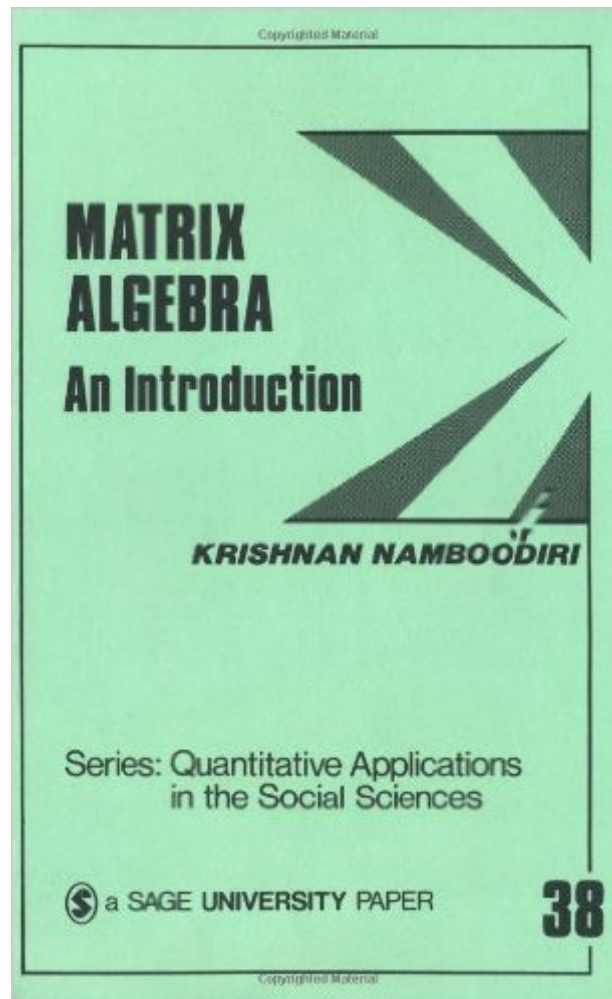# Matrix Algebra: An Introduction (Quantitative Applications In The Social Sciences)

Synopsis

Matrix Algebra is a vital tool for mathematics in the social sciences, and yet many social scientists have only a rudimentary grasp of it. This volume serves as a complete introduction to matrix algebra, requiring no background knowledge beyond basic school algebra. Namboodiri's presentation is smooth and readable: it begins with the basic definitions and goes on to explain elementary manipulations and the concept of linear dependence, eigenvalues, and eigenvectors -- supplying illustrations through fully-worked examples.

Book Information

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Customer Reviews

The aim of this short book (less than 100 pages) is to enable the reader to rapidly acquire a working knowledge of the key areas of matrix algebra. It could also be useful for a quick review. The emphasis is on those aspects of matrix theory that are of most use in statistics. The good points of the book are clear writing, good examples and freedom from typo's; there is also a short but somewhat dated bibliography. The bad points are the lack of both drill exercises and an index.Covered theory includes:Basic matrix operations such as matrix addition, scalar multiplication, matrix multiplication, matrix transposition;Special types of matrices (square, identity, symmetric, orthogonal, echelon).A very brief introduction to determinants;Matrix inversion, including the generalized inverse (a nice touch);Eigenvalues and eigenvectors (including matrix diagonalization).(More advanced theory, such as matrices with complex numbers as elements, multilinear forms, the Jordan canonical form, partitioned matrices, etc., are omitted.)Theorems are

sometimes proven, at other times only illustrated.Illustrative applications include: linear regression, Markov chains, Leontief input-output analysis, solution of systems of linear equations (including the homogeneous and rank-deficient cases), principal components analysis.The section on principal components analysis is brief, but it gets to the heart of the matter. PCA is an important statistical model reduction technique, making it possible to reduce the number of dimensions of a model, in a way that minimizes loss of accuracy.The author stresses the importance of centering the data before applying PCA.

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