

Based on the Analysis of the Most Dangerous and Emergency Situations Identify the Situation at Emergency Level of Risk to its Forecast of Acity

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Abstract: In this article the exogenous variables in the model pageween the value of regressiya korrelyativ multikollinearlikni and quotes. Common delays in the context of distributed delay are connected mutually of the variables when the response is difficult and individual evaluation of the importance of the individual parameters on the valuation koeffisiyentlar indicated. The alm method upon a distributed lag model is a “how to” settling the presence of k through the installation of a certain structure in the distribution echikish a free estimate to solve the problems of the specific multikollinearlik, alm, offer a draw the structure of my function with the method of polina delay, that is, given a few years after the appearance of its results. Alm, on the method of distributed lag model was composed of. Figure the distribution of emergency situations models are listed. Modern mathematical methods and modeling of emergency situations with the speed of options here ommaboplrik be explained by expanding the use of information technology influencessaid. A model in the framework of statistical and mathematical methods, variasion and dispersion analysis, and regression analysis korrelyativ the associated equations, statistical, statistical indices, final, updated and expanded, and other equations are integrated, and which matrisa analysis, mathematical programming methods, processes, research, public service systems, systems modeling and analysis, and an intuitive empirical methods was shown.

Keywords: Model regressiya, in korrelyativ, multikollinearlik, reviews, polina function, emergency situations, information technology, statistical equations, statistical indices, updated and expanded, and other equations are integrated, and which matrisa analysis, mathematical programming.

Introduction. Today, natural and forecasting the development of mathematical modeling of processes is one of the actual problems. In particular, the forecasting results through prevention and elimination of emergency situations in the country of the plan of measures for the further improvement of the quality of the development and practice can be introduced.

However, in this process, first and foremost, the territory of natural and affecting the development of the major indicators to identify emergency situations, it is necessary to take. Shakllantirilayotgan country or territory in the indicator system to solve problems on the level of the top of the affected area should be taken considering.

As the analysis of the emergency situation in our country, the territory for forecasting the change of a major emergency situation in the emergency situation following indicators were selected: that the earth moved, that the mountain of the outbreak, snow avalanches, strong winds, from mass food poisoning, dovu (the clouds), floods, water accumulation and flooding are. As noted, all of the indicators are directly connected to each other and relationship between the logical integrity reflects. However, this indicator emergency situation from the point of view of the origin of the major scale learn as a separate object, that is, to a certain extent the social development of the regions affected. The territory of the natural development of the population in emergency situations leads to security, and living standards of the population in emergency situations directly related to the quality indicators and the high level of research closely related to the major, while will lead us to achieve highly effective.

There is an indicator of a major emergency situation and their structure, dynamics and interaction that depends on them, and identify factors influencing the result of the analysis process, one requires a mathematical model of the effects of each of these indicators is to produce.

In the same place is worth to add to the knowledge of the accuracy of the model. The model in the field of emergency situations - this is the main object of the research the properties and interactions realistically in considerable understanding or details are different from state to mathis type of emergency situation or brief, he can imagine. Columbia university, professor m. Vudfordning opinion regarding the purpose of the general mathematical model representing the interaction between the concepts of random processes does not add to the accuracy of this, but the quality is from the new coming to a conclusion.

Model - research businesses advantage and disadvantages of the development of alternative strategies to describe realistically the process of determining the factors, the comprehensive study in combination with measures to eliminate negative trends and situations and the means to be almashtirilmaydigan way also.

For the purposes of the analysis of a major emergency situation and also usually "curved line Fillips", "Taylor rule" as a mutual need to identify structural related assets.

To answer the question of who is going to give you the model developed using the consolidated variable pumps for only a few years-time behavior relate to if we need a clear assessment of the future we long for this not mutually associated. But the future is no way of knowing from the construction of possible models is not the reason for the disclaimer. However, for the future depends on the interaction of structural long without giving such short-term studies of the period and in many models, according to the technical review - also for the future as well as unlimited long associated structural interaction is determined. That's the point, you can make forecasts of the future position of the model itself, the agent will wait and interaction between model forecasts consistent basis will not be made.

