STUDY ON THE EVOLUTION OF THE NUMBER OF PEOPLE WITH DISABILITIES IN ROMANIA

Crăciun Ionuț-Marius, Ph. D Student
University of Craiova, Faculty of Economics and Business Administration, Craiova, Romania

Abstract: In this paper, we made a statistical analysis and studied the evolution of the number of adults cared for in special care centers of the national authority for people with disabilities during 1999-2018 in Romania.Using the least squares method, we determined the forecast functions for each type of disability and predicted for the following years the number of people with disabilities.

JEL classification: C53

Key words: statistical analysis, predioction, disability

1. Introduction

In this article, we aim to use the least-squares method to make a prediction of the number of adults with disabilities in Romania. Given the need for anticipation of future events is a topical issue, the role of forecasting is becoming increasingly important, both economically and socially.

Forecasting is one of the main objectives of statistical-economic and econometric analysis along with mathematical modeling. Given the increasing concerns regarding the anticipation of future events, we believe that predicting the number of adults with disabilities in Romania can help the authorities take the best measures to help improve their lives.

In the article,[1] (7) the authors conducted a study on people with disabilities between 1982 and 1994 in the United States of America, with age categories between 5 and 65 years up to 95 maximum. In 1994 the origin of the disability was 21,3% with 3,6% less than in 1982 which was 24,9% and a decrease of 1,9% between 1982-1989 the difference being 7 years.

In the article, [2](4) the authors study the period 1983-1996 America-San Francisco, say that the risk of disability arises due to poverty and single-parent families and is based on the study of 3 criteria: 1) a higher risk in single-parent households 2) no incremental risk associated with racial or ethnic status after poverty control 3) a growing relationship between poverty and disability risk.

[1] Kenneth G. Manton, Larry Corder, Eric Stallard, Chronic disability trends in elderly United States populations: 1982–1994, Research Article PNAS March 18, 1997

[2] Glenn T. Fujiura, Kiyoshi Yamaki, Trends in Demography of Childhood Poverty and Disability, Research Article January 1, 2000

In the article, [3](1) it is discussed that those children living in poverty in America had the highest disability rates, 102,6 cases per 1000 populations in 2010-2011, but unexpectedly, children living in households with income ≥400% above the level federal poverty rates increased the most (28,4%) compared to this 10 year period. Over the past decade, the child's disability reported by parents has steadily increased. As the child's disability due to physical conditions decreased, there was a large increase in disabilities due to neurodeveloped or mental health problems.

Article [4](2) refers to disability in the aging population in the United States and proposes a framework for studying disability trends based on existing patterns of disability. The framework is abbreviated FE-BRIT-SE to designate fixed attributes at the individual level (F), including genetic factors, personality, age, sex and previous and environmental living conditions (E); individual (B) behaviors, (R) resources, (I) interventions, (T) technology; and (S) socio-economic and (E) ecological consequences of disability trends.

Article [5](9) Reliable estimation of future trends in life expectancy and disabilities is crucial for older societies. Previous forecasts did not take into account the potential impact of trends in the incidence of the disease. The current prediction model combines population trends in cardiovascular disease, dementia, disability and mortality with projected trends in life expectancy and the burden of disability in England and Wales by 2025.

Article (10) talks about students with disabilities who are important members of the American population; therefore, the provisions for their inclusion in the learning community, set out in the Disability Education Act (IDEA) are relevant. The purpose of the study was to track disability trends in the appropriate 2008-2018 Missouri processes for K-12 public school students.

The paper is structured in four chapters. The first chapter is introductory and presents the current state of knowledge in the field. The second chapter includes the research methodology and presents the least-squares method, which is used to determine the forecast function. The third chapter, which also contains the unique elements of this paper, presents a statistical analysis (standard deviation, mean,coefficient of variation) of the number of adults cared for in the special care centers of the national authority for people with disabilities in 1999-2018. These data and the least squares method, the forecast functions are determined for each type of disability and a forecast is made on their evolution until 2021, with the possibility of extension.

[3] Amy J. Houtrow, Changing Trends of Childhood Disability, 2001–2011 Pediatrics September 2014

[4] Danan Gu, Rosa Gomez-Redondo, Studying Disability Trends in Aging Populations, Demography 14 November 2014

[5] E. Verza, Psihopedagogia specială,1994,Revista Academia Edu

2. Research methodology

2.1 Smallest squares method

The study of an economic or social phenomenon can be characterized from a practical point of view by obtaining data as a result of experiences, measurements, observations. These data provide information on the link between the various variables of the phenomenon studied. In the following, we will consider only the case of two variables *x, y* and study the dependence between them. From a mathematical point of view, we must find a model of the form $y = f(x)$, which will model as accurately as possible the researched phenomenon and be able to provide information on its subsequent evolution.

