



Regression and dimensional analysis in coastal engineering: some pitfalls

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In this article a sentence in Appendix 1, regarding least absolute deviations (LAD or L^1 norm) method, is misleading. The author says (page 224, second column)

‘... two major difficulties have impeded its general adoption. Firstly, there are no closed-form formulae for evaluating b_0 or b_1 ...’

In fact, the optimal values b_0 and b_1 are the solutions of the following linear programming problem:

$$1 \quad \min \sum_{i=1 \text{ to } N} e_i$$

subject to

$$2 \quad e_i + b_0 + b_1 X_i \geq Y_i$$

$$3 \quad e_i - b_0 - b_1 X_i \geq Y_i$$

$i = 1 \dots, N, N$ number of observations,

that can be solved using the Simplex method. A detailed analysis may be seen, for instance, in the excellent book ‘Linear programming’ by V. Chvátal.²¹

I think that Dr. Hedges is well aware of the solution because it is explained in some of the references of his paper, but a non-

experienced reader may have the feeling that only approximate solutions exist.

Author’s reply

Those readers familiar with Hudson’s equation will have noticed a printing error in equation (5) of the paper. It should have read⁷

$$4 \quad \text{Hudson: } N_s = (K_D \cot \alpha)^{1/3}$$

Those readers unfamiliar with Hudson’s equation should now be able to make greater sense of the associated text.

Dr Jacovkis is thanked for emphasising the fact that, while use of the least-absolute-deviations (LAD) regression method may be a little more difficult than fitting using the least-squares (LS) procedure, there is no implication that the method is any more approximate. Chvátal’s book²¹ could usefully have been added to the list of references in the paper.

REFERENCES

7. HEDGES T. S. The core and underlayers of a rubble mound structure. *Proceedings of the Institution of Civil Engineers, Conference on Breakwaters—Design and Construction*, London, Thomas Telford Ltd, London, 1983, pp. 99–106.
21. CHVÁTAL V. *Linear Programming*. W. H. Freeman, New York, 1983.