



R商业应用两例

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Mango Solutions

- 专业的R语言咨询公司
 - 基于R的解决方案
 - R语言培训
 - R语言的技术支持
 - 数据分析外包
- 行业经验
 - 制药、金融、保险、能源
 - 医学图像分析、农业、食品

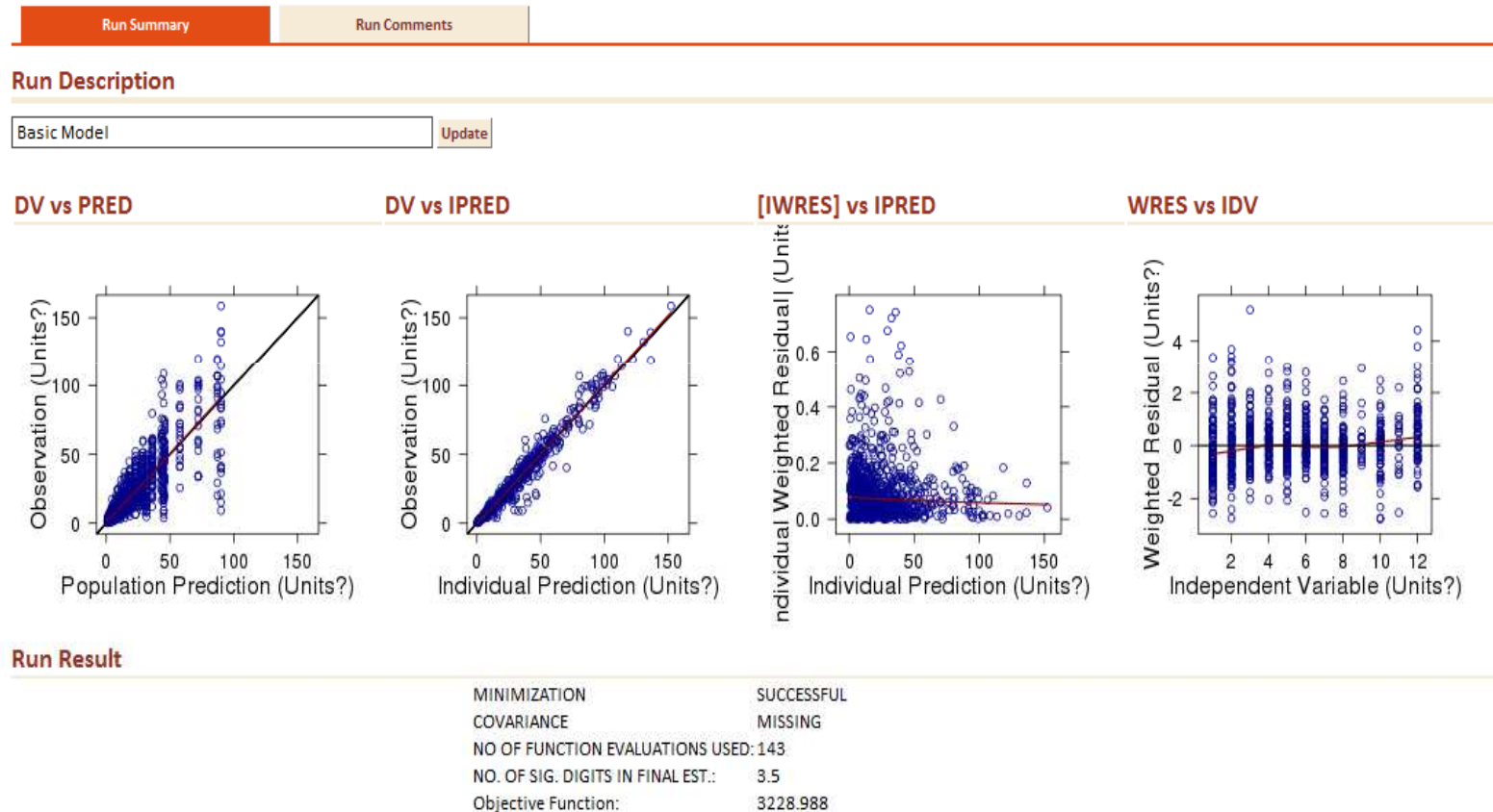
Navigator

- 基于R语言的定量药理学研究平台
- 使用NONMEM建模
- R语言进行分析
- 生成Word/PDF/RTF报告



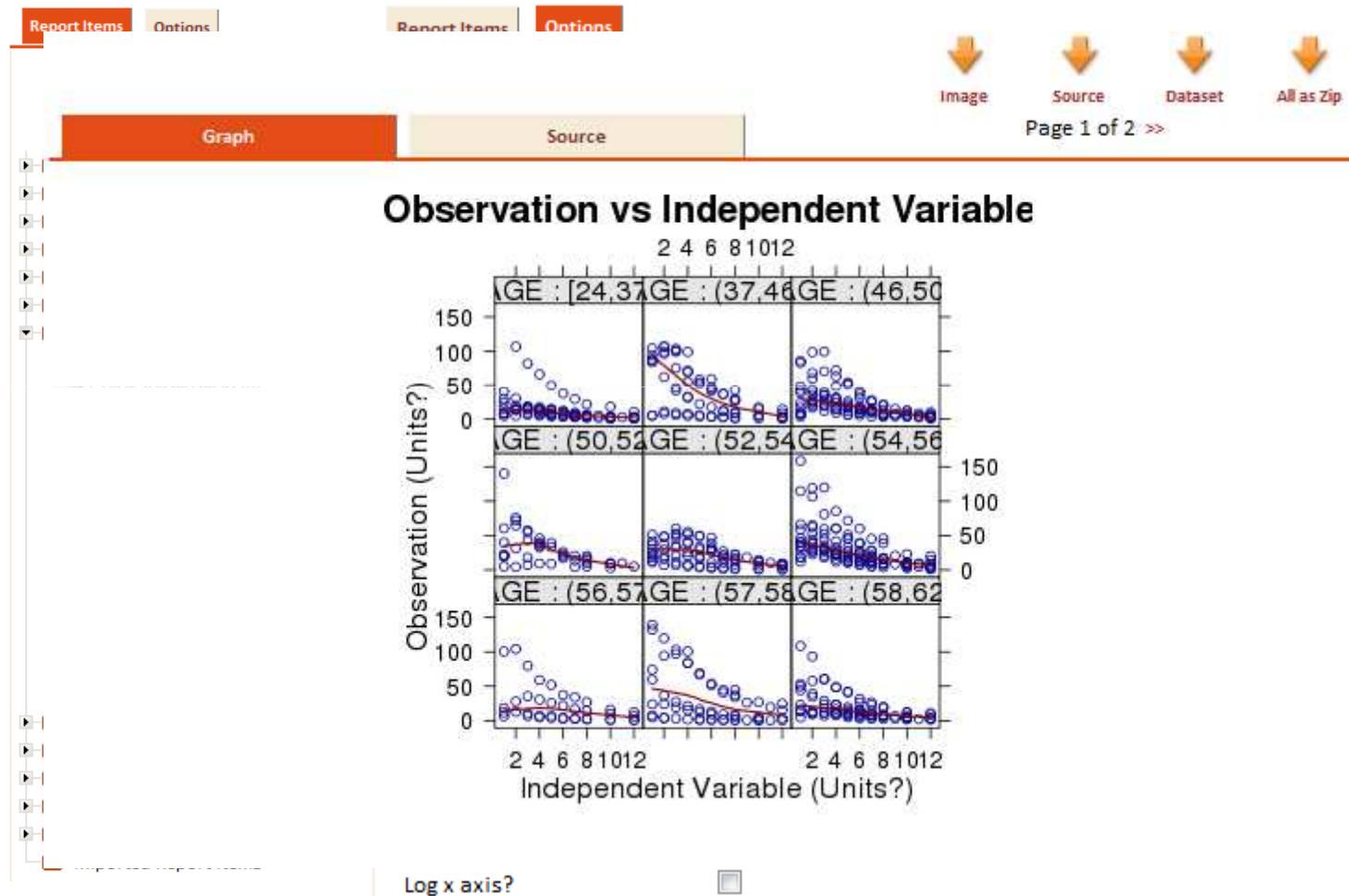
The image shows a login window for the Navigator application. At the top left is the Navigator logo, which consists of an orange circle with a black arrow pointing right, and three smaller orange circles with arrows pointing towards the main circle. To the right of the logo is the word "Navigator" in a bold, dark red font. Below the logo and name are two input fields: one for "Username" and one for "Password". Below the password field are two radio buttons: "Load last project" (which is selected) and "Load root project". At the bottom right is a red button with a white arrow icon and the word "Login" in white text.

Navigator – 主要功能（一）



自动生成数据的概览

Navigator – 主要功能（二）



选择并生成分析图形

Navigator – 主要功能（三）

The screenshot displays the Navigator application interface. At the top, there is a navigation bar with links for Admin, Help, About, and Logout navplus - (admin). Below this, there are buttons for Open Project and Create Project. The main area is divided into two panels. The left panel, titled 'Edit Report Item Definition', contains fields for Version (0), Item name (DV vs IDV), Item title (DV vs IDV), Item type (Graph), Categories (General Plots, Covariate Plots, Prediction Plots), Required Columns (@ID,@DV,@IDV), Apply subset (checked), Execute with default (checked), and Arguments (xVar, yVar, iVar, xLab, yLab). A large text area on the right of this panel contains R code for generating a plot. The right panel, titled 'Report Items', shows a hierarchical list of report items, including Bootstrap, Categorical Data Plots, Covariate Plots, Data Checkout Plots, Data Create, General Plots, Model Comparison Plots, Parameter Distribution Plots, Prediction Plots (with sub-items like DV vs IDV, DV vs IDV by covariate, etc.), Residual Error Distribution Plots, Residual Error Model Plots, SCM, Table, and VPC. A 'Show Deleted' link is also present.