The function f represents in our case the evolution as number of people of a degree of disability in a time interval $[t_1, t_2]$, and the function g (t) can provide an image of the number of people with a degree of disability, which will be call prediction (forecast). The g-curve is also called the trend of the studied sample.

We consider the function f: [a, b] → R. whose analytical expression is not known, but its values are known in a finite number of points x_1, x_2, ..., x_n in the interval [a, b] and poses the problem of determining a function g that approximates the function f in the interval [a, b].

x	x_1	x_2	$\cdots$	x_n
f(x)	y_1	y_2	$\cdots$	y_n

Most often the function g is chosen in the form of a polynomial because on short length intervals, the curve y = f (x) can be approximated by means of curves that have as an analytical representation a polynomial.

Suppose that the values of the function y_i = f (x_i), i = $\overline{1,n}$ are known at the points x_1, ..., x_n and $\bar{y}$ = g(x) be the function with which we want to approximate. We will determine the analytical expression of *g* by highlighting an approximation criterion. Let's consider the errors

$$\varepsilon_1 = y_1 - \bar{y}_1, \varepsilon_2 = y_2 - \bar{y}_2, \dots, \varepsilon_n = y_n - \bar{y}_n$$

We want to find the analytical expression of g, so that the error of approximation is minimal. It is used as an approximation criterion to minimize the sum of the squares of the errors,must

$$\sum_{i=1}^{n} \varepsilon_i^2 = \sum_{i=1}^{n} [f(x_i) - g(x_i)]^2$$

to be minimal.

We consider instead of g (x) a polynomial of degree k ≤ n

$$P_k(x) = a_0 + a_1x + a_2x^2 + \dots + a_kx^k$$

The coefficients a_0, a_1, ..., a_k will be determined by setting the condition as the expression

$$\sum_{i=1}^{n} [f(x_i) - P_k(x_i)]^2$$

to be minimal

This expression is a function of k + 1 parameters,

$$F(a_0, a_1, \dots, a_n) = \sum_{i=1}^{n}[f(x_1) - (a_0, a_1x_i + a_2x_i^2 + \dots + a_kx_i^k)]^2$$

We have the next system

$$\frac{\partial F}{\partial a_0} = 0$$
$$\dots\dots\dots\dots$$
$$\frac{\partial F}{\partial a_k} = 0$$

Are go to

$$-2\sum_{i=1}^{n}[f(x_i) - (a_0 + a_1x_1 + a_2x_i^2 + \dots + a_kx_i^k)] = 0$$
$$\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots$$
$$-2\sum_{i=1}^{n}[f(x_i) - (a_0 + a_1x_1 + a_2x_i^2 + \dots + a_kx_i^k)] = 0$$

Performing the calculations, we arrive at the following system of (k + 1) linear equations with (k + 1) unknowns

$$na_0 + a_1\sum_{i=1}^{n}x_i + a_2\sum_{i=1}^{n}x_i^2 + \dots + a_k\sum_{i=1}^{n}x_i^k = \sum_{i=1}^{n}f(x_i)$$
$$a_0\sum_{i=1}^{n}x_i + a_1\sum_{i=1}^{n}x_i^2 + a_2\sum_{i=1}^{n}x_i^3 + \dots + a_k\sum_{i=1}^{n}x_i^{k+1} = \sum_{i=1}^{n}x_if(x_i)$$
$$\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots$$
$$a_0\sum_{i=1}^{n}x_i^k + a_1\sum_{i=1}^{n}x_i^{k+1} + \dots + a_k\sum_{i=1}^{n}x_i^{2k} = \sum_{i=1}^{n}x_i^k f(x_i).$$

called Gauss's system of normal equations

A simplified case is obtained if the observed data x_i are chosen so that

$$\sum_{i=1}^{n}x_i = 0\ ,$$

system of equation normal behind

$$na_0 + a_2\sum_{i=1}^{n}x_i^2 + \dots + a_k\sum_{i=1}^{n}x_i^k = \sum_{i=1}^{n}f(x_i)$$
$$a_1\sum_{i=1}^{n}x_i^2 + a_2\sum_{i=1}^{n}x_i^3 + \dots + a_k\sum_{i=1}^{n}x_i^{k+1} = \sum_{i=1}^{n}x_if(x_i)$$
$$\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots$$
$$a_0\sum_{i=1}^{n}x_i^k + a_1\sum_{i=1}^{n}x_i^{k+1} + \dots + a_k\sum_{i=1}^{n}x_i^{2k} = \sum_{i=1}^{n}x_i^k f(x_i).$$

It can be shown that the determinant of the system (15) is different from zero, the points x_1, x_2, ..., $x_n$being distinct. Under these conditions the system has a unique solution and it forms the stationary point $X_0 = (a_0, a_1, \dots, a_k)^t$. Also the quadratic function.

$$\varphi(U) = \sum_{i=1}^{n} \sum_{i=1}^{n} \frac{\partial^{2} F(X_0)}{\partial a_i \partial a_j} u_i u_j$$

is positively defined, so $X_0$is the minimum point of F (a_0, a_1, ..., a_k).

