



Statistical Modeling of Groundwater Pollution Using Logistic Regression

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ABSTRACT: Binary logistic regression is used to examine groundwater pollution and determine the main contributing elements. Groundwater level, Northing coordinates, and Total Dissolved Solids (TDS) were the hydrogeological and geographical variables that were examined using SPSS. The study showed the significant impact of variables on the state of pollution. The results provide important information for methods to mitigate pollution and manage groundwater resources.

Key Words: Groundwater, logistic Regression, pollution.

Contents

1 Introduction	1
2 Logistic Regression	2
3 Data	2
3.1 Table of data	2
4 Data Analysis and Results	4
4.1 Data processing	4
4.2 Evaluate the basic model without the independent variables	4
4.3 The importance of variables before entering them into the model	4
4.4 Model significance after introducing variables	4
4.5 Model quality	5
5 Discussion	5
6 Conclusions	5
7 Recommendations	5

1. Introduction

Groundwater is a major source of fresh water in arid and surface water-poor areas. One of the most important reasons that make it vulnerable to pollution is human waste, represented by urban expansion, liquid industrial waste, and agricultural runoff. To evaluate the impact of hydrogeological factors and model groundwater pollution statistically, we will use binary logistic regression. Combating pollution requires developing sustainable water management methods. There are significant concerns about the safety of groundwater in Al-Ghareeb-Marawah area of Iraq due to poor monitoring and increasing land use. Groundwater pollution means the deterioration of groundwater quality due to the introduction of hazardous chemical, biological or physical substances into the aquifer. The main causes of pollution include improper disposal of waste, excessive use of chemical fertilizers, water leakage from irregular waste dumps, and leakage of industrial waste. These pollutants cause a change in the natural composition of groundwater, making it unfit for human and agricultural use for studies on groundwater pollution, see [9,5]. Given the difficulty of observing groundwater pollution, unlike surface water pollution, which is clearly visible, long periods may pass without groundwater pollution being noticed. For this reason, predictive models must be developed to assess the potential for contamination.

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