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## Good will hunting. Predicting response quality using motivation in longitudinal surveys

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# ESRA 2019 :

**Good will hunting. Predicting response quality using motivation in longitudinal surveys**

Valentin Brunel  
Jean-Baptiste Portelli

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# Introduction

- Declining response rates and quality (Massey and Tourangeau 2013)
- What tools can we use to predict and target those challenges ?
- Motivation : what is it ?

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[Massey Douglas S., Tourangeau Roger. 2013. "Introduction: New Challenges to Social Measurement." The ANNALS of the American Academy of Political and Social Science 645:6–22.](#)

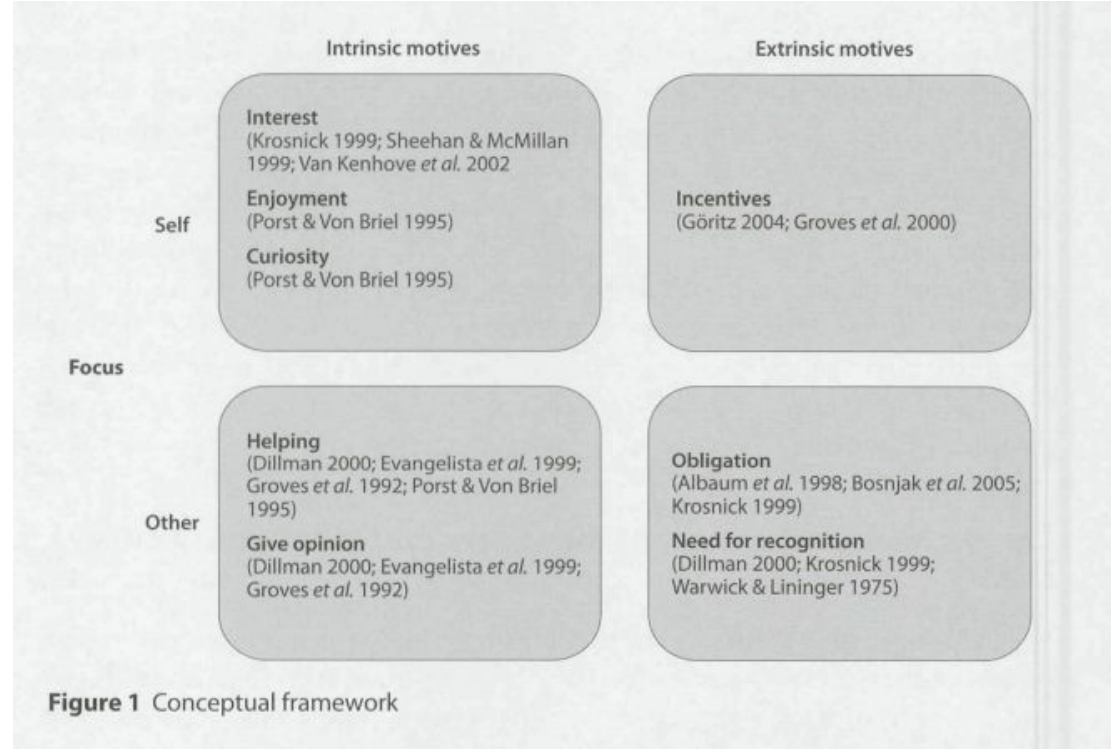
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# Literature

- Most research on motivation is psychological
- Finding out what are the big drivers or sub-elements of motivation
- The objective in most cases is to maximize motivation

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# Literature



Elisabeth Bruggen, Martin Wetzels, Niels Schillewaert and Ko de Ruyter, Individual differences in motivation to participate in online panels : The effect on response rate and response quality perceptions, International Journal of Market Research Vol. 53 Issue 3, 2011

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# Literature

- Most research on motivation is psychological
- Finding out what are the big drivers or sub-elements of motivation
- The objective in most cases is to maximize motivation
  
- But this is not our case ! We will simply define “motivation” as the reason why people say they participate in a survey (“functionalist approach”, Dillman 2000).

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Dillman, D. A. (2000). Mail and Internet surveys: The tailored design method. New York: Wiley.