Navigator

Admin | Help | About | Logout navplus - (admin)

Open Project Create Project

Project Overview Run Views Report Items

Edit Report Item Definition

Version: 0

Item name: DV vs IDV

Item title: DV vs IDV

Item type: Graph

Categories: General Plots, Covariate Plots, Prediction Plots

Required Columns: @ID,@DV,@IDV

Apply subset: ☒

Execute with default: ☒

Arguments: xVar, yVar, iVar, xLab, yLab

The R code entered will not be validated by the application. Please ensure they are valid so that the report can be run correctly.

```
with(optionList, {  
  if(zeroRefLine) ablines <- list(0) else ablines <- NULL  
  if(rotX) xRotAngle <- 90 else xRotAngle <- 0  
  reportImage <-  
  ERTKScatter( dataList[[1]], xVars=xVar, yVars=yVar, iVar=iVar, xLab=xLab,  
    b=yLab, titles=mTitle, bVars=bVar, addLoess=addLoess,  
    type=type, maxPanels = maxPanels, maxLevels = maxLevels,  
    addGrid=addGrid,  
    logX = logX, logY = logY, xRotAngle = xRotAngle, xAxisPlotStyle =  
    xAxisPlotStyle, xAxisScaleRelations = xAxisScaleRelations,  
    yAxisScaleRelations = yAxisScaleRelations,  
    expX = expX, expY = expY, ablines = ablines)  
  print(reportImage)  
})
```