See also major interaction indicators emergency situations of natural-mathematical model, you will need to develop a systematic approach to the modeling process.

Statistical analysis and forecasting of modeling a large scale and be applied at modeling tools in the field of emergency situations caused by the use of the following circumstances:

First of all, at a high level is extremely difficult and somewhat random variables abstract that is important and significant objects of the relations of separation and there is a possibility of formal writing.

Secondly, based on clearly expressed, primary relationship and sharing statistical data and methods from the relationship with the logical conclusions of concepts you can get to enter the parameters corresponding to the model.

Third, compatible with the methods of mathematics and statistics research methods in the object realistically induktiv the relation pageween the variables at a high level to get knowledge about the shape and the appearance of new threats. The calculation result and finally, fourth, the language of mathematics is the use of extreme values, the probability ofk theory is an explanation of the rules of clear and compact, and allows you to represent the conclusion of his essence.

Analysis of the literature on the subject. Expanding with the speed of modern mathematical methods and modeling of emergency situations of options here ommaboplak be caused by the use of information technology. A model in the framework of statistical and mathematical methods: variasion and dispersion analysis; korrelyativ and regression analysis; statistical associated equations; statistical indices; the final, updated and expanded, integrated, and other equations; and which matrisa analysis; mathematical programming methods; research processes, mass service systems, systems modeling and analysis; and an intuitive empirical methods and others. The above listed o‘is known and popular all the methods and the models built in the us, many of the scientific literature and quotes.

Research methodology. Modellashtirish boosts the extreme importance of means necessary to pay great attention to its quality. The basis of the results or the conclusions based on them and ko‘from the aspect of tool manufacturers this p, professionalism and real emergency situations occurred in the field of a random process to a new konkretdekvatlgi, modelbrowsing the correct choice of the method on the model considered that rely on your perspective, and concluding them that were used in the statistical information such as the quality depends on. As it is known, in real life a while to complete all of the above terms and conditions is difficult.

Analysis and results. The study function. Modellashtirish available to offer recommendations in previous research work in the field and quotes for students to teach: object model is trying to develop.

The territory's emergency situations the major 2004-2025 in the year to the dynamics of (3.1-table) based on without Sh.Alm, a delay from the distributed lag model using the method of construction.

Sh.Alm, the dynamic mathematical modeling method is one of the issues if this method is quite universal. This method is used for modeling the delay of the quotation process with a different structure from no less than the number of o‘zgaruvchan network with distributed lag models you can build any long-term delay. However, the method is limited alm delay upon the value of l the model it is desirable to build. Alm, the method - these exogenous o‘ve zgaruvchan different time delays (delays deployed pageween korrelyativ correct way which will re parametrlash method.

The development function. Exogenous in the model Regressiya o‘zgaruvchan korrelyativ multikollinearlikni because they do not value it produces. This problem ko‘pinch in the context of distributed delays is common. Mutually variables distributed delay are connected to the individual response and the evaluation of the importance of the individual parameters on the valuation is difficult koeffisiyentlar regular t -reliable tests. The alm method upon a distributed lag model is a “how to” settling makes the assumption that. A certain delay in the distribution in the structure ornatish a free estimate by multikollinearlik can resolve specific problems. In particular, the structure of the alm function with a delay upon polina offer my draw method, that is, after a few years of its results , ko‘rinib will.

This is explained as follows. General model ko‘following rinib be as follows:

$$y = \alpha + a_0 \cdot x_t + a_1 \cdot x_{t-1} + \dots + a_n \cdot x_{t-l} + \varepsilon_t \quad (3.30)$$

Sh.Alm, the distributed lag method on a model we made.

3.1-table

Years	Emergencies	they moved There, they outbreak mountain	snow avalanches, strong winds	from the food mass poisoning	dovul the clouds, strong winds,	floods, water accumulation and flooding of
2014	165.8	43.1	27.7	17.4	76.3	117.4
2015	261.8	60.0	53.6	35.4	116.9	198.6
....						