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## What we aim to do

- Find out to what extent motivation can explain data quality and attrition
- Use those results to maximize data quality and minimize attrition
  
- Plus another, more methodological issue : comparing open-ended questions and close-ended questions in producing an effective and useful classification of reasons to participate



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## Our data

ELIPSS Panel, two waves :

1. pilot study (2012, 1000 panelists)
2. refreshment (2016, 2500 panelists)

5 years of data : longitudinal vision, commentaries, paradata, full-text, etc.





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# Our variables

786 variables :

- Questions asked when joining the panel
- Paradata (response status, duration, number partial non-response) for all surveys
- Socio-demographics (each year)
- “Pratiques numériques” questions (each year)
- End-of-survey questions of these surveys : close-ended questions on motivation
- Other

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# Descriptive statistics

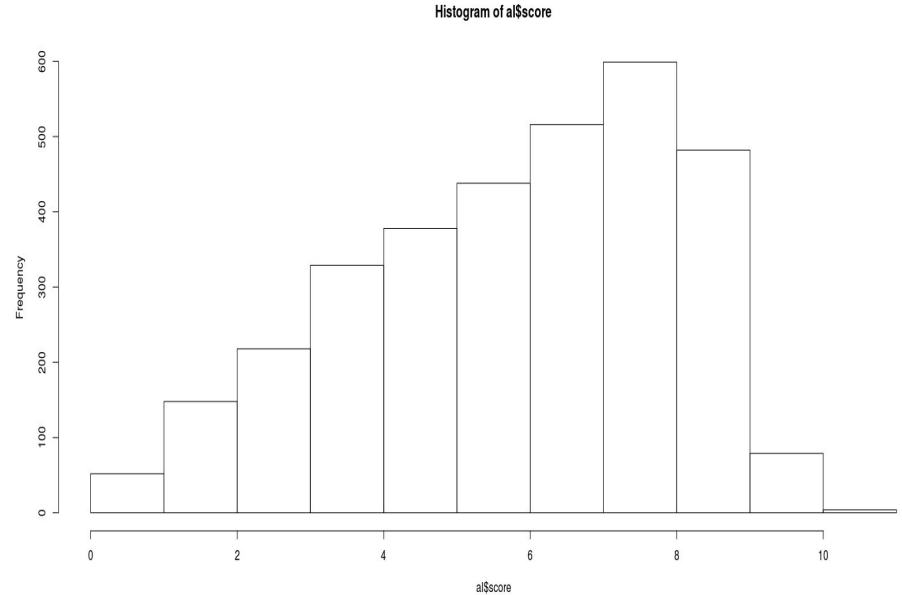
What is motivation and how correlated is it to other variables ?

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# Descriptive statistics

Score constructed using :

- how much did you hesitate,
- did you subscribe yourself,
- did you check for additional information and where ?



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# Quali vs Quanti motivation

Other than the “quantitative” motivation score, we used a pair of questions asked to all panelists when entering : what is the reason why you chose to participate? Those questions had 6 possible answers:

- interest for research
- trust in institutions
- incentives (tablets or internet subscriptions)
- project's originality
- other

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# Quali vs Quanti motivation

Another approach of qualitative motivation : textual analysis. Could you describe your first impressions when hearing about ELIPSS?

First results : very high similarity of vocabulary...

...which makes all analysis difficult.

intéressant	990	adj
projet	621	nom
participer	398	ver
enquête	259	nom
trouver	248	ver
intéresser	243	ver
curiosité	239	nom
curieux	178	adj
tablette	161	nom
donner	149	ver

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# Quali vs Quanti motivation

However, we used Reinert (Alceste software) method, to identify classes of respondents, based on similarity of vocabulary.

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Reinert method :

Descending hierarchical classification, which separates progressively texts depending on their similarity of vocabulary. Texts with the same words will surface in the same class.