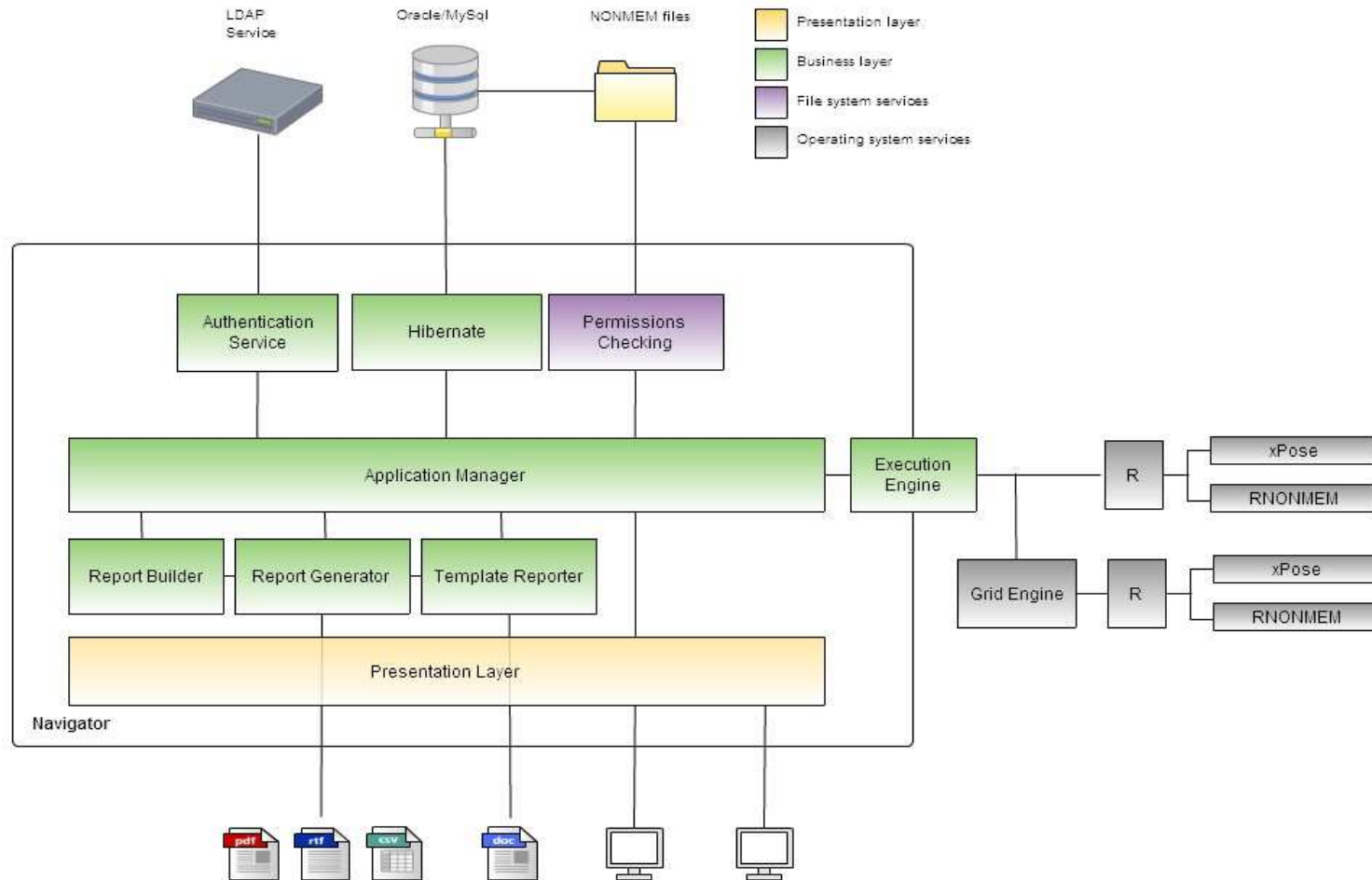
Report Items

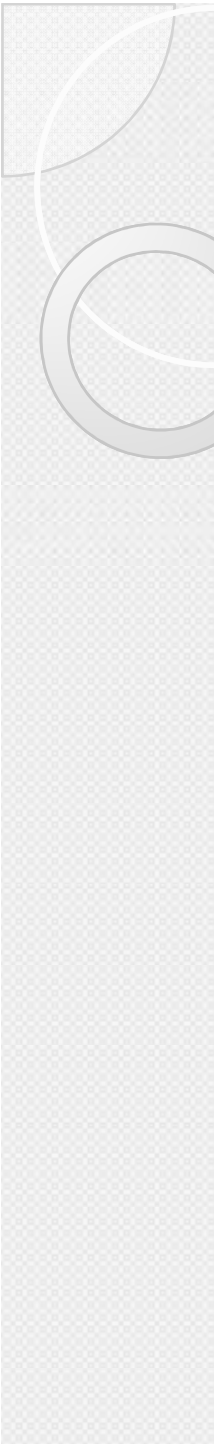
Show Deleted

- Bootstrap
- Categorical Data Plots
- Covariate Plots
- Data Checkout Plots
- Data Create
- General Plots
- Model Comparison Plots
- Parameter Distribution Plots
- Prediction Plots
 - DV vs IDV
 - DV vs IDV by covariate
 - DV vs IPRED
 - DV vs IPRED by IDV
 - DV vs IPRED by covariate
 - DV vs PRED
 - DV vs PRED by IDV
 - DV vs PRED by covariate
 - DV vs TAD by Covariate
 - DV, PRED, IPRED vs IDV
 - DV, PRED, IPRED vs IDV by ID
 - DV, PRED, IPRED vs TAD by Covariate
 - IPRED vs IDV
- Residual Error Distribution Plots
- Residual Error Model Plots
- SCM
- Table
- VPC

定制分析图形与报告

Navigator – 系统架构





Navigator – R的调用

- 使用Rterm与Rscript进行调用
- 结果通过XML回传
- 文件系统作为中介

Java调用R的其他选择

- JRI
 - 需要配置，调用简单，高度灵活，密集计算需要考虑性能问题
- Rserve
 - 配置简单，高度灵活，缺乏Windows支持，以HTTP方式调用
- Rapache
- 其它自制方案
 - 提供更强的高吞吐量、高性能计算



What is Mango Sensory

- Sensory – 感官分析
- 感官分析由应用统计分析方法与实验设计组成。消费品经过测试，测试的结果会被逐条记录，随后据此找出有意义的数据，并做出推论。
- 当前，世界上大多数的食品公司都在感官分析上做出了投资

