Book: Measurement in medicine
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www.cambridge.org/9780521133852

```
GET
  FILE='N:\PROJECTEN\KMG\boek clinimetrics\opgaven en website\hoofdstuk 8\chapter 8_
assignment 2_1_PRAFAB.sav'.

* Assignment 8.2
Get FILE PRAFAB.sav


* Assignment 8.2.A
* The file PRAFAB.sav has a variable 'changeT0_T2' calculated as 'totalPRAFABT0'
    minus 'totalPRAFABT2'
* Mean change values (change T0-T2) for each category of the gobal rating scale
   (GRS9)

MEANS
  TABLES=changeT0_T2  BY GRS9
  /CELLS COUNT MEAN STDDEV  .
```

Means

Case Processing Summary

	Cases					
	Included		Excluded		Total	
	N	Percent	N	Percent	N	Percent
changeT0_T2 * GRS9 Global Rating Scale-9	484	100.0%	0	.0%	484	100.0%

Report

changeT0_T2

GRS9 Global Rating	N	Mean	Std. Deviation
1 completely recovered	124	6.5081	1.83682
2 much improved	86	4.5233	1.71311
3 moderately improved	86	3.5698	1.33320
4 slightly improved	49	2.5510	.79218
5 not changed	139	.8201	.97988
Total	484	3.5992	2.58529

```
* To form three groups of patients who are improved, not cahnged and deteriorate
   d we first create a new variable which we call anchor_cutpoint_slightly_chang
   ed, with
* anchor_cutpoint_slightly_changed = 1 when patients are importantly improved ac
   cording to the anchor;
* anchor_cutpoint_slightly_changed = 0 when patients are not importantly changed
    according to the anchor; and
* anchor_cutpoint_slightly_changed = -1 when patients are importantly deteriorat
   ed according to the anchor.

IF (GRS9  <= 4) anchor_cutpoint_slightly_changed = 1 .
EXECUTE .
IF (GRS9  =5) anchor_cutpoint_slightly_changed = 0 .
EXECUTE .
IF (GRS9   >= 6) anchor_cutpoint_slightly_changed = -1 .
EXECUTE .

MEANS
  TABLES= changeT0_T2 BY anchor_cutpoint_slightly_changed
  /CELLS   COUNT  MEAN  STDDEV    .
```

Means

Case Processing Summary

	Cases					
	Included		Excluded		Total	
	N	Percent	N	Percent	N	Percent
changeT0_T2 * anchor_cutpoint_ slightly_changed	484	100.0%	0	.0%	484	100.0%

Report

changeT0_T2

anchor_cutpoint_	N	Mean	Std. Deviation
.00	139	.8201	.97988
1.00	345	4.7188	2.14972
Total	484	3.5992	2.58529

```
* Assignment 8.2.B

* select patients who are 'importantly improved'

USE ALL.
COMPUTE filter_$=(anchor_cutpoint_slightly_changed = 1).
VARIABLE LABEL filter_$ 'anchor_cutpoint_slightly_changed = 1 (FILTER)'.
VALUE LABELS filter_$  0 'Not Selected' 1 'Selected'.
FORMAT filter_$ (f1.0).
FILTER BY filter_$.
EXECUTE .

* determine distribution over T0-T2 leading to positive change scores for the im
   proved patients

FREQUENCIES
  VARIABLES=ChangeT0_T2
  /ORDER=  ANALYSIS .
```

Frequencies

Statistics

changeT0_T2

N	Valid	345
	Missing	0

changeT0_T2

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	2	.6	.6	.6
	2.00	61	17.7	17.7	18.3
	3.00	59	17.1	17.1	35.4
	4.00	52	15.1	15.1	50.4
	5.00	52	15.1	15.1	65.5
	6.00	43	12.5	12.5	78.0
	7.00	31	9.0	9.0	87.0
	8.00	25	7.2	7.2	94.2
	9.00	16	4.6	4.6	98.8
	10.00	4	1.2	1.2	100.0
	Total	345	100.0	100.0	

```
.* select patients who have not changed


USE ALL.
COMPUTE filter_$=(anchor_cutpoint_slightly_changed = 0).
VARIABLE LABEL filter_$ 'anchor_cutpoint_slightly_changed = 0 (FILTER)'.
VALUE LABELS filter_$  0 'Not Selected' 1 'Selected'.
FORMAT filter_$ (f1.0).
FILTER BY filter_$.
EXECUTE .


* determine distribution over T0-T2 for the patients who have not changed

FREQUENCIES
  VARIABLES=ChangeT0_T2
 /ORDER=  ANALYSIS .
```