impression  
simple  
particulier  
instant  
intuitif  
favorable  
moment  
positif  
convivial  
prononcer  
réaction  
facilité  
accès  
sérieuse  
familiariser  
attente  
utilisation  
parler  
clair  
simplicité  
répondre  
pratique  
vraiment  
simplement  
main  
construire  
cest  
jour

curiosité  
intérêt  
étonnement  
méfiance  
suscoiter  
enthousiasme  
questionnement  
structure  
expérience  
sympathique  
appréhension  
envie  
peur  
motiver  
interrogation  
satisfaction  
inconnu  
étudier  
ressentir  
possible  
information  
émancer  
tenir  
sociétales  
privé  
panélistes  
panéliste  
ordre  
opération  
futur

curieux  
intéresser  
surprendre  
surprise  
étonner  
sélectionner  
intriguer  
arnaquer  
premier  
méfiant  
choisir  
courrier  
départ  
agréablement  
enquêteuse  
découvrir  
présenter  
demander  
sceptique  
connaître  
commencer  
tirer  
domicile  
sortir  
rassurer  
renseigner  
réticent  
renouveler

donner  
avis  
opinion  
permettre  
société  
sujet  
participer  
chose  
recherche  
aimer  
avancer  
apporter  
exprimer  
français  
répondre  
social  
étude  
aider  
enquête  
population  
important  
évolution  
partie  
panel  
sentir  
heureux  
sondage  
tablette

intéressant  
projet  
sérieux  
trouver  
utile  
air  
sembler  
paraître  
innovant  
enrichissant  
po  
contraignant  
onrs  
avvenir  
motivant  
instructif  
ambitieux  
organisme  
long  
participatif  
atrayant  
suivre  
pratique  
amusant  
organiser  
étonnant  
ca  
terme  
programme  
attractif

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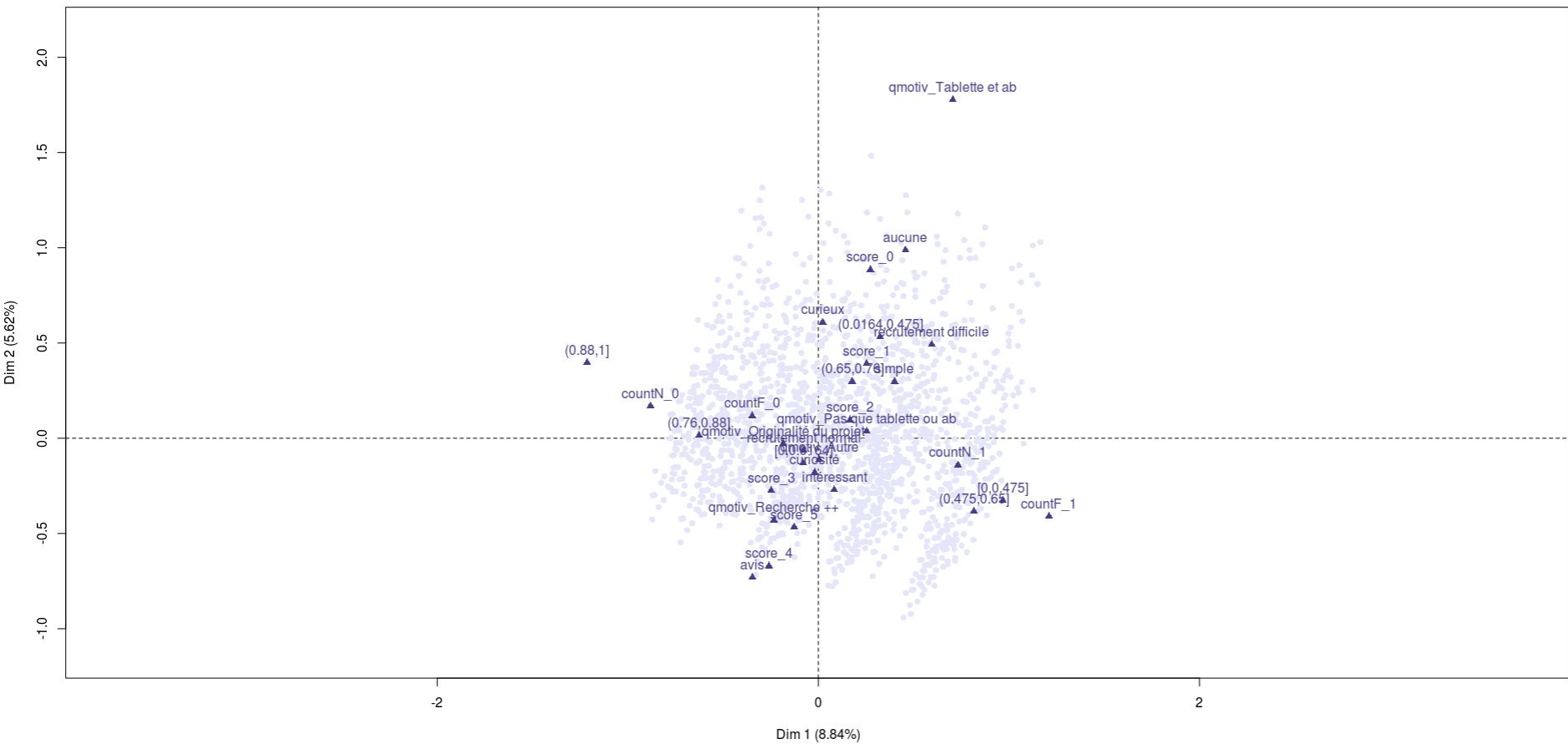
# Approaching motivation through all dimensions