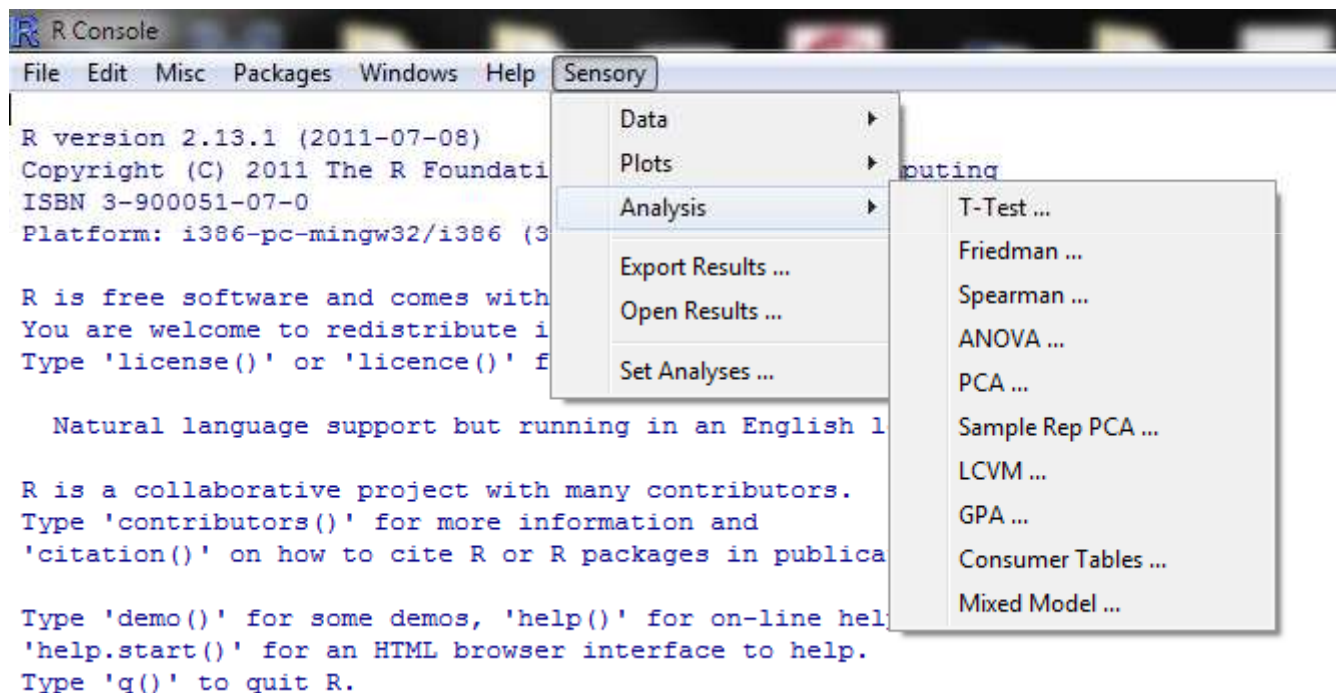


Components of Mango Sensory

- 数据导入
- 描述统计
- 各种图形: 线图, 直方图, 雷达图等等
- 分析功能: T检验, Friedman检验, Spearman检验, 方差分析, 主成分分析, GPA分析
- 结果导出