Of years	Emergencies	of the earth as they moved outbreak they mountain	snow avalanches, strong winds	from the food mass poisoning	dovul the clouds, strong winds,	floods, water accumulation and flooding of
2023	22393.5	4231.3	11835.1	3979.7	10728.0	17844.1
2024	24912.0	5322.7	10068.2	4774.7	12545.8	19424.0

y_t -the emergency situation in the current case, the amount of;

x_t – major emergency situations , ko‘rsatkich, the amount of.

Using the information given to Sh.Alm, the method will have the following appearance regressiya distributed lag model:

$$y = \alpha + \beta_0 \cdot x_t + \beta_1 \cdot x_{t-1} + \beta_2 \cdot x_{t-2} + \beta_3 \cdot x_{t-3} + \varepsilon_t \quad (3.31)$$

here, y_t the current in case the emergency situation, the amount of;

x_t – major emergency situations , ko‘rsatkich, the amount of.

The second level of the structure is characterized polina me the equation with the assumption that we have put forward without it, the parameters are determined based on the following formula:

$$1 - I \text{ have to polina level: } \beta_j = c_0 + c_1$$

$$2 - I \text{ have to polina level: } \beta_j = c_0 + c_1 \cdot j + c_2 \cdot j^2$$

$$3 - \text{level polina I have to: } \beta_j = c_0 + c_1 \cdot j + c_2 \cdot j^2 + c_3 \cdot j^3$$

K - polina level for me, the most general form as follows:

$$\beta_j = c_0 + c_1 \cdot j + c_2 \cdot j^2 + \dots + c_k \cdot j^k \quad (3.32)$$

z_0, z_1, z_2 o‘zgaruvchilarning value is calculated with the following formula:

$$z_0 = x_t + x_{t-1} + x_{t-2} + \dots + x_{t-l}$$

$$\begin{aligned}
 z_1 &= x_{t-1} + 2x_{t-2} + 3x_{t-3} + \dots + lx_{t-l} \\
 z_2 &= x_{t-1} + 4x_{t-2} + 9x_{t-3} + \dots + l^2 x_{t-l} \\
 z_k &= x_{t-1} + 2^k x_{t-2} + 3^k x_{t-3} + \dots + l^k x_{t-l}
 \end{aligned} \tag{3.33} \text{is}$$

On the basis of the variables and have them z_0, z_1, z_2 identify the variables in each indicator is calculated separately, and most of them will determine the parameters of linear equation by the method of small kvadratga regressiya. In this case this niladi quotes on the following formula:

$$y_t = a + c_0 z_0 + c_1 z_1 + c_2 z_2 + \dots + c_k z_k \tag{3.34}$$

Using ms excel application y_t, z_0, z_1, z_2 , which korrelyativ variables-regression analysis was carried out. As a result X_{sm} regressiya allows you to write the model in the following form:

$$y_t = 71.85 + 1.27 \cdot z_0 - 2.18 \cdot z_1 + 0.83 \cdot z_2 + \varepsilon_t \tag{3.35}$$

(2) the parameters of the initial model of distributed based on the formula $(\beta_0, \beta_1, \beta_2, \beta_3)$ will determine the value of:

$$\beta_0 = 1.27$$

$$\beta_1 = 1.27 - 2.18 + 0.83 = -0.07$$

$$\beta_2 = 1.27 + 2 \cdot (-2.18) + 4 \cdot 0.83 = 0.25$$

$$\beta_3 = 1.27 + 3 \cdot (-2.18) + 9 \cdot 0.83 = 2.25$$

The results of this calculation to ko'ra won in the form of a table.

Same as above to the emergency situation affecting a major emergency situation ko'rsatkich was established for all models (table 2).

Territoryemergency situations at ko'distribution models rsatkich

3.2-table

Emergencies indicators	Conditional of the characters	lag model
the earth as they moved mountain performance of the outbreak on the damage	Y_t – emergency situation in the index X_{sm} – Earth as they moved outbreak damage, mountain,	$Y_t = 71.85 + 1.27X_t - 0.07X_{t-1} + 0.25X_{t-2} + 2.25X_{t+3}$
snow avalanches, strong shamollarda	Y_t – emergency situation index	$Y_t = 833.33 + 0.44X_t - 0.67X_{t-1} + 0.16X_{t-2} + 2.92X_{t+3}$

