

MS • Food :

A Shiny Webapp for nutritional reformulation of food products according to Nutri-Score[®] label



Logo Nutri-Score/Santé Public France

*Romane Poinsot, Rozenn Gazan,
Matthieu Maillot & Florent Vieux*

useR! Toulouse, July, 11th 2019



Who are we ?

Modeling

Statistics



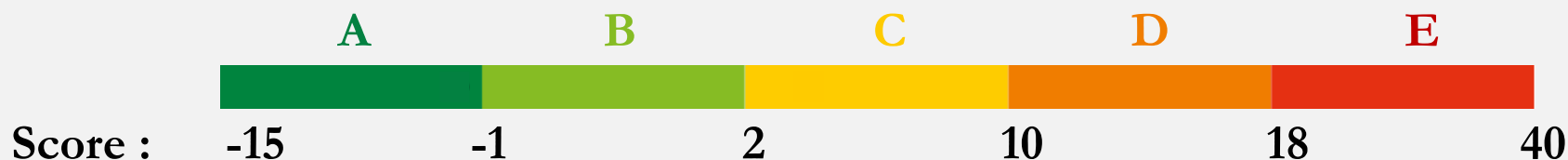


A “Front-of-pack” label to assess nutritional quality of processed foods :

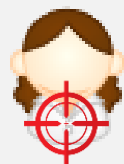
- Contents for 100 g of 7 components :
Saturated Fatty Acids, Sugars, Sodium & Energy,
Proteins, Fibers, Fruits and Vegetables
- 5 classes : from **A** (best) to **E** (worst)



Source : Open Food Facts



→ Help people make healthier choices



Agribusiness professionals

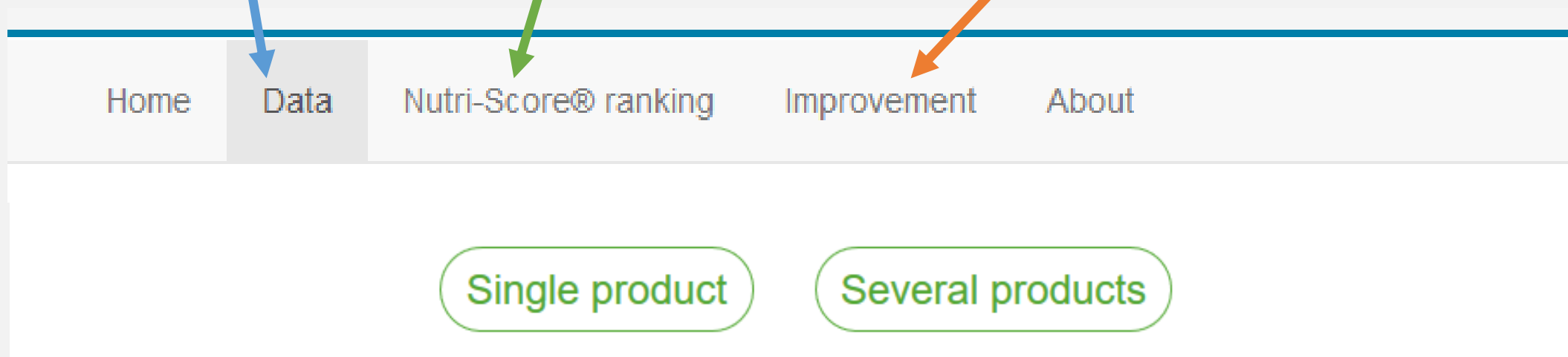
① Compute Nutri-Score®

② Visualize class repartition

③ Find solutions to improve product's Nutri-Score®



Save and export results





1 Nutri-Score[®] computation : single product

Compute the Nutri-Score[®]

My products

Name of the product

Toulouse sausage & mashed potatoes

Nutri-Score[®] category

Waters in bottle Beverages Added fats Cheeses Others



radio buttons

Energy (kJ/100g) :]670;1005]



Saturated fatty acids (g/100g) :]6;7]



Sugars (g/100g) : <=4,5



Fibres (g/100g) :]0,9;1,9]



Proteins (g/100g) :



Sodium (mg/100g) : [Ⓢ]]180;270]



Fruits and vegetables (%) :



Nutri-Score[®] of your product

Nutri-Score[®] of "Toulouse sausage & mashed potatoes" :

Logo Nutri-Score / Santé publique France

↑ Improvement of this score

Compute the Nutri-Score[®]



1 Nutri-Score[®] computation : several products

Download a template file

For an optimal data processing, it's recommended to use this template and to fill in with your products

1. File importation

Choose a file

Browse...

