



## Why

Here's a simple idea. If the set of postcepts is a vector space, use a predictor that is a linear transformation.<sup>1</sup>

## Definition

A *linear predictor* is a predictor which is linear in the precepts. Such a model is simple to implement and interpretable, at the cost of flexibility.

## $\mathbf{R}^d$ Example

A linear function  $f : \mathbf{R}^d \rightarrow \mathbf{R}$  over the vector space  $(\mathbf{R}^d, \mathbf{R})$  has a set of parameters  $w \in \mathbf{R}^d$  so that

$$f(x) = \sum_i w_i x_i = w^\top x.$$

The parameters of a linear predictor on  $\mathbf{R}^d$  are often called *weights*.

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<sup>1</sup>Future editions will expand on this why.



