCIAL	0.00	0.00	56.00	49.00	58.00	69.00	55.00
Almaty region	Number of children admitted to the orphanage during the year	SOCIAL	0.00	0.00	127.00	81.00	65.00	61.00	54.00
Atyrau region	Number of children admitted to the orphanage during the year	SOCIAL	0.00	0.00	24.00	12.00	16.00	19.00	28.00
West Kazakhstan region	Number of children admitted to the orphanage during the year	SOCIAL	0.00	0.00	36.00	25.00	23.00	19.00	18.00
Zhambyl region	Number of children admitted to the orphanage during the year	SOCIAL	0.00	0.00	69.00	75.00	39.00	38.00	60.00
Karagandy region	Number of children admitted to the orphanage during the year	SOCIAL	0.00	0.00	225.00	231.00	267.00	233.00	195.00
Kostanay region	Number of children admitted to the orphanage during the year	SOCIAL	0.00	0.00	98.00	107.00	78.00	61.00	96.00
Kyzylorda region	Number of children admitted to the orphanage during the year	SOCIAL	0.00	0.00	78.00	83.00	68.00	79.00	54.00
Mangystau region	Number of children admitted	SOCIAL	0.00	0.00	29.00	21.00	9.00	24.00	12.00

	to the orphanage during the year								
Turkestan region	Number of children admitted to the orphanage during the year	SOCIAL	0.00	0.00	78.00	59.00	88.00	58.00	0.00
Pavlodar region	Number of children admitted to the orphanage during the year	SOCIAL	0.00	0.00	59.00	91.00	73.00	72.00	71.00
North Kazakhstan region	Number of children admitted to the orphanage during the year	SOCIAL	0.00	0.00	58.00	53.00	48.00	47.00	54.00
East Kazakhstan region	Number of children admitted to the orphanage during the year	SOCIAL	0.00	0.00	145.00	148.00	163.00	179.00	189.00
Astana	Number of children admitted to the orphanage during the year	SOCIAL	0.00	0.00	96.00	109.00	88.00	80.00	88.00
Almaty	Number of children admitted to the orphanage during the year	SOCIAL	0.00	0.00	52.00	79.00	65.00	74.00	41.00
Shymkent	Number of children admitted to the orphanage during the year	SOCIAL	0.00	0.00	0.00	0.00	0.00	0.00	35.00

(n)

REGION	VARIABLE	CRITERIA	2012	2013	2014	2015	2016	2017	2018
Akmola region	Volume of pollutant emissions into the atmosphere by enterprises that increased pollutant emissions (metric ton)	ECOLOGICAL	61,000.83	36,619.86	24,706.07	27,105.68	42,486.19	30,266.03	42,657.73
Aktobe region	Volume of pollutant emissions into the atmosphere by enterprises that increased pollutant	ECOLOGICAL	58,656.46	49,117.92	36,793.69	57,558.22	89,543.54	109,114.89	64,514.70

	emissions (metric ton)								
Almaty region	Volume of pollutant emissions into the atmosphere by enterprises that increased pollutant emissions (metric ton)	ECOLOGICAL	9,749.20	5,677.54	28,693.96	34,508.99	20,262.41	12,285.68	29,488.64
Atyrau region	Volume of pollutant emissions into the atmosphere by enterprises that increased pollutant emissions (metric ton)	ECOLOGICAL	53,869.97	112,451.83	15,104.34	84,907.28	146,403.07	94,130.84	51,393.83
West Kazakhstan region	Volume of pollutant emissions into the atmosphere by enterprises that increased pollutant emissions (metric ton)	ECOLOGICAL	35,542.83	31,349.09	26,367.18	21,229.61	20,758.94	6,192.12	27,210.43
Zhambyl region	Volume of pollutant emissions into the atmosphere by enterprises that increased pollutant emissions (metric ton)	ECOLOGICAL	22,948.11	25,358.31	25,531.78	19,100.01	29,543.04	38,345.92	21,161.72
Karagandy region	Volume of pollutant emissions into the atmosphere by enterprises that increased pollutant emissions (metric ton)	ECOLOGICAL	159,018.95	85,831.15	408,612.77	167,172.24	358,677.17	248,434.27	191,716.81
Kostanay region	Volume of pollutant emissions into the atmosphere	ECOLOGICAL	8,843.45	73,690.75	20,495.60	23,810.17	33,746.11	61,520.09	67,161.29