Using a MCA

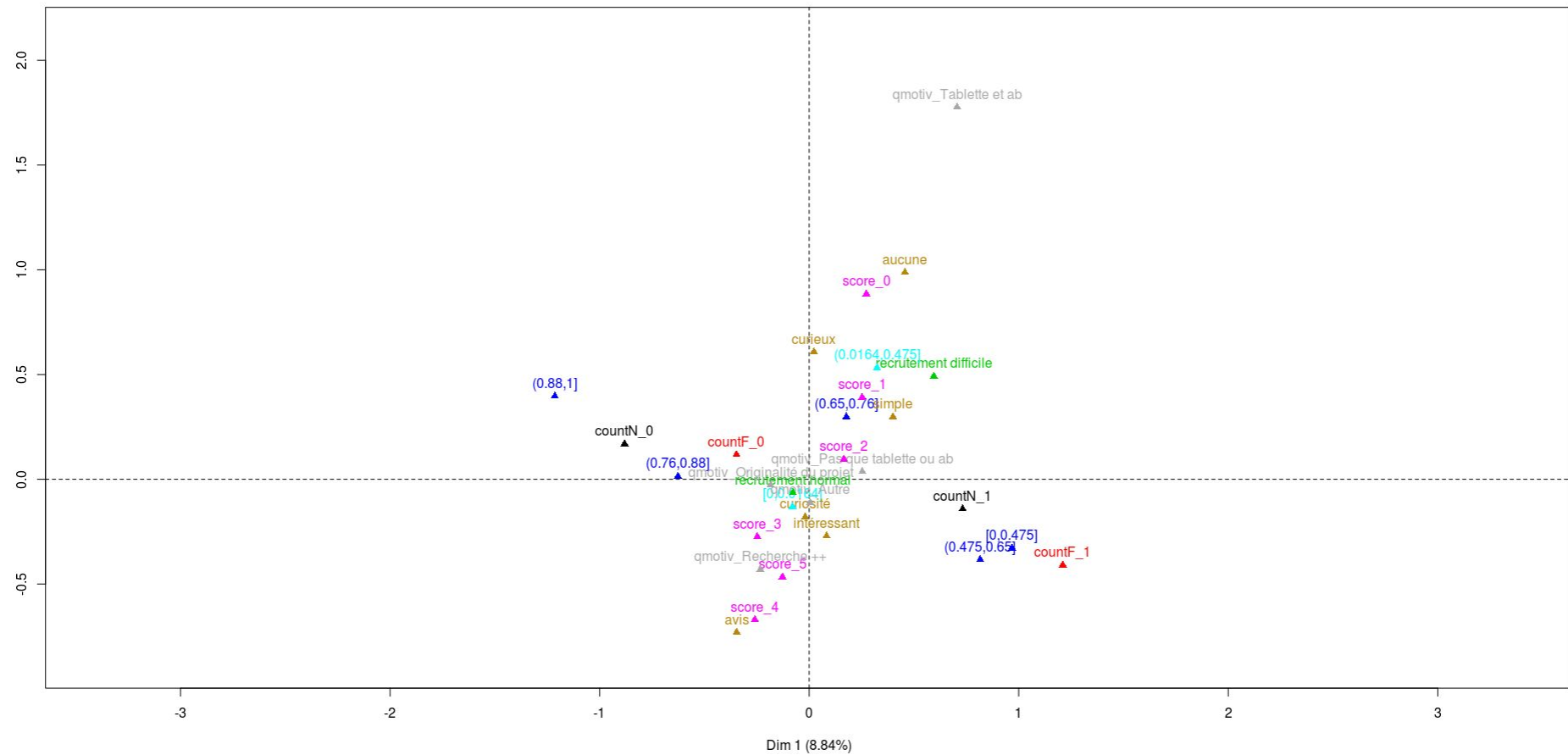
- close-ended answers on motivation
- textual analysis categories
- quantitative score
- having not answered surveys
- having started but not finished surveys
- difficulty of recruitment
- proportion of over-time survey answering
- proportion of item non-response in main surveys