It follows that the polynomial P_k(x) is uniquely determined. This method by which they function *f* is approximated by a function *g* is also called an adjustment, and g (x), an adjustment function.

In order to choose the adjustment function as correctly as possible, it is necessary to graphically represent the points (x_i , f(x_i)) that form the so-called correlation cloud and to appreciate the type of curve after which it is the adjustment.

Among the most common adjustment curves we mention:

Linear adjustment

g(x) = a_0 + a_1x

with the system of normal equations

$$n a_0 + a_1 \sum_{i=1}^{n} x_i = \sum_{i=1}^{n} f(x_i)$$

$$a_0 \sum_{i=1}^{n} x_i + a_1 \sum_{i=1}^{n} x_i^2 = \sum_{i=1}^{n} x_i f(x_i)$$

Parabolic adjust

$$g(x) = a_0 + a_1 x + a_2 x^2$$

with the system of normal equations

$$n a_0 + a_1 \sum_{i=1}^{n} x_i + a_2 \sum_{i=1}^{n} x_i^2 = \sum_{i=1}^{n} f(x_i)$$

$$a_0 \sum_{i=1}^{n} x_i + a_1 \sum_{i=1}^{n} x_i^2 + a_2 \sum_{i=1}^{n} x_i^3 = \sum_{i=1}^{n} x_i f(x_i)$$

$$a_0 \sum_{i=1}^{n} x_i^2 + a_1 \sum_{i=1}^{n} x_i^3 + a_2 \sum_{i=1}^{n} x_i^4 = \sum_{i=1}^{n} x_i^2 f(x_i).$$

Hiperbolic adjust

$$g(x) = a_0 + \frac{a_1}{x}$$

with notation $\frac{1}{x} = z$ s linear adjustment is reached.

Exponential adjustation g(x) = ba^x

By logarithm is obtained ln g(x) = ln b + x ln a or h(x) = a_0 + a_1x, where h(x) = ln g(x), a_0 = ln b, a_1 = ln a, (a, b > 0).

Adjustment with the power function

$$g(x) = ax^{b}$$

By logarithm is obtained ln g(x) = ln a + b ln x, with the system of normal equations

$$n \ln a + b \sum_{i=1}^{n} \ln x_i = \sum_{i=1}^{n} \ln f(x_i)$$

$$ln\ a \sum_{i=1}^{n} ln\ x_i + b \sum_{i=1}^{n} (ln\ x_i)^{2} = \sum_{i=1}^{n} ln(x_i)\ ln\ f(x_i)$$

3. Forecasts on the number of people with disabilities

3.1 Physical Disability

Physical disability is characterized by morphological or structural changes more or less accentuated, which occur in the shape and structure of the body and manifested by a slowdown or excessive growth, by a developmental disorder or a disproportionate development , by deviations, deformations or other structural defects, followed or preceded by functional disorders.

Data by year are presented in the next series for physical disability

Years	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Number of persons	1336	1263	1225	1234	1252	690	572	528	1323	1557	1465

2010	2011	2012	2013	2014	2015	2016	2017	2018
1678	1856	1617	1578	2409	2352	2265	2013	2127

The average number of people with physical disabilities is 1619,56. The mean square deviation is 585,93 where it results that the number of people with this type of disability deviates on average by about 585 people from the average of the series. The coefficient of variation is 36,17% which indicates that the series is homogeneous and the average is representative.

Applying the least-squares method we obtain the prediction function in the form of a polynomial of degree 5 with the expression

$$y = 0{,}0178x^5 - 1{,}0006x^4 + 19{,}128x^3 - 136{,}35x^2 + 273{,}57x + 1187{,}8$$

represented graphically in Figure 1. For ease of calculation it was considered horizontally that the year 1999 be represented as year 1 for all subsequent graphical representations.