Plats_prep_EN.xlsx

Upload complete

2. Nutri-Score[®] categories



3. Selection of the variables



4. Your file is ready !

Compute the Nutri-Score[®]

To avoid configuring again your file, the results downloaded in "My products" tab can be imported here



File imported:

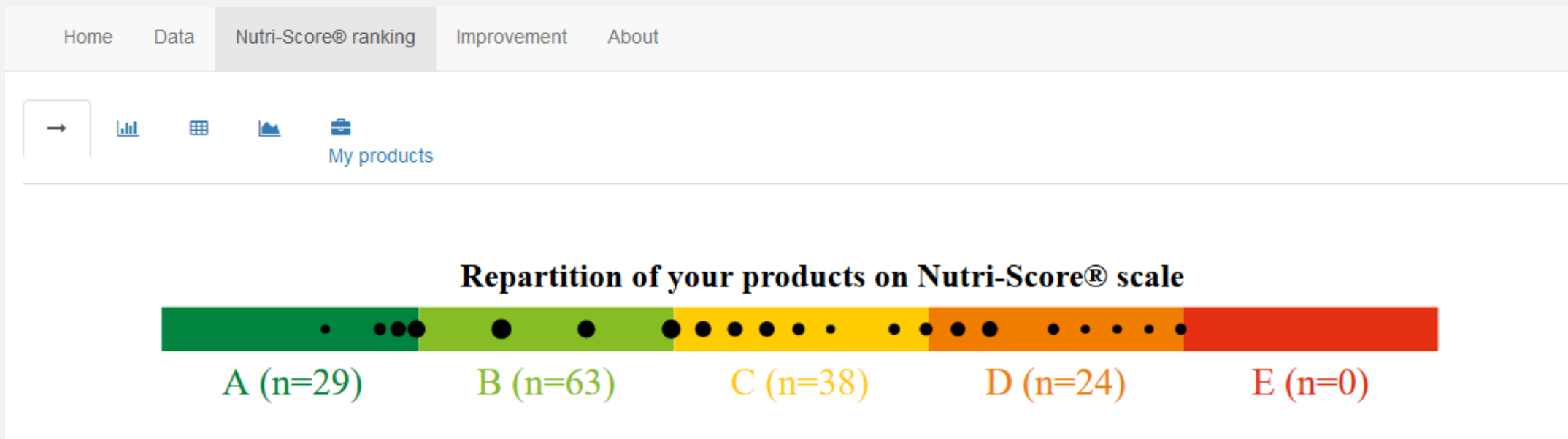
Filter:

	Category_Nutri_score	Name_of_products	Category_product	Energy_KJ	Energy_kcal	Fibres	Proteins	Total_fats	SFA	Sodium	Carbohydrates	Sugars	FVEG
1	Others	Cordon bleu coquillettes au fromage	ready meals	771	184	0.8	8.4	9.4	2.4	270	16.1	0.7	0
2	Others	Penne au poulet et au pesto	ready meals	734	174	1.3	9.5	5.5	1.3	280	21.1	0.2	0
3	Others	Paëlla royale aux petites gambas et au safran	ready meals	429	101	1	5.9	1.4	0.3	310	16.3	1.2	0
4	Others	Riz à la cantonaise	ready meals	599	142	0.9	4.2	3.1	0.4	230	23.9	1.8	0
5	Others	Pâte à tarte brisée - Pur beurre	pastry	1587	379	0.2	5.6	19.2	12.4	320	45.9	2.2	0
6	Others	Pâte à tarte brisée - Margarine	pastry	1569	375	2.2	6.9	19	10	433.0708661	43	2.3	0



