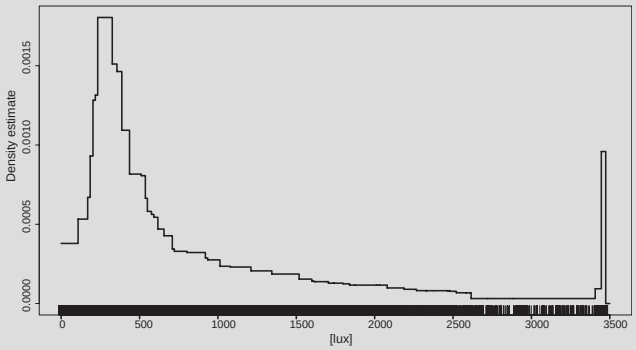
Integrating R in an advanced building control system



David Lindelöf
useR! 2006
15/06/2006 Vienna
david.lindelof@epfl.ch

The LESO-PB building

David Lindelöf
useR! 2006
15/06/2006 Vienna
david.lindelof@epfl.ch

Bayes's theorem

$$\Pr(C = False | E = e) = \frac{\Pr(E = e | C = False)\Pr(C = False)}{\Pr(E = e | C = False)\Pr(C = False) + \Pr(E = e | C = True)\Pr(C = True)}$$

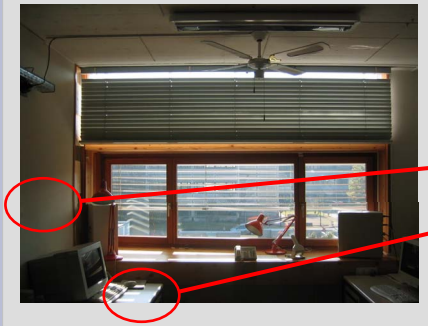
Illuminance distribution for uncomfortable situations

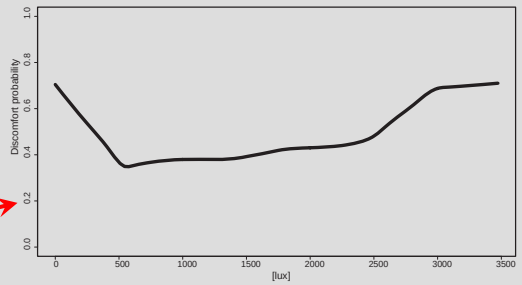
Illuminance distribution for comfortable situations