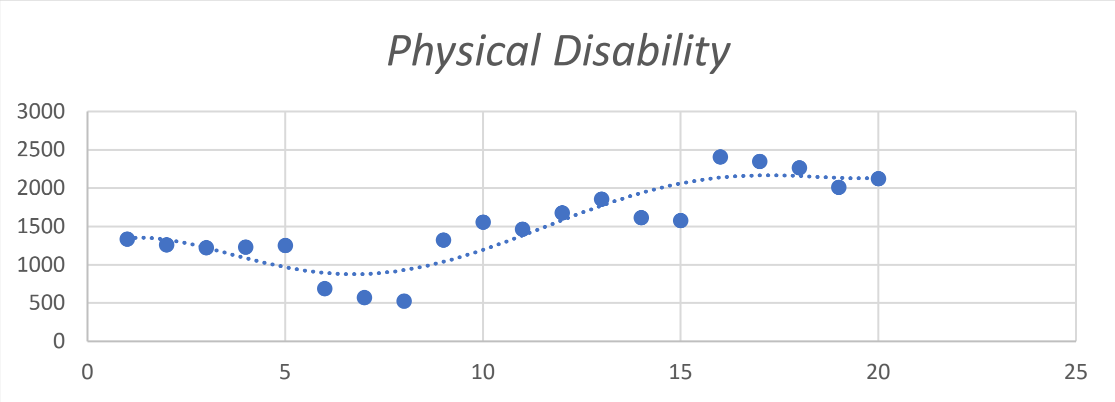

Figure 1

We notice that the physical disability starting from 2013 starts to increase until 2015 reaching the value of 2352 people suffering from this disease. We estimate that from 2019 to 2021, the number of people with this disability will increase to 2639. The lowest value is in 2006 (528 cases)

Forecast for the number of people with this type of disability is given in table 1

Table 1

Years	2019	2020	2021
Prediction	2246	2225	2639

3.2 Somatic disability

It belongs to the body in general and not to the viscera, for example, the somatic muscles, the muscles of the wall of his body somatopleure, differing from the splanchnic muscles. This term must be understood as opposed to the term psychic (which refers to psychism). Somatic disability is not very popular in Romania because since 2000, being its peak has a mass decrease as we see in the series below. The lowest value is observed in 2018. The data by year is presented in the next series for somatic disability.

Table 2

Years	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Number of persons	2891	3069	2791	2623	2552	1049	793	735	807	764	567

2010	2011	2012	2013	2014	2015	2016	2017	2018
524	534	574	514	657	528	502	390	369

The average of people suffering from a somatic disability is 1061,30, we can see that the oscillation is 91,80% where it results that the series is heterogeneous, the variation is very large and the average is not representative. People who deviate from the average of 974,363 are approximately 974.

Applying the least-squares method we obtain the prediction function in the form of a power function with the expression

$$y = 5057{,}3x^{-0.827}$$

represented graphically in Figure 2.

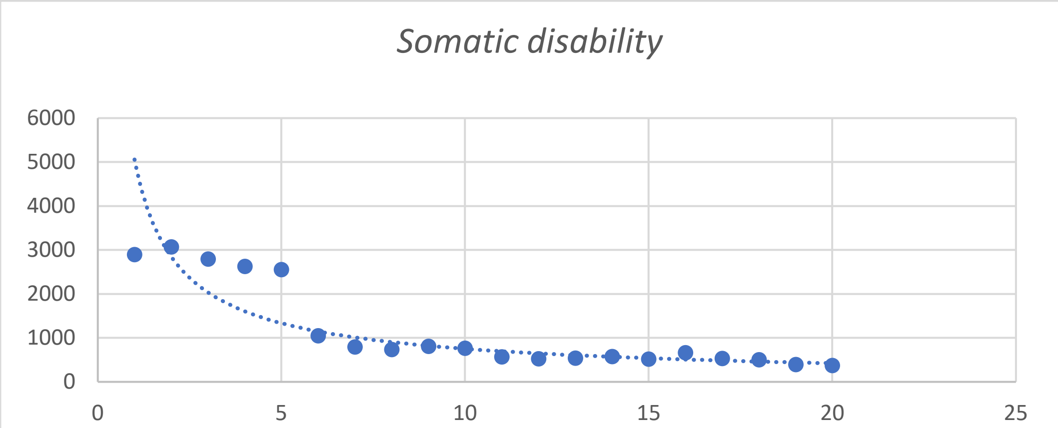

Figure 2

People suffering from somatic disabilities are slowly starting to decline since 2000, this year's value is 3069 reaching the minimum value of 369 cases in 2018. We can expect that from 2019 these cases will decrease considerably compared to previous years.

Table 3 illustrates the forecast for the coming years

Table 3

Years	2019	2020	2021
Prediction	407	392	378

3.3 Hearing disability

Hearing impairment is a sensory impairment and is a total or partial impairment or loss of hearing. The occurrence of a hearing deficit affects both the professional activity of the person and his relations with the world around him. Hearing impairment is measured in terms of decibels. Data by year are presented in the next series for the hearing impaired.