Graphe de l'ACM



Graphe de l'ACM





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# Approaching motivation via different dimensions

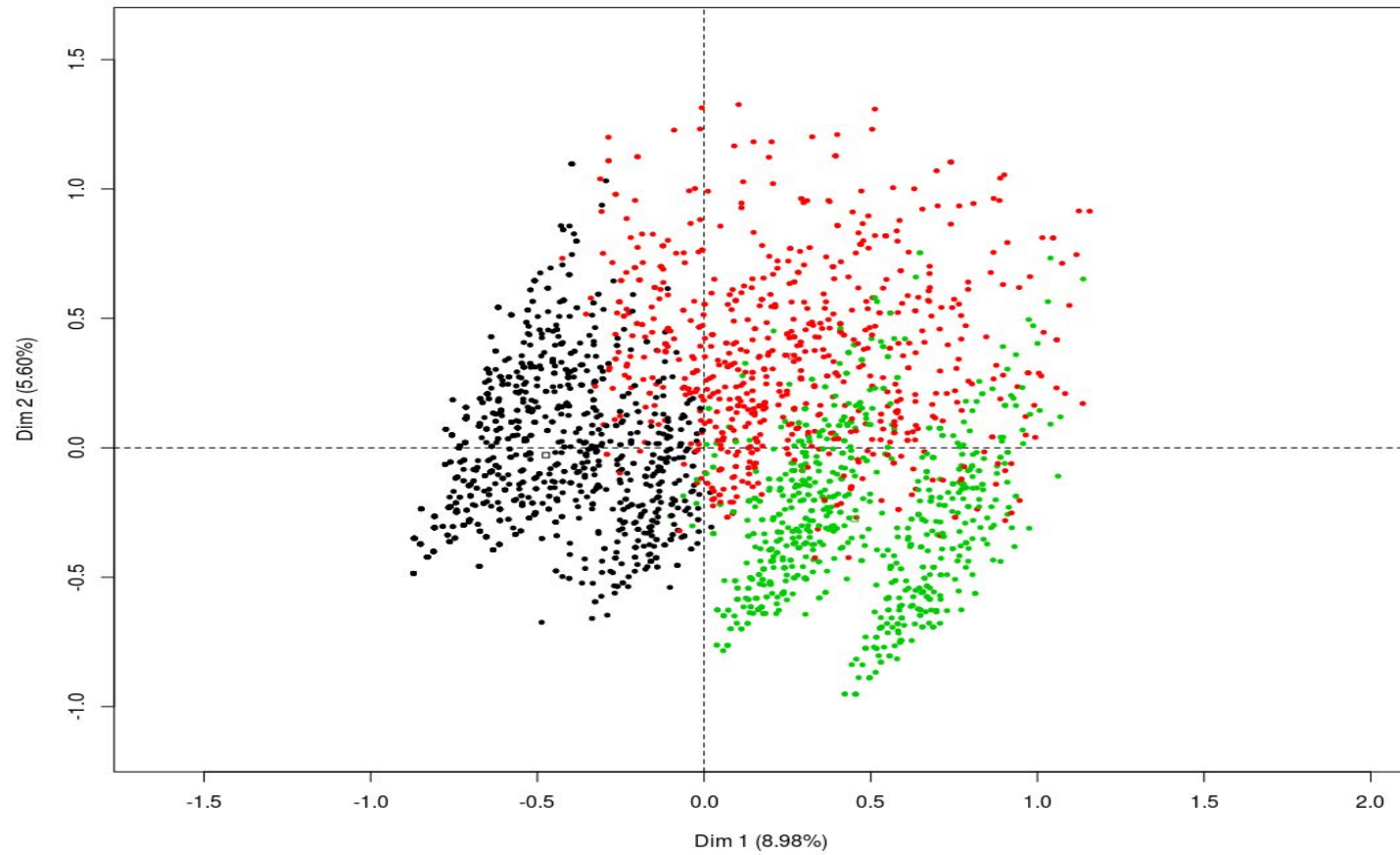
The main result is the opposition between subjective motivation and objective measures of motivation.