	by enterprises that increased pollutant emissions (metric ton)								
Kyzylorda region	Volume of pollutant emissions into the atmosphere by enterprises that increased pollutant emissions (metric ton)	ECOLOGICAL	16,577.47	14,659.97	5,304.38	14,983.90	11,591.03	8,036.31	10,020.62
Mangystau region	Volume of pollutant emissions into the atmosphere by enterprises that increased pollutant emissions (metric ton)	ECOLOGICAL	15,822.36	31,222.25	58,724.73	32,212.19	24,922.19	31,352.01	43,765.88
Turkestan region	Volume of pollutant emissions into the atmosphere by enterprises that increased pollutant emissions (metric ton)	ECOLOGICAL	31,220.87	24,643.34	28,080.32	12,950.32	34,973.99	34,163.62	10,600.93
Pavlodar region	Volume of pollutant emissions into the atmosphere by enterprises that increased pollutant emissions (metric ton)	ECOLOGICAL	540,355.84	431,798.08	236,975.46	122,213.63	148,275.26	515,045.53	607,190.53
North Kazakhstan region	Volume of pollutant emissions into the atmosphere by enterprises that increased pollutant emissions (metric ton)	ECOLOGICAL	15,437.70	46,631.68	46,063.35	52,268.99	54,871.74	12,376.47	49,411.74

East Kazakhstan region	Volume of pollutant emissions into the atmosphere by enterprises that increased pollutant emissions (metric ton)	ECOLOGICAL	40,884.53	30,806.09	42,579.80	50,486.64	38,342.39	52,586.66	56,938.16
Astana	Volume of pollutant emissions into the atmosphere by enterprises that increased pollutant emissions (metric ton)	ECOLOGICAL	3,418.66	4,642.47	55,033.21	3,673.98	47,325.94	47,295.76	2,031.60
Almaty	Volume of pollutant emissions into the atmosphere by enterprises that increased pollutant emissions (metric ton)	ECOLOGICAL	5,635.05	5,834.89	4,277.68	1,320.12	35,014.52	37,451.98	40,403.38
Shymkent	Volume of pollutant emissions into the atmosphere by enterprises that increased pollutant emissions (metric ton)	ECOLOGICAL	0.00	0.00	0.00	0.00	0.00	0.00	25,688.22

(o)

REGION	VARIABLE	CRITERIA	2012	2013	2014	2015	2016	2017	2018
Akmola region	CPI basket of consumer goods for children	ECONOMIC	110.82	104.08	106.97	150.09	111.98	111.41	106.65
Aktobe region	CPI basket of consumer goods for children	ECONOMIC	103.41	104.85	107.65	127.19	114.18	107.36	106.16
Almaty region	CPI basket of consumer goods for children	ECONOMIC	102.15	103.55	115.38	123.01	109.32	112.76	110.00

Atyrau region	CPI basket of consumer goods for children	ECONOMIC	106.08	109.50	113.72	128.00	112.30	110.46	109.57
West Kazakhstan region	CPI basket of consumer goods for children	ECONOMIC	105.80	102.54	109.31	130.34	109.93	108.47	107.57
Zhambyl region	CPI basket of consumer goods for children	ECONOMIC	104.80	109.06	111.40	131.85	110.23	110.07	110.21
Karagandy region	CPI basket of consumer goods for children	ECONOMIC	103.96	107.12	118.42	120.26	113.45	109.03	108.03
Kostanay region	CPI basket of consumer goods for children	ECONOMIC	103.34	102.33	106.11	122.38	108.73	106.62	109.15
Kyzylorda region	CPI basket of consumer goods for children	ECONOMIC	103.46	103.88	106.04	141.76	113.49	107.29	107.57
Mangystau region	CPI basket of consumer goods for children	ECONOMIC	106.50	105.58	111.77	126.34	108.26	109.90	105.97
Turkestan region	CPI basket of consumer goods for children	ECONOMIC	105.74	106.57	114.89	124.28	115.26	105.75	101.38
Pavlodar region	CPI basket of consumer goods for children	ECONOMIC	112.83	104.77	133.23	121.67	121.88	120.98	106.14
North Kazakhstan region	CPI basket of consumer goods for children	ECONOMIC	103.92	103.08	108.41	122.79	110.00	107.13	107.00
East Kazakhstan region	CPI basket of consumer goods for children	ECONOMIC	106.65	106.33	109.69	120.42	115.58	107.57	106.71
Astana	CPI basket of consumer goods for children	ECONOMIC	104.87	104.11	116.32	145.13	118.98	109.72	107.15
Almaty	CPI basket of consumer goods for children	ECONOMIC	103.23	102.20	109.76	130.55	117.82	106.65	105.61
Shymkent	CPI basket of consumer goods for children	ECONOMIC	0.00	0.00	0.00	0.00	0.00	0.00	101.17