Table 3

Years	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Number of persons	344	375	388	297	264	146	151	101	124	113	85

2010	2011	2012	2013	2014	2015	2016	2017	2018
84	129	136	115	126	118	100	100	84

We can see that the square average of people with hearing impairments is 99,72, where 99 people deviate from the average. The coefficient of variation being 63,32%, we deduce that the average is not very representative and the series is inhomogeneous. The persons included in this handicap are 157,47.

Applying the least-squares method we obtain the prediction function in the form of a polynomial of degree 3 with the expression

$$y = -0{,}1056x^3 + 4{,}9275x^2 - 75{,}907x + 491{,}82$$

represented graphically in Figure 3.

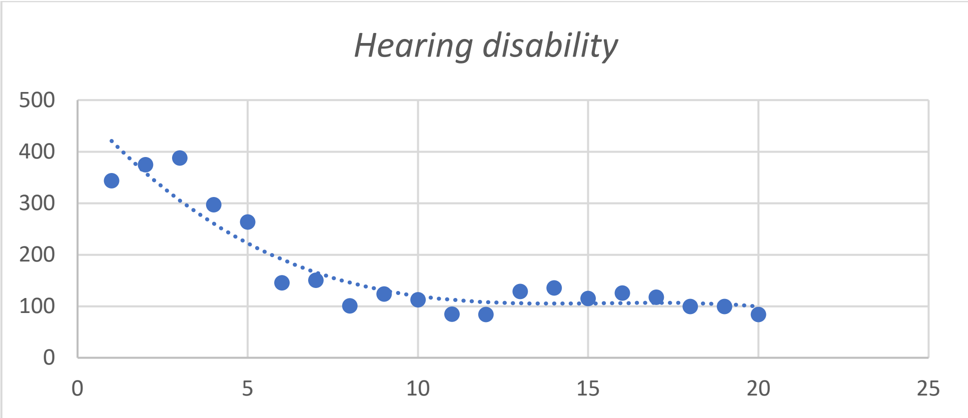

Figure 3

The case of people suffering from this hearing impairment decreases significantly because the causes that cause this disability are kept under control by specialists. The peak of cases is reached in 2001 with the value of 388 cases, in the future it will become very rare, the proof being the fact that in 2021 only 68 new cases are expected. The fewest cases are in 2010.

Table 4 indicates the forecast for the next years with the number of people with hearing impairment

Table 4

Years	2019	2020	2021
Prediction	92	82	68

3.4 Visual impairment

Visual impairment is a sensory impairment and consists in a decrease in varying degrees (up to total loss) of visual accuracy. Visual impairment of means a decrease in visual accuracy in one or both eyes (binoculars), which occurs from the period of intrauterine life until death. Visual impairment can also occur due to standing in front of a computer / TV or reading in very low light. The peak of this disability was in 2014, where 610 people were diagnosed.

Table 6

Year	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Number of persons	528	573	590	569	553	517	462	476	519	542	506

2010	2011	2012	2013	2014	2015	2016	2017	2018
504	568	558	519	610	417	488	412	363

510,82 represents the average of people with this disability, out of a total of 64,18 cases, 64 people deviate from the average. The fluctuation is 12,56% which shows that the average is representative and the series is homogeneous.

Applying the least-squares method we obtain the prediction function in the form of a polynomial of degree 5 with the expression

$$y = 0{,}0051x^5 - 0{,}2921x^4 + 5{,}9274x^3 - 50{,}735x^2 + 165{,}56x + 407{,}2$$

represented graphically in Figure 4.

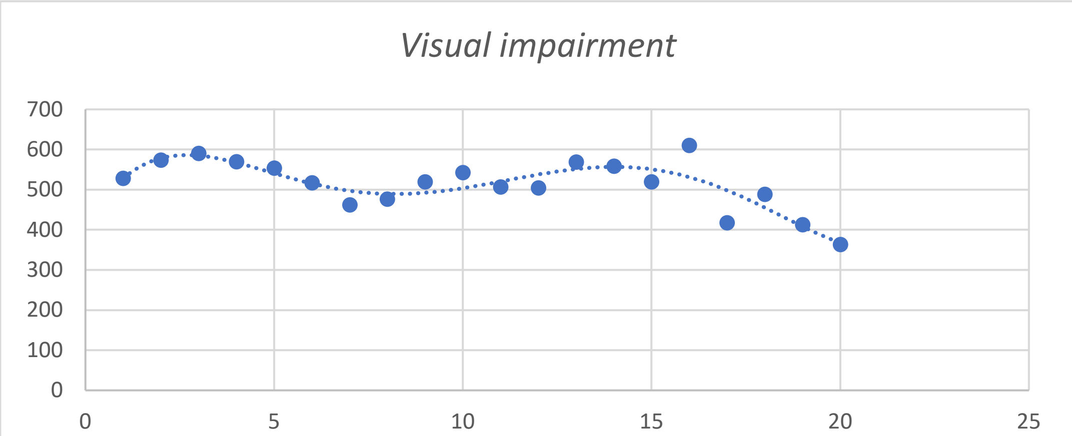

Figure 4

The cases of visual impairment are somewhat constant until 2017 where a decrease is observed reaching the value of 363, the estimate of cases of visual impairment is decreasing in the future. The highest value being 610 cases in 2014 and the lowest being registered in 2018 with 363 cases.