The MCA seems to oppose 3 groups of people : clockwise, starting from top left :

- good-willing panelists
- hard-to-reach, not too interested from the start
- unconcerned, non respondents

The first axis is motivation enduring in time, the second motivation during recruitment.

Plan factoriel

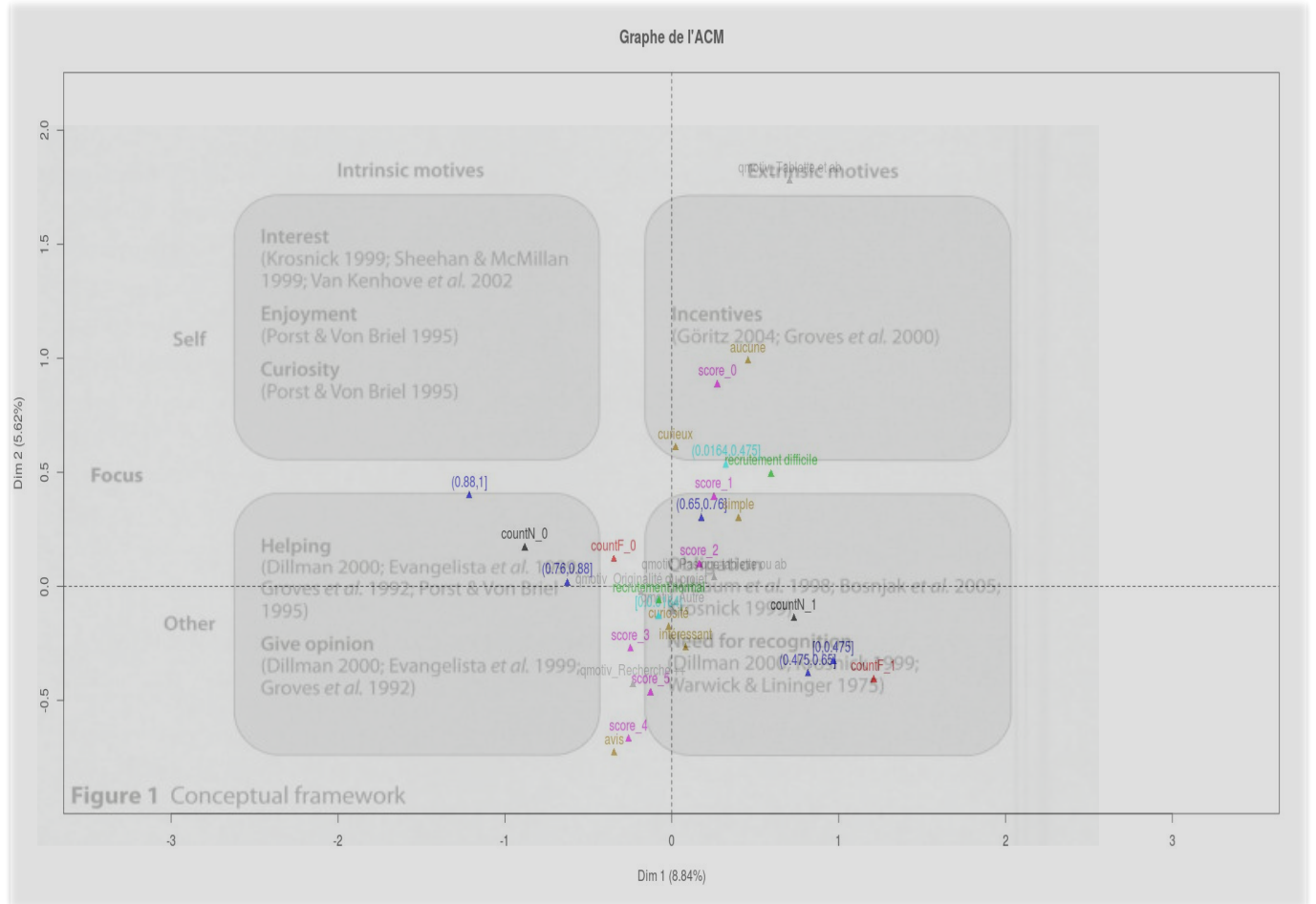


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# Approaching motivation via different dimensions