(p)

REGION	VARIABLE	CRITERIA	2012	2013	2014	2015	2016	2017	2018
Akmola region	Primary and secondary housing market price per 1 m2	ECONOMIC	0.00	0.00	0.00	214.20	189.10	187.15	186.10

	(in KZT)								
Aktobe region	Primary and secondary housing market price per 1 m2 (in KZT)	ECONOMIC	0.00	0.00	0.00	169.10	148.80	150.75	151.45
Almaty region	Primary and secondary housing market price per 1 m2 (in KZT)	ECONOMIC	0.00	0.00	0.00	138.16	137.56	163.16	163.16
Atyrau region	Primary and secondary housing market price per 1 m2 (in KZT)	ECONOMIC	0.00	0.00	0.00	293.35	294.10	294.10	294.75
West Kazakhstan region	Primary and secondary housing market price per 1 m2 (in KZT)	ECONOMIC	0.00	0.00	0.00	153.85	149.95	150.95	153.10
Zhambyl region	Primary and secondary housing market price per 1 m2 (in KZT)	ECONOMIC	0.00	0.00	0.00	151.76	151.76	151.76	147.26
Karagandy region	Primary and secondary housing market price per 1 m2 (in KZT)	ECONOMIC	0.00	0.00	0.00	177.00	180.65	190.30	190.30
Kostanay region	Primary and secondary housing market price per 1 m2 (in KZT)	ECONOMIC	0.00	0.00	0.00	186.50	183.50	181.00	188.60
Kyzylorda region	Primary and secondary housing market price per 1 m2 (in KZT)	ECONOMIC	0.00	0.00	0.00	117.65	121.60	132.32	136.57
Mangystau region	Primary and secondary housing market price per 1 m2 (in KZT)	ECONOMIC	0.00	0.00	0.00	325.80	310.60	278.40	266.95
Turkestan region	Primary and secondary housing market price per 1 m2 (in KZT)	ECONOMIC	0.00	0.00	0.00	0.00	0.00	0.00	79.80

Pavlodar region	Primary and secondary housing market price per 1 m2 (in KZT)	ECONOMIC	0.00	0.00	0.00	225.15	199.00	171.80	148.50
North Kazakhstan region	Primary and secondary housing market price per 1 m2 (in KZT)	ECONOMIC	0.00	0.00	0.00	167.85	170.20	183.40	161.97
East Kazakhstan region	Primary and secondary housing market price per 1 m2 (in KZT)	ECONOMIC	0.00	0.00	0.00	185.75	201.75	199.50	199.90
Astana	Primary and secondary housing market price per 1 m2 (in KZT)	ECONOMIC	0.00	0.00	0.00	338.45	322.95	322.90	343.25
Almaty	Primary and secondary housing market price per 1 m2 (in KZT)	ECONOMIC	0.00	0.00	0.00	328.60	320.90	330.65	335.85
Shymkent	Primary and secondary housing market price per 1 m2 (in KZT)	ECONOMIC	0.00	0.00	0.00	263.20	215.55	235.35	243.75

2. Sub-Index by clusters:

(a)

REGION	CLUSTER	SUB INDEX 2018
Mangystau region	SOCIAL	0.88
Atyrau region	SOCIAL	0.72
Almaty	SOCIAL	0.69
Shymkent	SOCIAL	0.68
West Kazakhstan region	SOCIAL	0.60
Turkestan region	SOCIAL	0.60
Aktobe region	SOCIAL	0.59
Astana	SOCIAL	0.59
Kyzylorda region	SOCIAL	0.57
Karagandy region	SOCIAL	0.47
Zhambyl region	SOCIAL	0.43

Almaty region	SOCIAL	0.41
Akmola region	SOCIAL	0.37
Pavlodar region	SOCIAL	0.37
North Kazakhstan region	SOCIAL	0.32
Kostanay region	SOCIAL	0.31
East Kazakhstan region	SOCIAL	0.29

(b)