The forecast of the number of disabled people is given in table 5

Table 5

Year	2019	2020	2021
Prediction	426	468	581

3.5 Mental and psycho-affective disability

It is characterized by mental or mental difficulties in coping with ordinary life situations and affects about 1% of people; they are at the forefront of severe disabilities and affect children and adolescents. Most mental disabilities have a delay in intellectual development and are related to pathologies of pregnancy or birth, of infectious or vascular origin, or, even more often, to some non-accidental pathologies. Adolescence and old age are conducive to the explosion of psycho-affective disorders that require care.

Table 7

Years	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Number of persons	5246	4569	4763	5745	6363	6487	6822	7023	7660	8203	8750

2010	2011	2012	2013	2014	2015	2016	2017	2018
9179	9624	9730	10112	9768	10384	10639	10700	10679

The average of the problems included in the mental disability is 8646,08, the cases deriving from the square average is 2399 out of the total of 2399,65. The average is representative and is very homogeneous due to the fact that the variation is 27,75%.

Applying the least-squares method we obtain the linear shape prediction function with the expression

$$y = 349{,}21x + 4455{,}6$$

represented graphically in Figure 5.

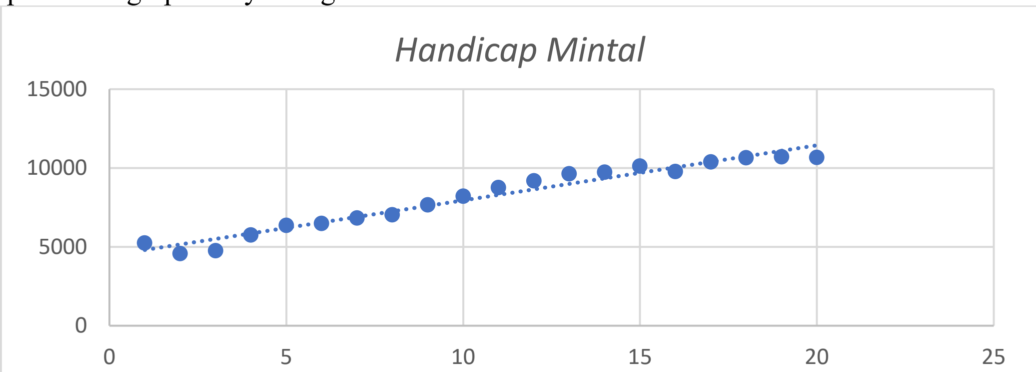

Figure 5

Unfortunately, the mental disability is on the rise, this increase started in 2002 with 5745 cases and continues to increase significantly until 2017 where the value of 10,700 cases is reached, it is expected that in the coming years this disability will thus increasing, thus reaching in 2021 the threshold of 12487. The lowest value of cases of this disability was 2000 where there were 4579 cases, the minimum value is in the year 2000 with 4569 cases. Table 8 is the forecast for the following years with the number of persons concerned.

Table 8

Years	2019	2020	2021
Prediction	11789	12138	12487

3.6 Mental disability

Mental disability is defined as the inability of a person with mental disorders to cope with life in society, a situation arising directly from mental disorders. A person with a mental disorder means a person who is mentally ill, a person with a mental imbalance or who is mentally underdeveloped or addicted to alcohol or drugs, as well as a person who has other disorders

.

Table 10

Years	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Number of persons	5293	5238	5066	4916	4874	4420	4670	4636	5369	5235	4688

2010	2011	2012	2013	2014	2015	2016	2017	2018
4470	4289	4253	4105	4076	3889	4120	3860	3717

The average number of cases in neuropsychiatric disability is 4445,86, the square average is 567,47, from where 567 people deviate from this series, and the variation of 12,76 shows that the series is homogeneous and the average is representative.

Applying the least-squares method we obtain the linear shape prediction function with the expression

$$y = -75{,}505x + 5352$$

represented graphically in Figure 6.