cf. email classifiers: $\Pr(Spam = True | Content = \text{"}Nigeria\text{"})$

David Lindelöf
useR! 2006
15/06/2006 Vienna
david.lindelof@epfl.ch

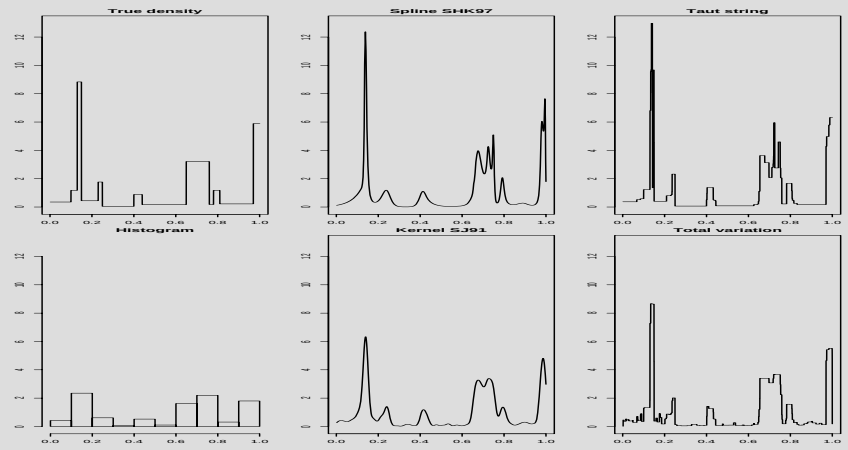
User discomfort probability





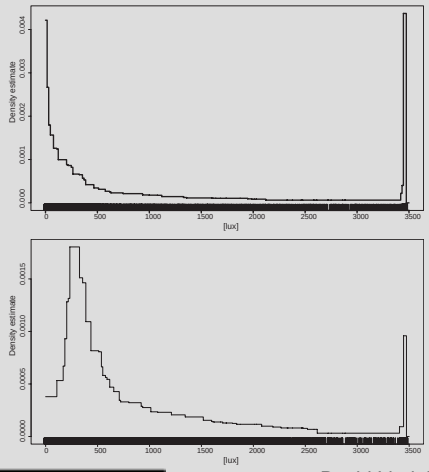
David Lindelöf
useR! 2006
15/06/2006 Vienna
david.lindelof@epfl.ch

Density estimation methods



David Lindelöf
useR! 2006
15/06/2006 Vienna
david.lindelof@epfl.ch

Density estimation with Davies & Kovac's `ftnonpar` package



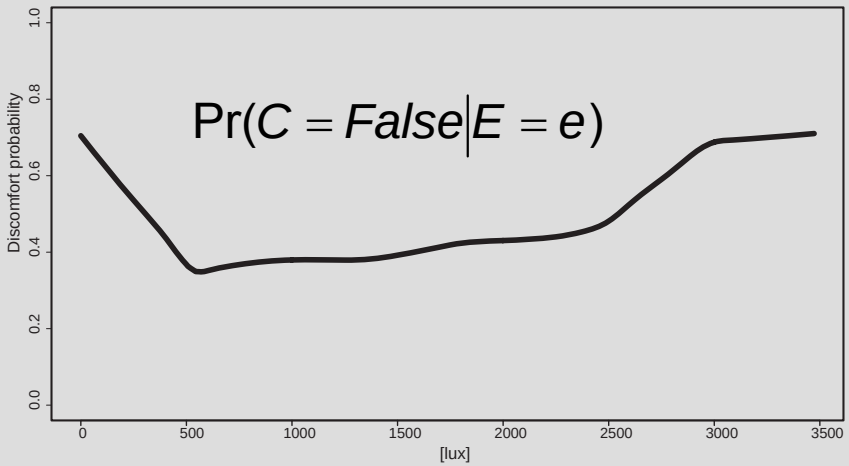
$$\Pr(E = e \mid C = False)$$

$$\Pr(E = e \mid C = True)$$

David Lindelöf
useR! 2006
15/06/2006 Vienna
david.lindelof@epfl.ch

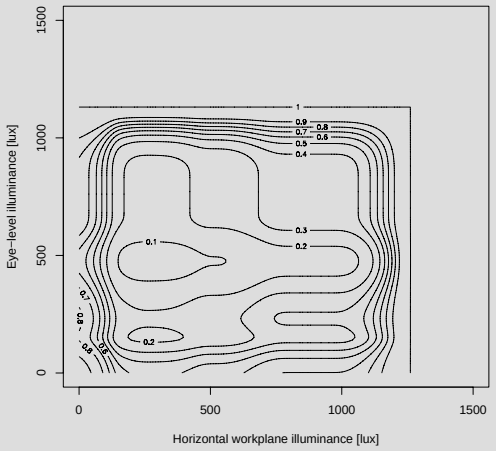
Discomfort probability

$$\Pr(C = False \mid E = e)$$



David Lindelöf
useR! 2006
15/06/2006 Vienna
david.lindelof@epfl.ch

Combination of variables



Horizontal and eye-level illuminances

David Lindelöf
useR! 2006
15/06/2006 Vienna
david.lindelof@epfl.ch

Summary

- R called from a Java program to perform density estimation with taut-string algorithm
- Data prepared with an R script, then Davies & Kovac's **`ftnonpar`** package computes the estimation

David Lindelöf
useR! 2006
15/06/2006 Vienna
david.lindelof@epfl.ch