GUI of Sensory

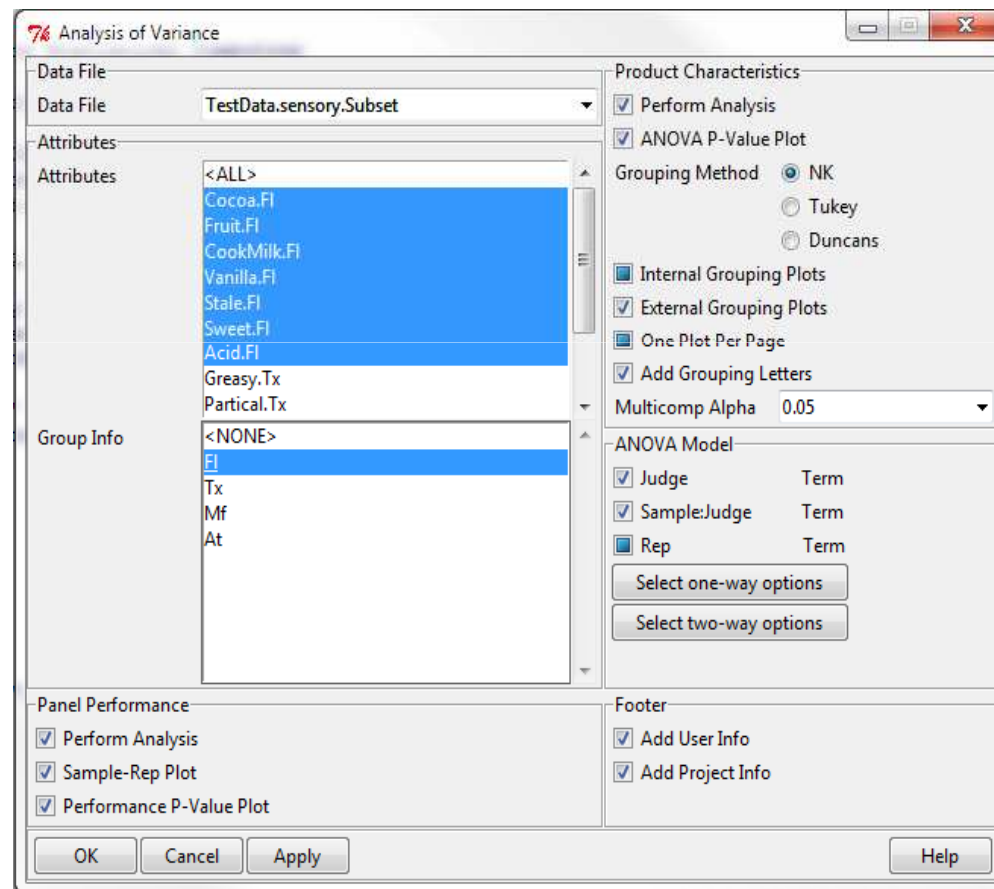
- 友好的用户界面可以提高分析师的效率



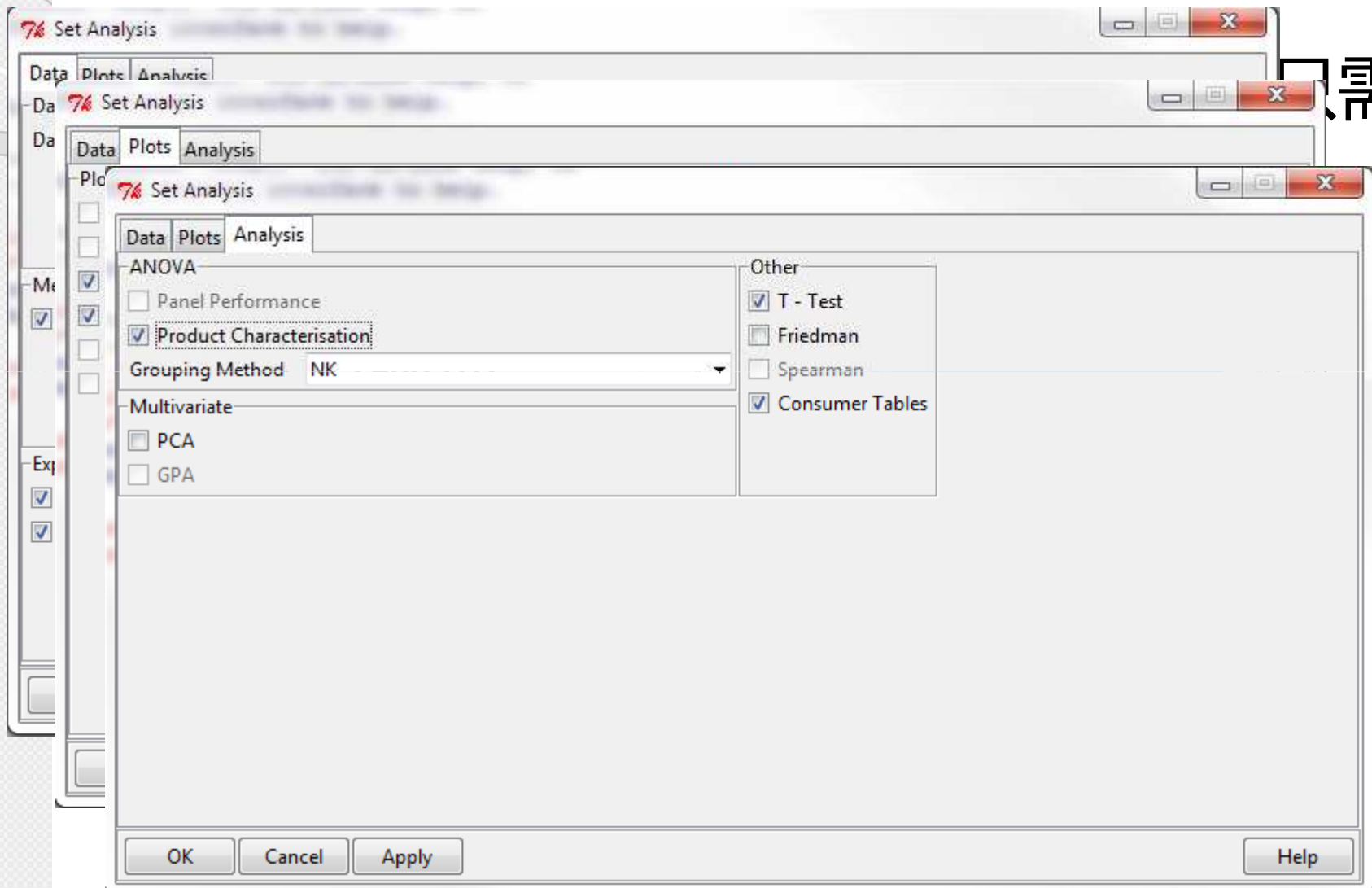
感官数据的形状

TestData.sensory																	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
row.names	Sample	Judge	Rep	Cocoa.Fl	Fruit.Fl	CookMilk.Fl	Vanilla.Fl	Stale.Fl	Sweet.Fl	Acid.Fl	Greasy.Tx	Partical.Tx	Dense.Tx	Astringent.Mf	Throatburn.At	Bitter.At	
1	1 Sample A	1	1	61.000	45.000	0.000	0.000	25.000	22.000	63.000	0.000	0.000	44.000	44.000	64.000	15.000	
2	2 Sample A	1	2	49.000	44.000	7.000	0.000	47.000	11.000	62.000	0.000	0.000	49.000	25.000	56.000	37.000	
3	3 Sample B	1	1	47.000	10.000	11.000	0.000	0.000	9.000	84.000	0.000	5.000	32.000	63.000	5.000	44.000	
4	4 Sample B	1	2	26.000	0.000	0.000	0.000	0.000	4.000	85.000	0.000	66.000	16.000	24.000	4.000	46.000	
5	5 Sample C	1	1	65.000	58.000	40.000	1.000	51.000	19.000	49.000	0.000	0.000	52.000	26.000	73.000	38.000	
6	6 Sample C	1	2	69.000	54.000	29.000	0.000	60.000	25.000	50.000	0.000	0.000	70.000	35.000	55.000	23.000	
7	7 Sample D	1	1	67.000	48.000	30.000	0.000	50.000	18.000	78.000	0.000	0.000	50.000	50.000	44.000	34.000	
8	8 Sample D	1	2	71.000	57.000	35.000	0.000	76.000	29.000	43.000	0.000	0.000	56.000	29.000	66.000	20.000	
9	9 Sample E	1	1	57.000	35.000	3.000	0.000	26.000	22.000	62.000	0.000	0.000	50.000	26.000	63.000	35.000	
10	10 Sample E	1	2	48.000	2.000	2.000	0.000	0.000	7.000	90.000	0.000	15.000	15.000	12.000	48.000	44.000	
11	11 Sample F	1	1	64.000	52.000	22.000	0.000	66.000	21.000	49.000	0.000	0.000	67.000	45.000	50.000	27.000	
12	12 Sample F	1	2	55.000	51.000	28.000	0.000	73.000	18.000	47.000	0.000	0.000	74.000	50.000	61.000	13.000	