One could here find other dimensions noted in the literature : extrinsic self (incentives), extrinsic other (recherche), intrinsic other (give opinion), intrinsic self (interest, curiosity).

# Literature



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# A statistical model to predict non response

- Model to predict attrition under-performed (16.5% bar of well-classed panelists)
- Thus we turned towards predicting non-response to at least one survey as our variable of interest.



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# Our model

Variables selected :

- durationsum2\_cl: response time to an inquiry
- ea16\_A2A\_REC\_cl): age divided in 5 slices
- housing16: occupancy status of the dwelling (owner or tenant)
- qmotiv2: qualitative initial motivation variable in 4 groups (Research, Originality of the project, Tablet and subscripton, other)
- score\_cl: initial motivation score in slices
- difficulty\_recruitment: difficult to find during recruitment, measured by survey institute

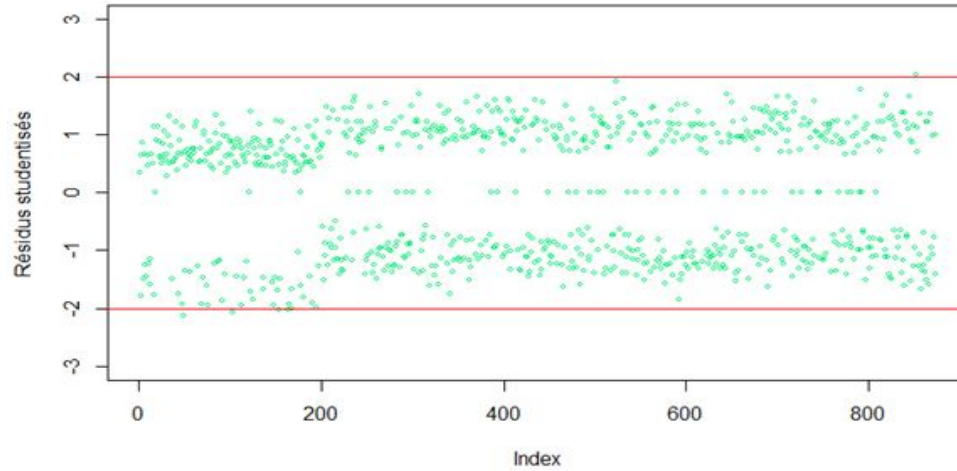
# Our model

Coefficients:

	Estimate	Std. Error	z value	Pr(> z )
(Intercept)	18.1974	3956.1805	0.005	0.99633
score_cl(1,2]	-0.38742	0.44544	-0.870	0.384440
score_cl(2,6]	-0.44104	0.33451	-1.318	0.187341
score_cl(6,8]	-0.37790	0.33641	-1.123	0.261291
score_cl(8,11]	-0.55896	0.33864	-1.651	0.098823 .
ea16_A2A_REC_cl(7,9]	-0.28524	0.14118	-2.020	0.043346 *
ea16_A2A_REC_cl(9,11]	-0.51901	0.15435	-3.363	0.000772 ***
ea16_A2A_REC_cl(11,99]	-0.78053	0.23635	-3.302	0.000959 ***
durationsum2_cl(0.25,0.35]	-0.18228	0.18209	-1.001	0.316795
durationsum2_cl(0.35,0.4]	-1.17636	0.18044	-6.519	7.06e-11 ***
durationsum2_cl(0.4,0.45]	-2.16779	0.17701	-12.247	< 2e-16 ***
durationsum2_cl(0.45,1]	-3.76696	0.24150	-15.598	< 2e-16 ***
qmotiv2Originalité du projet	-0.68006	0.25698	-2.646	0.008137 **
qmotiv2Recherche	-0.68388	0.23604	-2.897	0.003763 **
qmotiv2Tablette et ab	-0.59665	0.24347	-2.451	0.014262 *
difficult_recrutementrecrutement normal	-0.70899	0.15675	-4.523	6.09e-06 ***
logement16Accédant à la propriété	0.09051	0.13705	0.660	0.508974
logement16Locataire	0.35847	0.13614	2.633	0.008462 **
logement16Gratuit	0.28292	0.25257	1.120	0.262640