REGION	CLUSTER	SUB INDEX 2018
Astana	HEALTHCARE	0.75
Kyzylorda region	HEALTHCARE	0.71
Turkestan region	HEALTHCARE	0.65
Mangystau region	HEALTHCARE	0.62
Zhambyl region	HEALTHCARE	0.60
Atyrau region	HEALTHCARE	0.59
Akmola region	HEALTHCARE	0.56
Almaty	HEALTHCARE	0.56
Karagandy region	HEALTHCARE	0.46
Almaty region	HEALTHCARE	0.44
West Kazakhstan region	HEALTHCARE	0.43
Aktobe region	HEALTHCARE	0.40
Shymkent	HEALTHCARE	0.38
East Kazakhstan region	HEALTHCARE	0.35
Kostanay region	HEALTHCARE	0.31
Pavlodar region	HEALTHCARE	0.31
North Kazakhstan region	HEALTHCARE	0.29

(c)

REGION	CLUSTER	SUB INDEX 2018
North Kazakhstan region	EDUCATION	0.91
Akmola region	EDUCATION	0.76
Almaty region	EDUCATION	0.68
Kyzylorda region	EDUCATION	0.65
West Kazakhstan region	EDUCATION	0.56
East Kazakhstan region	EDUCATION	0.56
Zhambyl region	EDUCATION	0.53
Shymkent	EDUCATION	0.53
Kostanay region	EDUCATION	0.50
Pavlodar region	EDUCATION	0.44
Almaty	EDUCATION	0.44
Turkestan region	EDUCATION	0.44
Karagandy region	EDUCATION	0.41

Mangystau region	EDUCATION	0.41
Astana	EDUCATION	0.38
Aktobe region	EDUCATION	0.35
Atyrau region	EDUCATION	0.32

(d)

REGION	CLUSTER	SUB INDEX 2018
Astana	ECOLOGICAL	1.00
Zhambyl region	ECOLOGICAL	0.91
Shymkent	ECOLOGICAL	0.88
West Kazakhstan region	ECOLOGICAL	0.85
Almaty region	ECOLOGICAL	0.82
Almaty	ECOLOGICAL	0.79
Akmola region	ECOLOGICAL	0.76
Mangystau region	ECOLOGICAL	0.74
North Kazakhstan region	ECOLOGICAL	0.71
Atyrau region	ECOLOGICAL	0.68
Turkestan region	ECOLOGICAL	0.62
Kostanay region	ECOLOGICAL	0.59
Kyzylorda region	ECOLOGICAL	0.59
Aktobe region	ECOLOGICAL	0.21
Karagandy region	ECOLOGICAL	0.21
East Kazakhstan region	ECOLOGICAL	0.18
Pavlodar region	ECOLOGICAL	0.09

(e)

REGION	CLUSTER	SUB INDEX 2018
Pavlodar region	ECONOMIC	0.76
Astana	ECONOMIC	0.69
Atyrau region	ECONOMIC	0.59
Akmola region	ECONOMIC	0.58
Almaty	ECONOMIC	0.58
Aktobe region	ECONOMIC	0.56
Mangystau region	ECONOMIC	0.55
West Kazakhstan region	ECONOMIC	0.54
Kyzylorda region	ECONOMIC	0.54
North Kazakhstan region	ECONOMIC	0.54
East Kazakhstan region	ECONOMIC	0.49
Kostanay region	ECONOMIC	0.48
Karagandy region	ECONOMIC	0.47
Turkestan region	ECONOMIC	0.46
Shymkent	ECONOMIC	0.41

Zhambyl region	ECONOMIC	0.33
Almaty region	ECONOMIC	0.28

3. Index by years

Large cities	2012	2013	2014	2015	2016	2017	2018
Astana	1	1	7	6	5	4	1
Almaty	4	2	3	5	7	9	3
Shymkent	5	8	2	3	3	1	9

West Kazakhstan	2012	2013	2014	2015	2016	2017	2018
Mangystau region	3	4	5	1	1	5	2
Atyrau region	2	3	1	4	4	7	5
West Kazakhstan region	8	6	6	2	2	2	7
Aktobe region	10	14	11	13	12	12	12

South Kazakhstan	2012	2013	2014	2015	2016	2017	2018
Kyzylorda region	9	7	8	9	10	8	4
Turkestan region	14	13	16	14	14	10	8
Zhambyl region	7	9	12	12	9	13	10
Almaty region	6	5	13	10	5	14	13

North & East Kazakhstan	2012	2013	2014	2015	2016	2017	2018
Akmola region	16	10	4	8	8	3	6
North Kazakhstan region	13	11	9	11	13	6	11
Pavlodar region	17	17	15	17	17	16	14
Karagandy region	11	12	14	16	15	15	15
Kostanay region	12	15	10	7	11	11	16
East Kazakhstan region	15	16	17	15	16	17	17