13	13 Sample A	2	1	68.000	63.000	17.000	0.000	63.000	26.000	46.000	2.000	0.000	47.000	35.000	43.000	26.000	
14	14 Sample A	2	2	63.000	57.000	37.000	33.000	43.000	22.000	33.000	11.000	0.000	42.000	49.000	46.000	41.000	
15	15 Sample B	2	1	68.000	67.000	0.000	37.000	4.000	24.000	61.000	4.000	44.000	42.000	76.000	42.000	40.000	
16	16 Sample B	2	2	67.000	64.000	9.000	0.000	7.000	59.000	46.000	9.000	0.000	50.000	70.000	42.000	19.000	
17	17 Sample C	2	1	71.000	58.000	61.000	23.000	13.000	29.000	35.000	22.000	0.000	52.000	58.000	56.000	53.000	
18	18 Sample C	2	2	62.000	59.000	46.000	0.000	41.000	11.000	23.000	0.000	2.000	43.000	44.000	38.000	30.000	
19	19 Sample D	2	1	66.000	66.000	26.000	0.000	45.000	25.000	46.000	5.000	0.000	49.000	43.000	47.000	10.000	
20	20 Sample D	2	2	72.000	58.000	32.000	21.000	48.000	4.000	57.000	6.000	0.000	54.000	75.000	57.000	56.000	
21	21 Sample E	2	1	73.000	74.000	28.000	31.000	46.000	67.000	59.000	10.000	0.000	58.000	72.000	53.000	79.000	
22	22 Sample E	2	2	72.000	57.000	46.000	2.000	46.000	30.000	59.000	55.000	0.000	54.000	57.000	48.000	55.000	
23	23 Sample F	2	1	82.000	73.000	41.000	45.000	44.000	37.000	45.000	4.000	0.000	74.000	57.000	59.000	79.000	
24	24 Sample F	2	2	76.000	55.000	55.000	0.000	71.000	47.000	39.000	63.000	0.000	57.000	46.000	65.000	41.000	
25	25 Sample A	3	1	69.000	35.000	29.000	0.000	42.000	18.000	63.000	31.000	1.000	46.000	71.000	34.000	40.000	
26	26 Sample A	3	2	73.000	71.000	12.000	17.000	53.000	52.000	34.000	22.000	0.000	65.000	32.000	65.000	15.000	
27	27 Sample B	3	1	54.000	47.000	26.000	0.000	28.000	48.000	26.000	48.000	3.000	70.000	52.000	44.000	29.000	