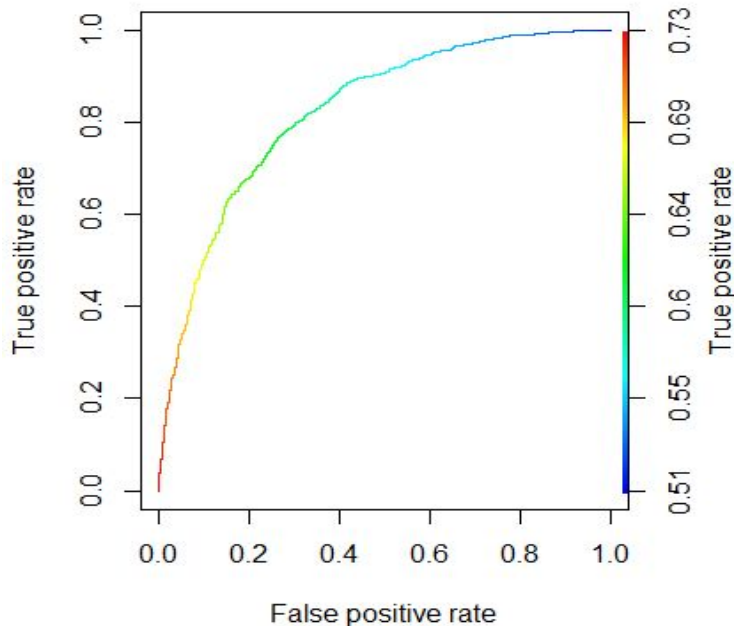
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# Our model



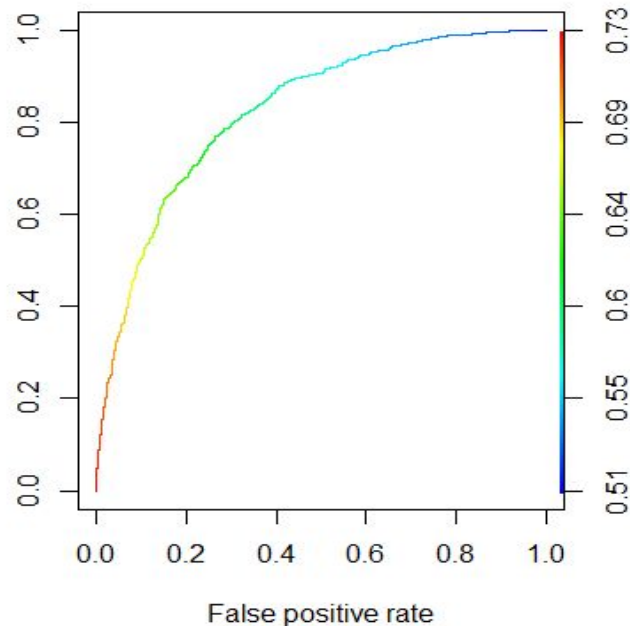


**ROC apprentissage - AUC= 0.83**



**Rate of well ranked = 67%**

**ROC Test - AUC=0.75**



**Rate of well ranked = 63%**

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# Our model

Although the model described above is not perfect, we can present the typical profile of a panelist's behavior with respect to his or her likelihood of not responding to an investigation can be identified. These criteria are:

- a low initial motivation score
- An initial motivation to acquire tablets and subscription
- Difficulties in contact during recruitment
- a young age
- tenant status

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# Conclusion

- Motivation, even initial, can be useful in predicting and preventing non-response. Surprising result : data collected sometimes seven years earlier.
- Paradata as a great indicator of motivation and a very useful tool : looking for other variables...
- Usg those elements could prove interesting in organising panel calls and stimuli. Focus on panelists with more risk of leaving/not answering.
  
- Textual analysis of motivation, even with a very homogeneous corpus, looks promising.