damage	X_{ak} – snow avalanches, strong shamollarda the damage	
the poison damage from the mass of food	Y_t – emergency situations ko'will rsatkich X_{qi} – the poison damage from the mass of food	$Y_t = 1728.88 + 0.95X_t - 0.27X_{t-1} + 0.58X_{t-2} + 3.29X_{t+3}$
in the morning dovul damage	Y_t – emergency situation index X_{chs} – dovul in the morning the damage	$Y_t = -42.79 + 5.67X_t - 0.95X_{t-1} - 3.69X_{t-2} - 2.55X_{t+3}$
the floods, accumulation of water in flooding and damage	Y_t – emergency situation index X_{suv} – floods, water accumulation and flooding damage.	$Y_t = 480.26 + 0.92X_t - 0.36X_{t-1} + 0.04X_{t-2} + 0.06X_{t+3}$

Thus, the X_{sm} distributed lagli model will have the following appearance:

$$Y_t = 71.85 + 1.27X_t + (-0.07)X_{t-1} + 0.25X_{t-2} + 2.25X_{t+3}$$

The model of the current period, short - term multiplikator 1,27 to equal that, ya'see , the gross domestic product t at the time 1,27 amount, a period when increases , while the $(t+1)-1.27 + (-0.07) = 1.20$ amount is reduced, two - period increases when $(t+2) - 1.20 + 0.25 = 1.45$ the amount increased ko'rsat was.

While the long-term multiplikator

$$(t+3)=1,27+(-0,07)+0,25+2,25=3,70$$

that increased the amount ko'browsing can be. Also ko'rindiki, they moved there, mountain outbreak damage when it exceeds the size of a significant amount of after 3 years, the average size 3,70 will lead to an increase in the amount of damage in emergency situations.

Long-term value of the model will determine the relative regressiya koeffisiyentlar multiplikator:

$$\beta_0 = \frac{1.27}{3.70} = 0.34 ,$$

$$\beta_1 = \frac{-0.07}{3.70} = -0.02 ,$$

$$\beta_2 = \frac{0.25}{3.70} = 0.07$$

$$\beta_3 = \frac{2.25}{3.70} = 0.61$$

So they moved here, mountain outbreak damage the overall size of the change coming 34,0% will take place at the present time; -2,0% - from the present time $(t+1)$; 7,0% - from the current time $(t+2)$; and this change only 61,0 % will happen in their own time $(t+3)$. In this way a general indicator of a major emergency situation change in the percent of the chamber and this process follows the average lag in the model the distribution of 3.3-in table.

The model relative regressiya

3.3-the table

Emergencies indicators	X_{sm}	X_{ak}	X_{qi}	X_{chs}	X_{qx}
β_0	0.34	0.15	0.20 cost	0.62	0.29
β_1	-0.02	-0.23	-0.06	4.84	0.06
β_2	0.07	0.06	0.12	5.02	-0.15
β_3	0.61	1.02	0.74	10.48	cost 0.20
\bar{l}	1.94	2.95	2.39	0.62	0.29

In average, the territory's emergency situations, damage to change size as they moved there, mountain damage the outbreak of the year, the volume of aiga (1 year 9 months) to determine the effect can:

$$\bar{l} = 0.34 \cdot 0 + (-0.02) \cdot 1 + 0.07 \cdot 2 + 0.61 \cdot 3 = 1.94 \text{ yil.}$$

Therefore 3,4,5 o'clock-that from the results in the table ko'it should be noted that browsing. O'central emergency situations after the beginning of the change of the size of the damage far 3,70 change the amount of capacity that leads to damage of 3.4-is to summarize the table.