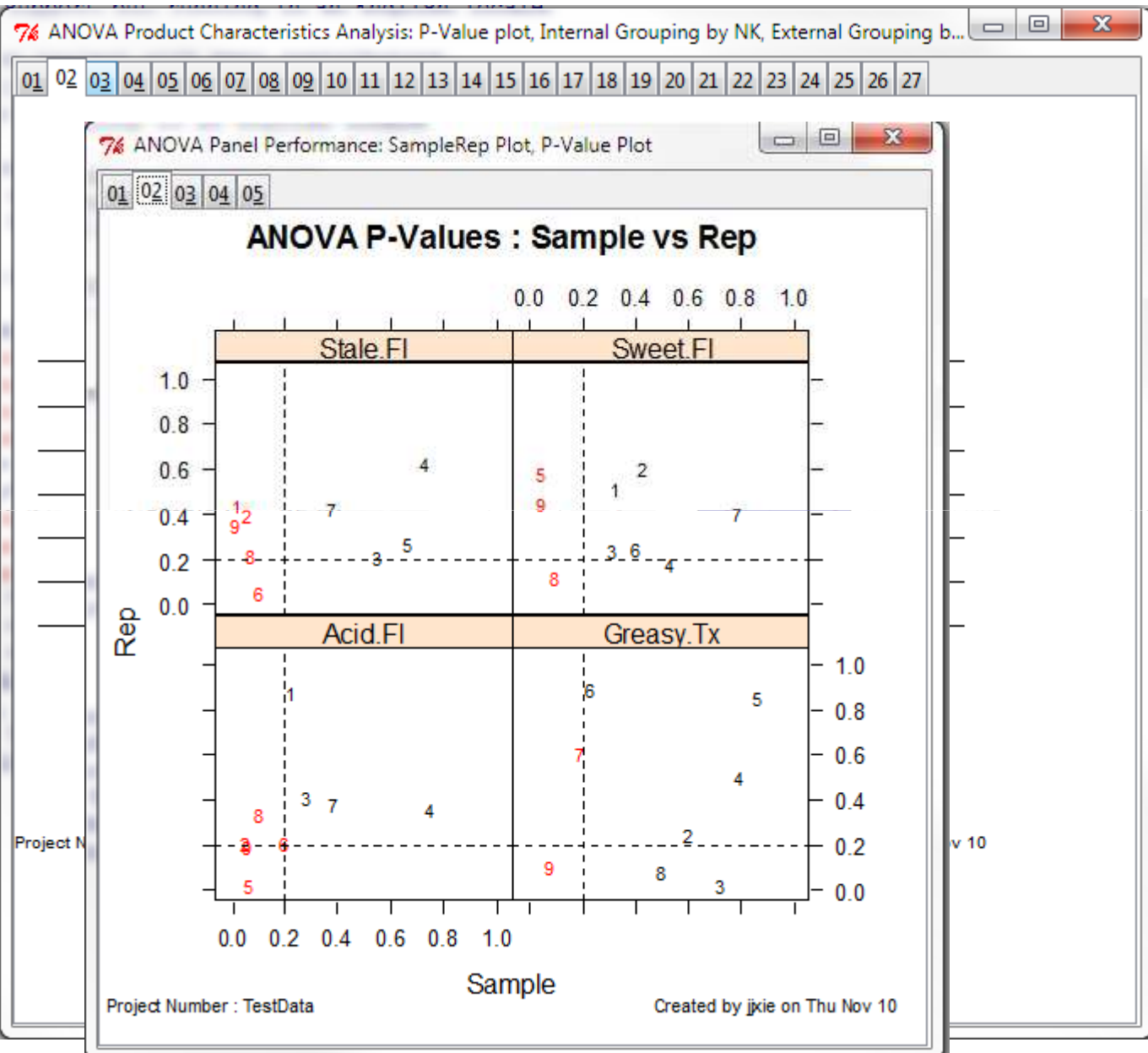
方差分析



批量分析



+



导出到Excel的结果

output.xml - Microsoft Excel

	C	D	E	F	G	H	I	J	K	L	M
1	NOVA on Sample-Judge-SampleJudge interaction, and posthoc NK groupings under level 0.05										
2											
3	N	Mean	Median	Stdev	PVal Sample	PVal Judge	PVal Sample Judge	Sig	Groupings	Group1	Group2
4	18	67.27777778	66.5	11.10805514	1.040627e-01	<0.001	4.037527e-02	NS			
5	18	66.88888889	65	11.21914796							
6	18	65.66666667	69.5	15.07627665							
7	18	65.61111111	66.5	12.77008862							
8	18	64.61111111	64	10.12358277							
9	18	59.55555556	57.5	12.26771095							
10	18	61.77777778	59	15.86544731	6.756818e-02	<0.001	3.228265e-01	NS			
11	18	59.5	61.5	18.45901661							
12	18	55.83333333	54	19.22697248							
13	18	54.61111111	58	24.59110047							
14	18	54.33333333	58	19.29340027							
15	18	46.83333333	51.5	24.50750185							
16	18	52.11111111	52	22.17016779	4.831908e-03	<0.001	5.341762e-02	1%	A	A	
17	18	43.88888889	38.5	19.25338439					AB	A	B
18	18	39.94444444	43	18.01134356					B		B
19	18	38.61111111	38	21.2163613					B		B
20	18	38.11111111	45.5	24.03646467					B		B
21	18	33.27777778	25.5	25.1438346					B		B
22	18	19.5	21	17.64436254	8.376665e-01	<0.001	7.447377e-01	NS			
23	18	15.77777778	13	17.95273388							
24	18	15.72222222	2	19.63731608							
25	18	15	7.5	17.70343935							
26	18	14.61111111	11.5	16.29196442							
27	18	13.94444444	10.5	14.18562745							
28	18	46.44444444	51	25.26383656	8.185672e-03	<0.001	<0.001	1%	A	A	
29	18	42.55555556	53.5	27.35221729					A	A	
30	18	42.44444444	46.5	23.2384626					A	A	
31	18	41.88888889	42.5	23.20722222					A	A	
32	18	40.33333333	45.5	20.47954503					A	A	
33	18	28.61111111	22.5	24.25874952					B		B
34	18	24.5	14	22.95327735	2.325558e-01	<0.001	2.169099e-02	NS			
35	18	22.61111111	19	17.62397728							
36	18	22.11111111	26.5	14.06660162							
37	18	20.27777778	20	13.33639671							

Ready

谢谢！



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