2 Data visualization

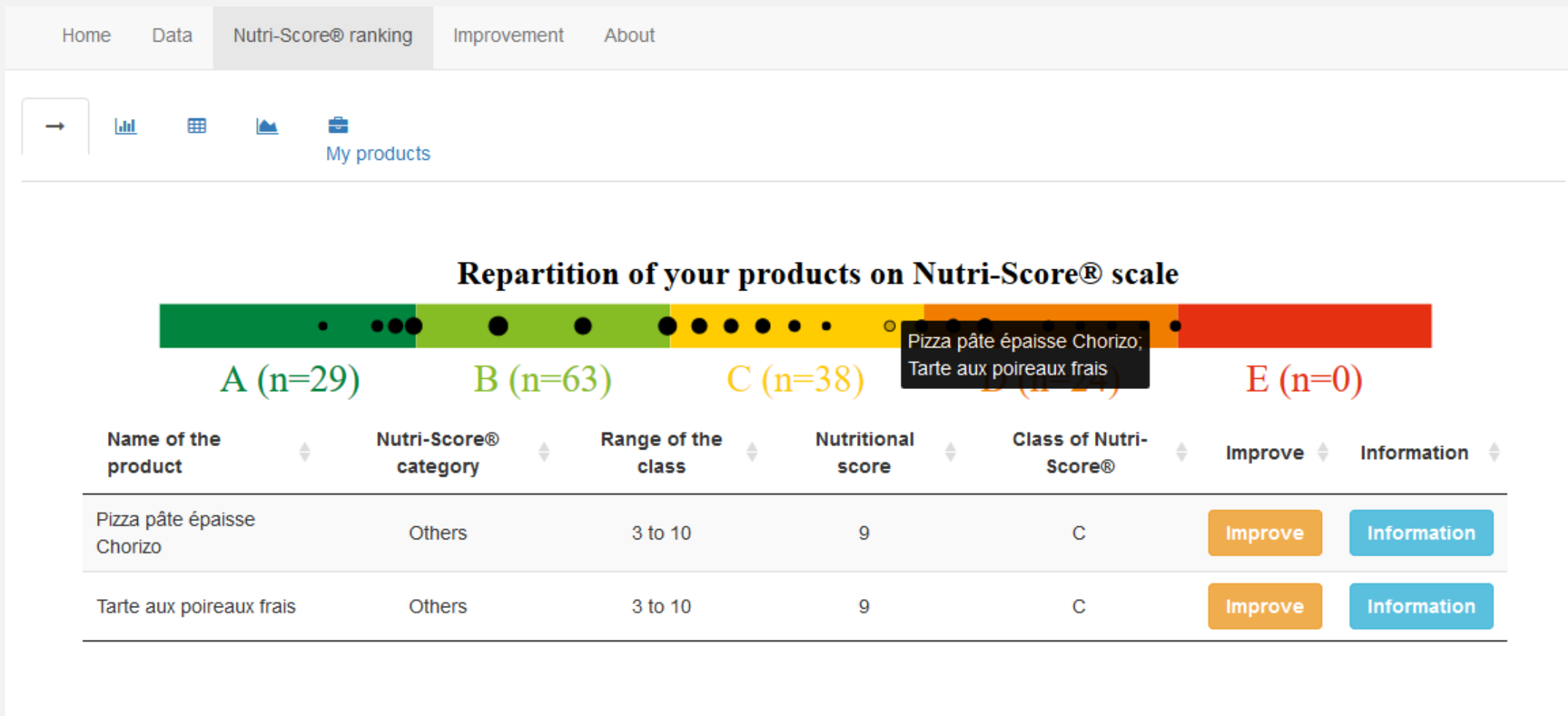
ggplot2, ggiraph packages



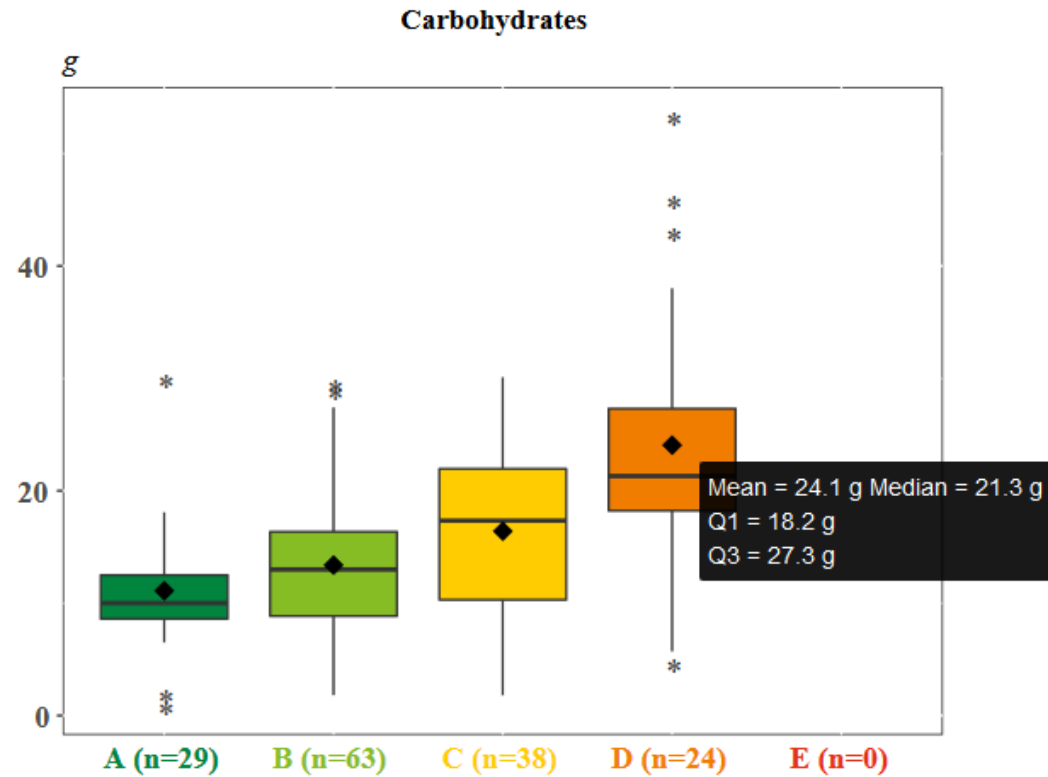


2 Data visualization

DT, ggplot2, ggiraph packages



Boxplots :



Mean among all classes = 15.4 g

Median among all classes = 14.05 g

Carbohydrates significantly varies according to the Nutri-Score® class (P-value = 0).