Frequencies

Statistics

changeT0_T2

N	Valid	139
	Missing	0

changeT0_T2

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	-2.00	3	2.2	2.2	2.2
	-1.00	4	2.9	2.9	5.0
	.00	44	31.7	31.7	36.7
	1.00	58	41.7	41.7	78.4
	2.00	25	18.0	18.0	96.4
	3.00	4	2.9	2.9	99.3
	4.00	1	.7	.7	100.0
	Total	139	100.0	100.0	

```
* Assignment 8.2.C

* determine the optimal ROC cut-off point of category anchor_cutpoint_slightly_c
   hanged = 1 (n=345) versus category anchor_cutpoint_slightly_changed = 0 (n=13
   9)
```

```
USE ALL.
COMPUTE filter_$=(anchor_cutpoint_slightly_changed = 0 OR
  anchor_cutpoint_slightly_changed = 1 ).
VARIABLE LABEL filter_$ 'anchor_cutpoint_slightly_changed = 0 OR'+
 ' anchor_cutpoint_slightly_changed = 1  (FILTER)'.
VALUE LABELS filter_$  0 'Not Selected' 1 'Selected'.
FORMAT filter_$ (f1.0).
FILTER BY filter_$.
EXECUTE .
ROC
  changeT0_T2  BY anchor_cutpoint_slightly_changed (1)
  /PLOT = CURVE(REFERENCE)
  /PRINT = SE COORDINATES
  /CRITERIA = CUTOFF(INCLUDE) TESTPOS(LARGE) DISTRIBUTION(FREE) CI(95)
  /MISSING = EXCLUDE .
```

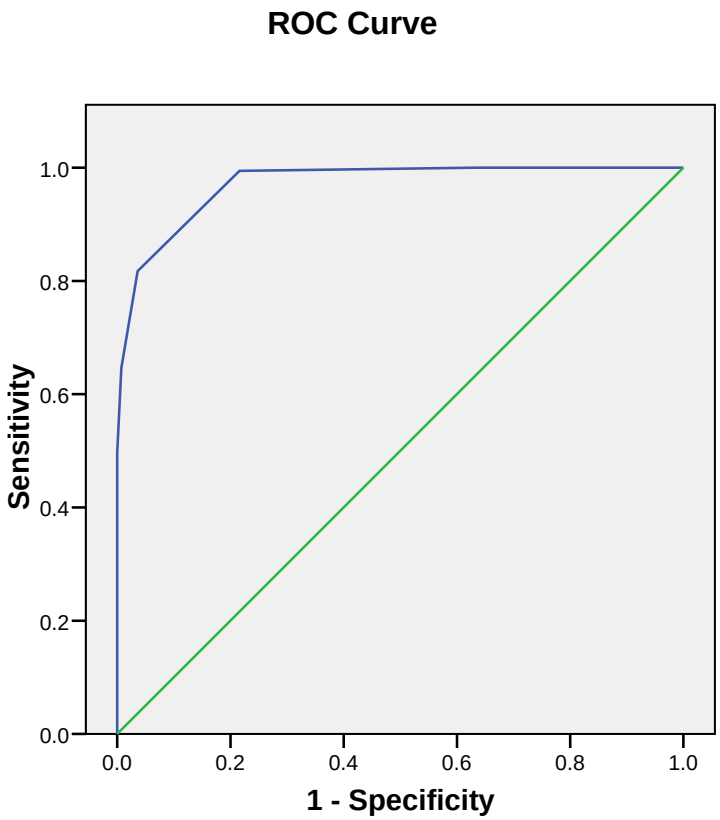
ROC Curve

Case Processing Summary

anchor_cutpoint_slightly_changed	Valid N (listwise)
Positive[a]	345
Negative	139

Larger values of the test result variable(s) indicate stronger evidence for a positive actual state.

a. The positive actual state is 1.00.



Diagonal segments are produced by ties.

Area Under the Curve

Test Result Variable(s): changeT0_T2

Area	Std. Error[a]	Asymptotic Sig.[b]	Asymptotic 95% Confidence Interval	
			Lower Bound	Upper Bound
.971	.007	.000	.958	.984

The test result variable(s): changeT0_T2 has at least one tie between the positive actual state group and the negative actual state group. Statistics may be biased.

a. Under the nonparametric assumption

b. Null hypothesis: true area = 0.5

Coordinates of the Curve

Test Result Variable(s): changeT0_T2

Positive if Greater Than or Equal To[a]	Sensitivity	1 - Specificity
-3.0000	1.000	1.000
-1.5000	1.000	.978
-.5000	1.000	.950
.5000	1.000	.633
1.5000	.994	.216
2.5000	.817	.036
3.5000	.646	.007
4.5000	.496	.000
5.5000	.345	.000
6.5000	.220	.000
7.5000	.130	.000
8.5000	.058	.000
9.5000	.012	.000
11.0000	.000	.000

The test result variable(s): changeT0_T2 has at least one tie between the positive actual state group and the negative actual state group.

a. The smallest cutoff value is the minimum observed test value minus 1, and the largest cutoff value is the maximum observed test value plus 1. All the other cutoff values are the averages of two consecutive ordered observed test values.