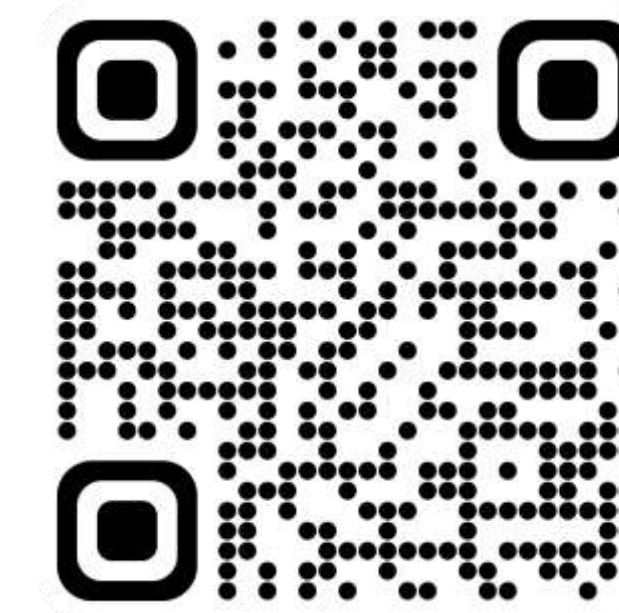


shiny risk: a web application for transparent exposure and risk modelling an open-source software tool developed at the BfR for the risk modelers

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In exposure and risk assessment, complex scenarios often have to be investigated and modeled in which different stochastic influences have to be taken into account. Applications that work on the basis of Excel are often used for this purpose. Models created with these applications can quickly lose transparency and traceability if the modelers do not work with great discipline. In addition, many of these software products are proprietary and can only be used with a purchase license. Models can then only be recalculated by others if they have the purchased license.



The *open-source* web application **shiny risk** was developed at the BfR to meet the requirements of modern exposure and risk modeling. This includes methods such as *2D Monte Carlo simulation*, which allows separate consideration of variable and uncertain variables, and *automated report generation* for rapid exchange between modelers and risk managers.

Visit us: <http://shiny.bfr.bund.de/apps/shiny-risk>

Write us: shiny-risk@bfr.bund.de

Transparent modelling

Name	Group	Definition	Unit	MC Dist	Description	Actions
1	dose-response	$1e^{-12}$	1/CFU	—	Frequency or prob. of illness by ingesting one CFU	DELETE
2	D_dist	$\text{poisson}(\lambda = 5 * LMC_home)$	CFU	V	Amount, or dose, of ingested L. monocytogenes per serving	DELETE
3	S	$\text{triangle}(min = 20, mode = 30, max = 60)$	g	V	Serving size in grams.	DELETE
4	LMC_home	$\text{transport and storage, home } LMC_SM * \text{exp}(growth_rate(T_home) * T_home)$	CFU/g	—	Conc. of L. monocytogenes in the cheese at home	DELETE
5	LMC_SM	$\text{transport and storage, retail } LMC_truck * \text{exp}(growth_rate(T_SM) * T_SM)$	CFU/g	—	Conc. of L. monocytogenes in the cheese at retail	DELETE
6	T_home	$\text{transport and storage, home } \text{unif}(min = -3.04, max = 10.02)$	°C	V	Temperature distribution in home fridge	DELETE
7	T_home	$\text{transport and storage, home } \text{triangle}(min = 0, mode = 3, max = 10)$	days	V	Storage time distribution at home fridge	DELETE

Transparent automatic reporting

Model name: L. monocytogenes in Minas cheese

1.1 Model Creation | 1.2 Fixed Parameters & Functions | 2 Simulation | 3 Documentation and Reporting

Set run parameter | Run simulation

D_dist: 5 | S: 30 | LMC_home: 1e-12 | LMC_SM: 1e-12 | T_home: 3 | T_home: 10 | LMC_truck: 1e-12 | T_SM: 1e-12 | LMC_inhal: 1e-12 | T_truck: 1e-12 | L_truck: 1e-12 | cheese_year: risk

Min: 3.14e-09 | 1st Qu: 8.54e-07 | Median: 8.75e-06 | Mean: 0.0348 | 3rd Qu: 0.000206 | Max: 1

Linear: log10
 convergence plot | histogram | ecdf plot

shiny risk

Automatic report for "L. monocytogenes in Minas cheese"

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Model description
Model was derived from Campagnolo et al. Food Control, 93, 2018, 370-379

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MC simulation settings
1D Monte-Carlo simulation with 2500 iterations and sampling type MC.

Model graph

Plot of the model graph

Model table

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