3.4-the table

	R^2	The average change (year)	short term Emergencies (amount)	long-term Emergencies (mid)	Emergencies	Significant social Emergencies
X_{sm}	0,994024	1,94	1.27	3.7	720,7663	1,it is 07-14
X_{ak}	0,986854	2.95	0.44	2.85	325,2944	1,79-12
X_{qi}	0,970793	2.39	0.95	4.74	144,0325	3.18 E-10
X_{chs}	0,99747	0.62	5.67	-1.53	1708,784	3.99 E-17
X_{qx}	0,998464	0.29	0.92	1.26	2817,551	1.56 E-18

Summarizing is from the table ko'rinib as the name suggests, they moved the earth, the mountain due to the outbreak of the size of the display: 3.7 in the amount of, the main snow avalanches, strong winds -2,85 amount, the mass of food damage from the poison of the world -4,74 amount, the clouds dovol -1,26 amount, emergency situations o'of sgan, only floods water accumulation and flooding damage in emergency situations -1,53 the amount that reduced ko'browsing our

can. Regressiya equation priority fisher's F-criteria, on the basis of , were determined. F-criteria in the table the value 0,95 reliability in the probability of 5,41 to be established was [4]. This, while fisher's F-criteria , ko'ra regressiya equation shows that it is significant. Styudent t-criteria of evaluation results through regressiya while koeffisiyentlar-yatliligini ko'rsat is.

This model is slightly higher identify koeffisiyenti toe'lish, despite the lag in the model structure, taking into account restrictions polina regressiya koeffisiyentlar I obtained towards the level of the standard error is significantly reduced. Size is reduced the risk of emergency situations in the future, as a result, the safety of the population of the territory is significantly increased.

Major emergency situations , ko'to produce forecasts of the impact of the value of polina rsatkich I also use the second level of the model it was. This model adekvatligi F-fisher criterion meeting'was based on citizens (3.Table 5).

Territory emergency situations ko'models to calculate the effects of rsatkich

3.5 table

Emergencies indicators	Model	Determinasiya koeffisenti
they moved There, mountain outbreak damage (X1)	$y = 59,587x^2 - 283,7x + 1270,2$	$R^2 = 0.9829$
snow avalanches, strong damage shamollarda (X2)	$y = 143,3x^2 + 16,038x + 3002,4$	$R^2 = 0.9918$
mass of food damage from the poison (X3)	$y = 143,3x^2 + 16,038x + 3002,4$	$R^2 = 0.9192$
dovul the damage in the morning (X4)	$y = 56,51x^2 - 262,11x + 764,81$	$R^2 = 0.9876$
floods, water accumulation and flooding (X5)	$y = 92,897x^2 + 11,837x + 1363,1$	$R^2 = 0.9979$

The size of the effect on the risk of emergency situations in the region, strong and weak, gardengreenhouses due to consider the availability of, and the following regression model was established and the forecasts is the value of (3.6-table).

$$\hat{Y} = 1411,41 - 0,79 * X1 + 0,71 * X2 - 0,21 * X3 + 1,66 * X4 + 0,64 * X5 \quad (R^2 = 0,999)$$

Territory emergency situations ko'forecast indicators of the volume of rsatkich

3.6-table

Year	of the forecasts, the value of s is	the rate of change	of the value of the forecasts	Forecast the value of	the value of forecasts-world	Forecasts the value of	the value Forecast-s
t	Y	%	X1	X2	X3	X4	X5
2021	33990,5	112,96	7652,3	27428,6	15881,4	6907,6	17216,6
2022	38777,1	114,08	8977,5	31313,7	18907,5	8171,2	19736,6
2023	43922,2	113,27	10421,8	35485,5	22206,5	9547,9	22442,5
2024	49425,9	112,53	11985,3	39943,8	25778,5	11037,6	25334,1
2025	55288,2	111,86	13667,9	44688,7	29623,4	12640,3	28411,6
change from the year 2025 compared to the year	1,84	x	2,05	1.86	2.46	2.15	1.88

2021							
an average change of the pace of	112.94	112.94	115.42	113.23	119.89	116.59	113.40

Conclusion and suggestions.

The forecast results of ko'ra, emergency situations of the volume of real value from 2025-the year to go 55288,2 the amount of up makes and he's 2021-a year compared 1,84 times is increased. His next five years in o'far central o'it zgarib fighting'ati 12,94 percent up makes.

Today's the day Areaat security representing major emergency situation ko'rsatkich of the region in emergency situations ta'secret of the analysis are, that we can, The territoryat major emergency situation ko'rsatkich of significantly ko'to be payib 3 years within their o'zgarib the dynamics show up toe'ldi and thus which ko'rsatkich of regional emergency situation zarariga ta'the secret to how that ko'browsing can be.

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