Exporting results



Export to PowerPoint : officer package

- Click on the  next to charts or table → add a slide


- Download final report :

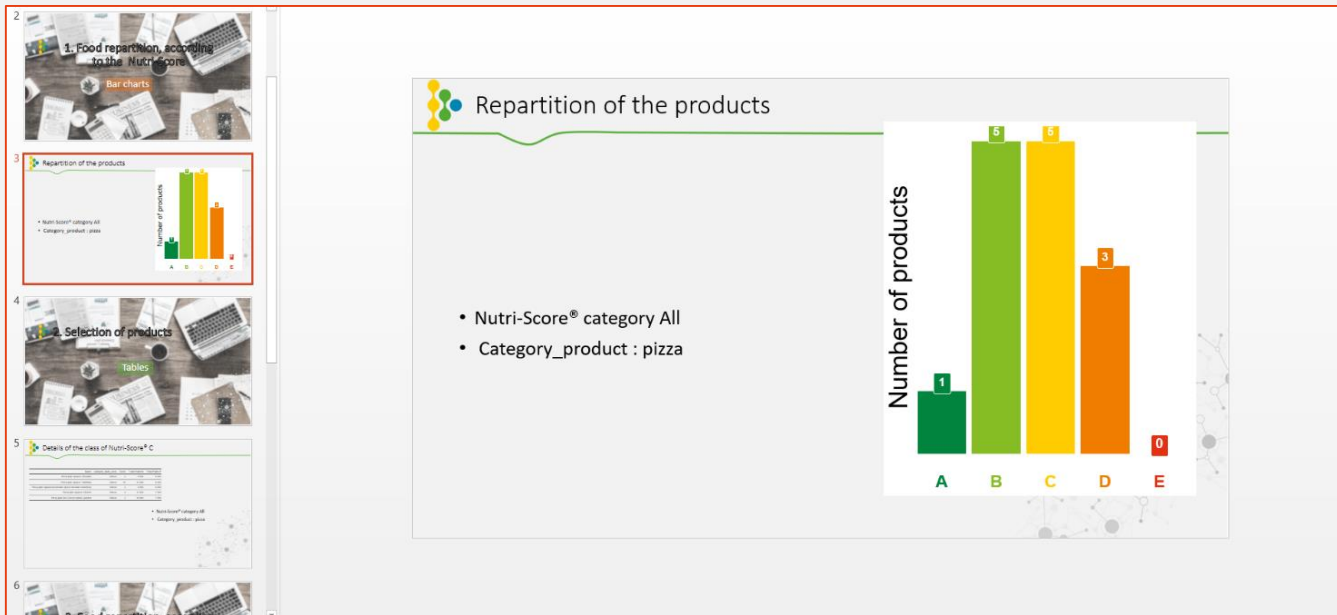
Do you want to add this graph to the report ?

Return

Save

+  Export to Excel for tables

 Download my results (Excel)