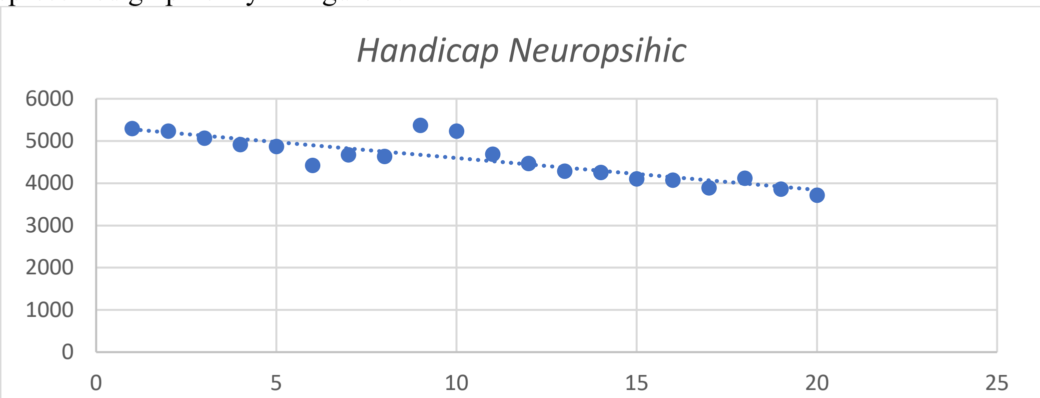

Figure 6

The cases of neuropsychic disability are decreasing, this decrease occurs since 2001 where the number of cases is 5066, the maximum peak of this disability is in 2007 with 5369 cases, from there there is a slight decrease in cases to 3717 in the year 2018.

People with a Neuropsychic disability are given in Table 9 where the evolution of the disability over the following years is forecast.

Table 9

Years	2019	2020	2021
Prediction	3766	3690	3615

3.7 Severe Disability (Associate)

One of these diseases that represents a severe disability is Arthrogryposis.

Arthrogryposis or congenital multiplex comprises non-progressive pathological conditions characterized by multiple joint contractures throughout the body at birth. It is detectable at birth or in the uterus by ultrasound. In most cases, it is not a genetic disease but in 30% of cases a genetic component. Arthrogryposis is a physical sign observed in many specific medical conditions.

Table 11

Years	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Number of persons	4263	3238	3032	2440	2703	1925	1448	1435	1540	1526	1510

2010	2011	2012	2013	2014	2015	2016	2017	2018
1647	1481	1648	1720	2103	2187	2432	2400	2569

From the average of patients in 2249,34 cases we notice that the average is representative and the series homogeneous due to the fact that the variation is 32,38%. Out of the total average of 728,48; 728 patients are referred.

Applying the least-squares method we obtain the prediction function in the form of a polynomial of degree 3 with the expression

$$y = -1{,}0265x^3 + 53{,}529x^2 - 772{,}41x + 4854{,}7$$

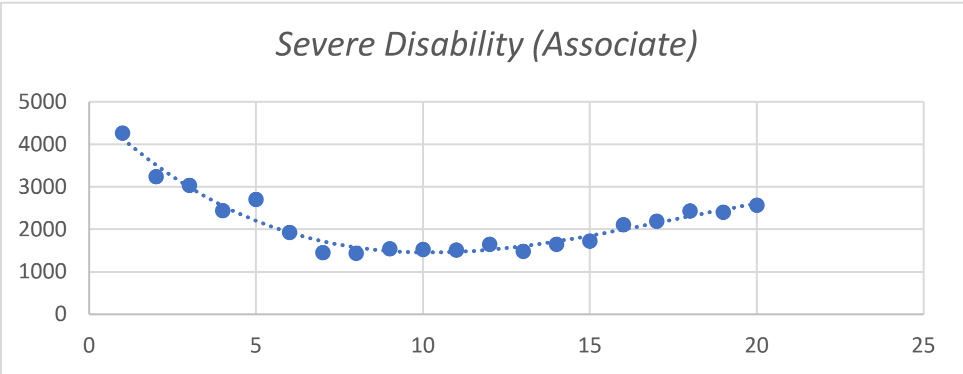

Figure 7

The Severe Associated Handicap since 1999, where the peak of these cases is (4263), begins to gradually decrease to the value of 1435 in 2006 (being also the lowest value of cases registered) then increases slightly until 2018 (2187 cases). We can observe the maintenance of the cases somewhat constant for the next 3 years.

The years 2019-2020-2021 in table 12 represent the forecast of disability cases.

Table 12

Years	2019	2020	2021
Prediction	2733	2839	2916

3.8. Rare diseases

The so-called rare diseases are diseases that affect a small number of people and there are very specific problems related to their rarity. In Europe, a disease is considered rare if it affects 1 person in 2000. A disease may be rare in one region but common in another. There are many other common diseases, the variants of which are rare.

