

COMPARISON BETWEEN KRIGING VARIANCE AND INTERPOLATION VARIANCE AS UNCERTAINTY MEASUREMENTS IN THE CAPANEMA IRON MINE, STATE OF MINAS GERAIS – BRAZIL.

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The Capanema Mine, an iron ore deposit, is located at the central portion of the Quadrilátero Ferrífero, State of Minas Gerais, southeastern Brazil. Formerly, this mine was explored by 70 diamond drill holes and during its development about 7000 blast holes were made. These two data sets are used to make comparisons for spatial variability as well as for estimation variance derived from ordinary kriging estimates. As we know, the traditional kriging variance does not depend on local data and, therefore, does not measure the actual dispersion of data. On the other hand, the interpolation variance has been proved to be a reliable measurement of local data dispersion. In this sense this paper compares both uncertainty measurements using these data sets. For both data sets, Fe and SiO₂ were statistically and geostatistically analyzed. Fe is characterized by a negative asymmetrical distribution while SiO₂ shows a positive asymmetry. For these variables, kriging variance plotted against estimated grades does not present any correlation. On the other hand, the interpolation variance shows a good correlation with the estimates, negative for Fe and positive for SiO₂. The positive correlation is in fact the proportional effect illustrated by SiO₂ values while the opposite occurs for Fe. Indeed, as long as Fe grade increases the interpolation variance decreases due to the fact that the Fe distribution has its end delimited by the stoichiometric value (69.9%). Therefore, according to the results the interpolation variance has proved to be a reliable uncertainty measurement for ordinary kriging estimates.