Repartition of the products

Number of products

Nutri-Score	Number of products
A	1
B	6
C	6
D	3
E	0

- Nutri-Score® category All
- Category_product : pizza

Category	Name of Category	Energy_kJ	Energy_kJ_per100g	Proteins_g	Total_fat_g	SFA_g	Carbohydrate_g	Sugars_g	Fibre_g	Salt_g	score_NutriScore	score_SFA	score_Sugars	score_SFA_per100g	score_Sugars_per100g	score_Fibre	NutriScore	NutriScore_class				
Others	Cordon_rouge_ready_mea	775	184	8.4	9.4	2.4	16.1	0.7	0	0.875	2	2	0	2.4	2	6	0	5	5	1.8	light green 0 to 2	
Others	Parmesau_ready_mea	734	174	9.3	5.3	1.3	21.1	0.3	0	0.7	2	2	0	1.3	1	6	0	1	5	6	0.8	light green 0 to 2
Others	Puella_toy_ready_mea	429	101	5.5	1.4	0.3	16.3	1.2	0	0.775	3	1	0	0.3	0	4	0	1	3	4	0.8	light green 0 to 2
Others	Riz_a_la_carte_ready_mea	599	142	4.2	1.1	0.4	29.9	1.8	0	0.575	2	1	0	0.4	0	3	0	2	2	1.8	light green 0 to 2	
Others	Pike_tart_pasty	1387	379	5.6	39.2	10.4	49.9	2.2	0	0.8	3	4	0	14.4	10	17	0	3	3	17.0	orange 11 to 18	
Others	Pike_tart_pasty	1569	375	6.9	19	10	41	2.3	0	1.082977	4	4	0	10	9	17	0	2	4	6	15.0	orange 11 to 18
Others	Pike_tart_pasty	1557	373	6.6	21.2	14.6	38	0.9	0	1.15	3	4	0	14.6	10	19	0	1	4	5	16.0	orange 11 to 18
Others	Pike_tart_pasty	1057	397	6.3	24	13	38	1	0	1.082977	4	4	0	13	10	18	0	2	3	5	16.0	orange 11 to 18
Others	Pike_tart_pasty	1875	400	6.9	38.5	12.7	59.3	14.2	0	0.975	3	4	3	12.7	10	18	0	3	3	18.0	orange 11 to 18	
Others	Poulet_ready_mea	658	156	7.4	3.7	0.9	22.6	0.2	0	0.575	2	1	1	0.9	0	4	0	4	4	0.8	light green 0 to 2	
Others	Poulet_ready_mea	585	139	7.3	4.6	0.8	16.7	1.6	0	0.7	3	1	0	0.8	0	4	0	4	4	0.8	light green 0 to 2	
Others	Poulet_ready_mea	760	262	7.8	6.6	1.9	17.9	5	0	0.26	2	2	1	2.9	3	8	0	4	4	4.4	yellow 3 to 10	
Others	Couscous_ready_mea	591	141	6.6	5.5	1.4	13.5	5	10	0.7	3	1	1	1.4	1	6	0	1	5	6	0.8	light green 0 to 2
Others	Merguez_ready_mea	775	185	7.1	9.2	1.1	17.7	4.3	30	0.7	3	2	0	3.1	3	8	0	1	4	5	3.0	yellow 3 to 10
Others	Gratin_ready_mea	536	127	3.8	6.8	4.2	16.3	1.2	0	0.525	2	1	0	4.2	4	7	0	2	2	2.0	yellow 3 to 10	
Others	Hachis_ready_mea	818	197	7.9	14.4	7.6	15	0.8	0	0.75	3	2	0	7.6	7	12	0	4	4	4	0.8	light green 0 to 2