Years	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Number of persons	56	8	79	44	36	64	21	33	45	42	88

2010	2011	2012	2013	2014	2015	2016	2017	2018
71	65	128	85	92	164	147	109	110

Rare diseases have an average of 82,34, an exception to the deviation of the square average is 44 cases out of 44,19, the coefficient of variation is 53,66% which indicates that the series is inhomogeneous and the average is unrepresentative.

Applying the least-squares method we obtain the linear shape prediction function with the expression

$$y = 5{,}3842x + 17{,}816$$

represented graphically in Figure 8.

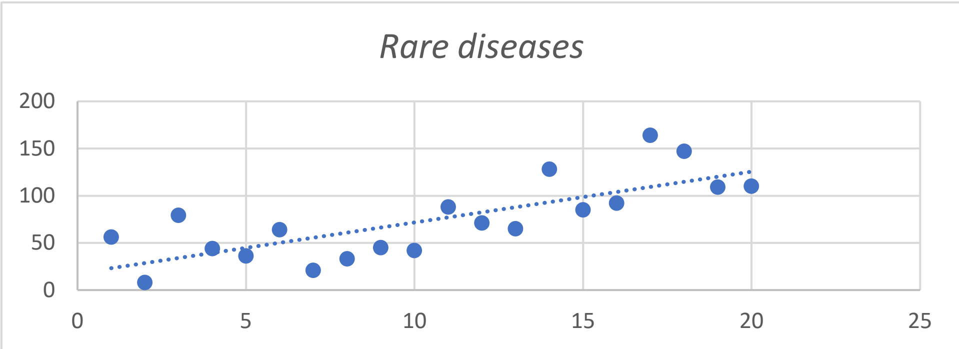

Figure 8

This type of disability does not have very high values, but despite these low values we can see that they begin to increase gradually in the following years, the lowest value was in 2000 where there were only 8 cases and the highest case rate was in 2015 where there were 164 cases. During the studied period, there are sudden increases but also decreases in cases. A very slight increase in cases is expected in the coming years.

For the number of disabled people with rare diseases, the forecast is given in Table 13.

Table 13

Years	2019	2020	2021
Prediction	130	136	141

Table 14 shows the detailed forecast of the degrees of disability previously considered

DISABLED		YEARS	

	2019	2020	2021
PHYSICAL	2046	2225	2639
SOMATIC	407	392	378
HEARING	92	82	68
VISUAL	426	468	581
MENTAL AND PSYCHO-AFFECTIVE	11789	12138	12487
MENTAL	3766	3690	3615
SEVERE DISABILITY (ASSOCIATE)	2733	2839	2916
RARE DISEASES	130	136	141

4. Conclusions and further developments

Medical discoveries, especially at the genetic level, have made it possible to identify the cause of certain disabilities and to implement appropriate means to compensate for these disabilities. On the other hand, technological advances allow people with physical or cognitive disabilities to facilitate their daily lives. Moreover, an adequate forecast of the number of people with different degrees of disability for the coming years can help the authorities to take appropriate measures to improve their lives.

In this article, we made a statistical analysis of the number of adults with disabilities in Romania during 1998-2018. Using the method of least squares we determined the forecast functions, we represented them graphically and we predicted the evolution for the following years. As further developments, we aim to study the correlation between different types of disability and certain economic and social phenomena.

Annex 1. Number of adults cared for in special assistance centers of the national authority for persons with disabilities, by types of disabilities.

Years	TYPES OF DISABILITIES							
	Physical	Somatic	Hearing	Visual	Mental and psycho - affective	Mental	Severe disability (Associate)	Rare diseases
1999	1336	2891	344	528	5246	5293	4263	56
2000	1263	3069	375	573	4569	5238	3238	8
2001	1225	2791	388	590	4763	5066	3032	79
2002	1234	2623	297	569	5745	4916	2440	44
2003	1252	2552	264	553	6363	4874	2703	36
2004	690	1049	146	517	6487	4420	1925	64
2005	572	793	151	462	6822	4670	1448	21
2006	528	735	101	476	7023	4636	1435	33
2007	1323	807	124	519	7660	5369	1540	45
2008	1557	764	113	542	8203	5235	1526	42
2009	1465	567	85	506	8750	4688	1510	88
2010	1678	524	84	504	9179	4470	1647	71
2011	1856	534	129	568	9624	4289	1481	65
2012	1617	574	136	558	9730	4253	1648	128
2013	1578	514	115	519	10112	4105	1720	85
2014	2409	657	126	610	9768	4076	2103	92
2015	2352	528	118	417	10384	3889	2187	164

2016	2265	502	100	488	10639	4120	2432	147
2017	2013	390	100	412	10700	3860	2400	109
2018	2127	369	84	363	10679	3717	2569	110

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