Others	Langues_ready_mea	491	117	7.9	3.8	1.7	11.8	0.2	0	0.65	2	1	0	3.7	1	4	0	7	7	1.4	dark green 0 to 5	
Others	Couillet_ready_mea	732	175	7.5	8.9	3.7	15.6	1	0	0.45	2	1	0	0.7	3	7	0	1	4	5	2.8	light green 0 to 2
Others	Escalope_ready_mea	658	157	8.2	5.8	0.9	17.4	3.3	0	0.675	2	1	0	0.9	0	3	0	1	5	6	-1.4	dark green 0 to 5
Others	Magret_ready_mea	607	144	7.1	4.2	1	18.1	0.1	0	0.575	2	1	0	1	0	3	0	1	4	5	-2.4	dark green 0 to 5
Others	Poulet_ready_mea	586	140	10.5	5.5	2.3	11.9	0.3	0	0.7	3	1	0	2.1	2	6	0	5	5	1.8	light green 0 to 2	
Others	Tagliatelle_ready_mea	663	158	7	6.2	1.1	18	2.6	0	0.120	1	1	0	3.1	3	5	0	4	4	5	0.8	light green 0 to 2
Others	Tagliatelle_ready_mea	695	166	5.9	8.8	3.2	16	0.9	0	0.68291	2	2	0	5.2	5	9	0	3	3	6.0	yellow 3 to 10	
Others	Tomates_ready_mea	451	108	3.8	5.6	1.9	10	2.2	75	0.7	3	1	0	1.9	1	5	2	1	2	5	0.8	light green 0 to 2
Others	Mince_loin_ready_mea	688	166	5.9	11.7	5.9	9.2	1.8	0	0.4	2	2	0	5.9	5	9	0	1	3	4	2.0	yellow 3 to 10
Others	Colin_ready_mea	659	157	6.4	6.9	1.5	17.1	2	0	0.875	2	1	0	1.5	1	4	0	3	3	1.8	light green 0 to 2	
Others	Quenelle_ready_mea	707	164	5.4	21.6	1.6	14.2	3	10	0.875	2	2	0	3.6	3	7	0	3	3	4.4	yellow 3 to 10	
Others	Enfornado_ready_mea	645	154	8	7.8	2.7	12.2	0.6	0	0.725	3	1	0	2.2	2	6	0	1	4	5	1.8	light green 0 to 2
Others	Catillout_ready_mea	365	134	7.8	4.6	1.2	15	1	20	0.625	2	1	0	1.2	1	4	0	4	4	4	0.8	light green 0 to 2
Others	Parmesan_ready_mea	528	129	6	7.1	4.4	9.1	0.5	0	0.7	3	1	0	4.4	4	8	0	3	3	2.0	yellow 3 to 10	
Others	Petit_pois_ready_mea	330	126	8.9	3.4	1.1	12.5	2.3	5	0.8	2	1	0	1.1	1	4	0	1	3	4	0.8	light green 0 to 2
Others	Poisson_ready_mea	444	306	8	4.3	0.8	8.2	1.3	20	0.7	1	0	0	0.8	0	4	0	4	4	5	-1.4	dark green 0 to 5
Others	Saumon_ready_mea	698	187	6.6	9	3.4	14.6	0.5	0	0.8	2	2	0	3.4	3	7	0	4	4	3.0	yellow 3 to 10	
Others	St_jacques_ready_mea	389	180	5.9	5.7	2.8	18	1.4	40	0.875	2	1	0	2.8	2	5	0	3	3	2.8	light green 0 to 2	
Others	Parmesan_ready_mea	650	155	6.7	6.2	2.8	17.4	0.5	0	0.475	2	1	0	2.8	2	5	0	4	5	0.8	light green 0 to 2	



3 Improvement of the Nutri-Score®

1)

Name of the product	Class of Nutri-Score®	Improve	Information
Pizza pâte épaisse Chorizo	C	Improve	Information
Tarte aux poireaux frais	C	Improve	Information

Home Data Nutri-Score® ranking Improvement About

Finding solutions My solutions

Name of the product	Nutri-Score® category	Class	Score	Energy (kJ)	Saturated fatty acids (g) (or Saturated fatty acids/Total fats (%))	Sugar (g)	Fibres (g)	Proteins (g)	Sodium (mg)	Fruits and vegetables Nutri-Score® (%)
Pizza pâte épaisse Chorizo	Others	C	9	1016	3.8	2.9	2.1	9.6	476	0

Initial values

2) Enter the target class of Nutri-Score®

Target class of Nutri-Score®

B

Target class (from A to E)

3) Choose your calculation mode

Automatic Manual



3 Improvement of the Nutri-Score

Automatic mode :

ggplot2 and
ggiraph packages

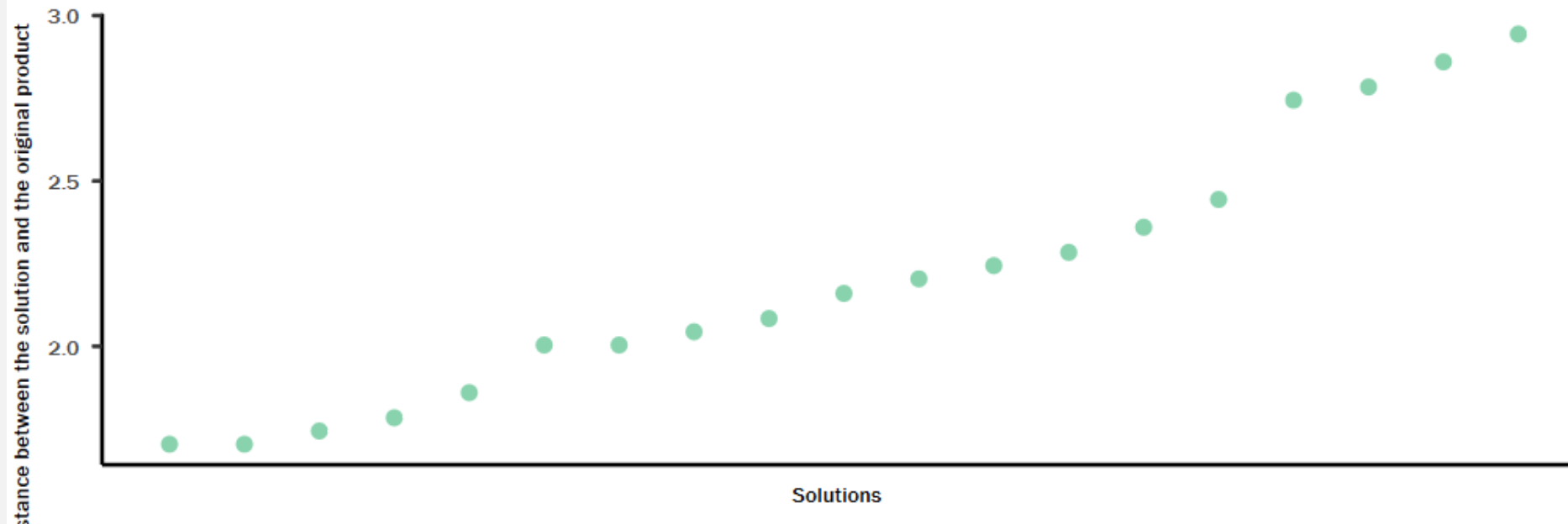
3. Visualize the closest solutions

Tick the nutrients that you would like to modify

Energy Saturated fatty acids Sugars Fibres Proteins Sodium Fruits and vegetables

Validate

Please, see below the solutions of improvement, ranked from the closest nutritional composition to the farthest of the original product [?]
(click on the dot to have more details)



← Closest solution to initial values



3 Improvement of the Nutri-Score

Automatic mode :

ggplot2 and
ggiraph packages

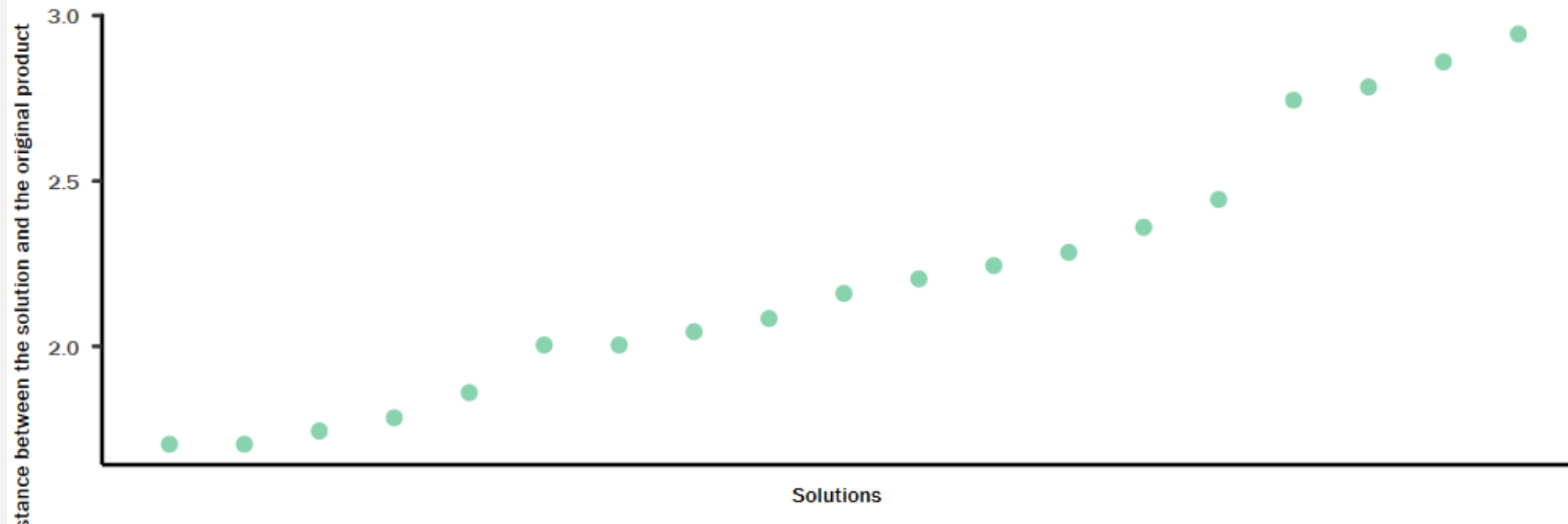
3. Visualize the closest solutions

Tick the nutrients that you would like to modify

Energy Saturated fatty acids Sugars Fibres Proteins Sodium Fruits and vegetables

Validate

Please, see below the solutions of improvement, ranked from the closest nutritional composition to the farthest of the original product [?]
(click on the dot to have more details)

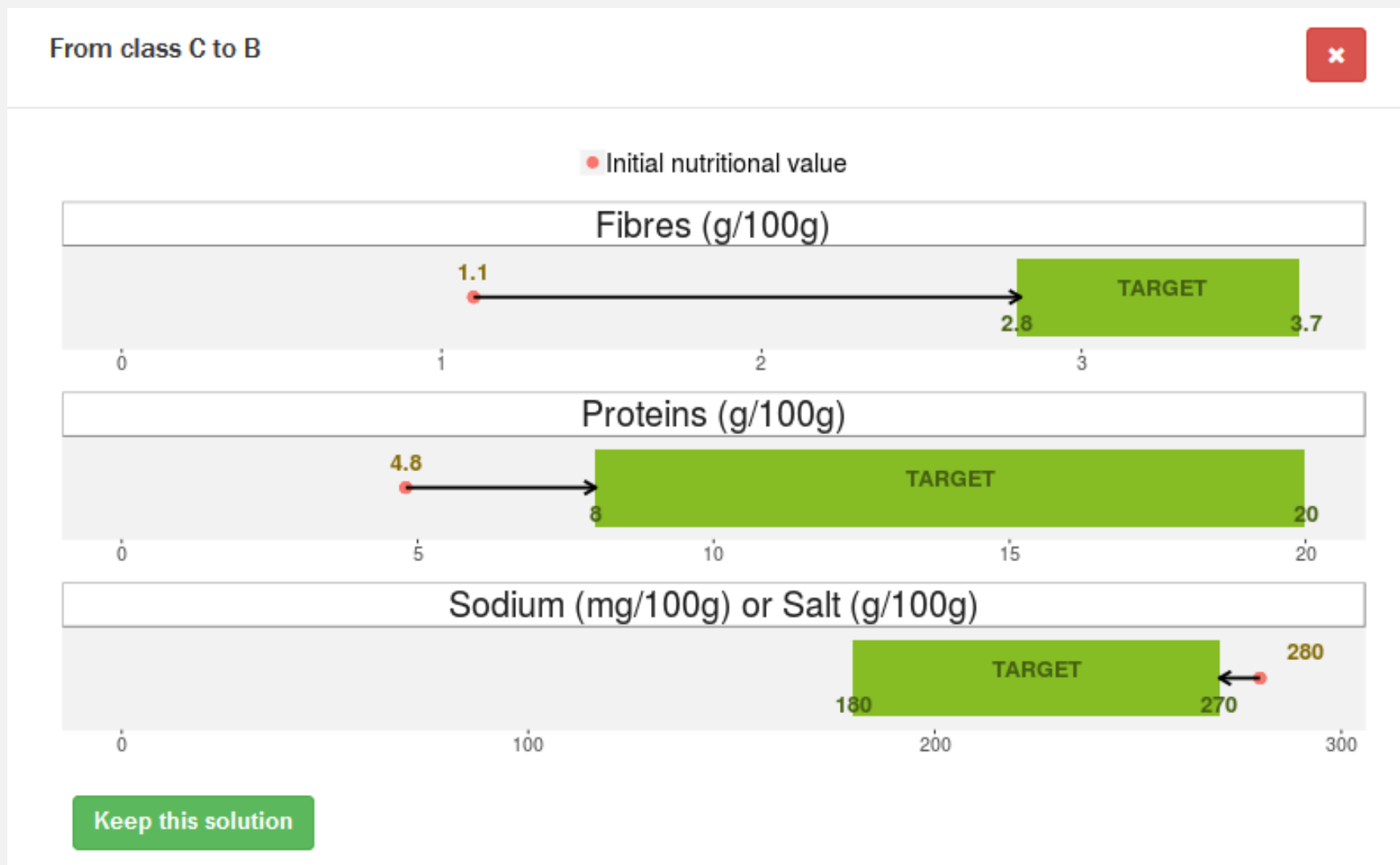


← Closest solution to initial values



3 Improvement of the Nutri-Score

Detail of the modifications in a modal window : `ggplot2` package



Free version + commercial version secured with personal logins

Rcurl and httr packages

MS-Food Free

- ✓ Nutri-Score® class of one product
- ✓ Nutri-Score® classes of several products & Descriptive analysis of the products portfolio
- ✓ Finding solutions to improve the Nutri-Score®

MS-Food

- ✓ Nutri-Score® class of one product*
- ✓ Nutri-Score® classes of several products & Descriptive analysis of the products portfolio
- ✓ Finding solutions to improve * the Nutri-Score®

**Demo version available for 3 days*

Available soon !

Thank you for your attention !



MS Nutrition
La solution quantitative