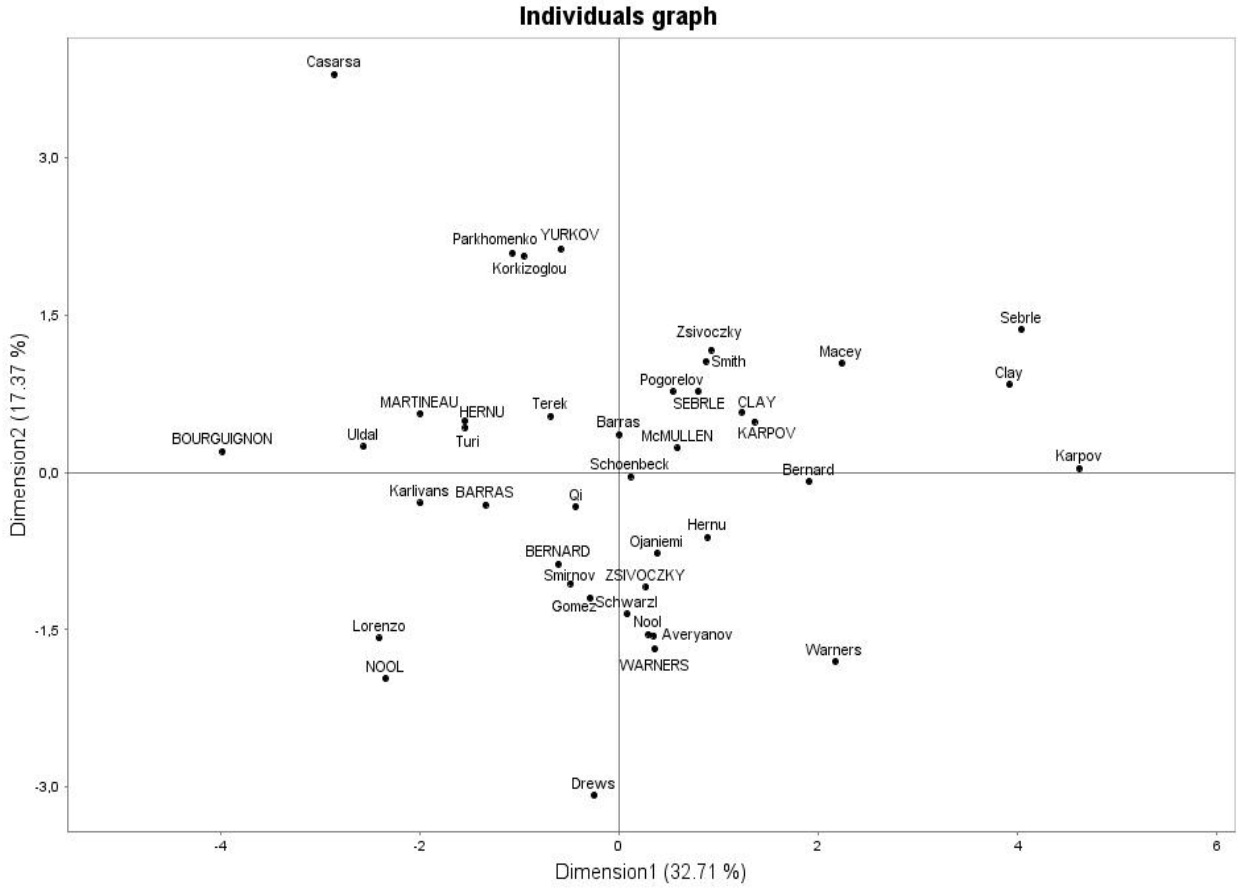
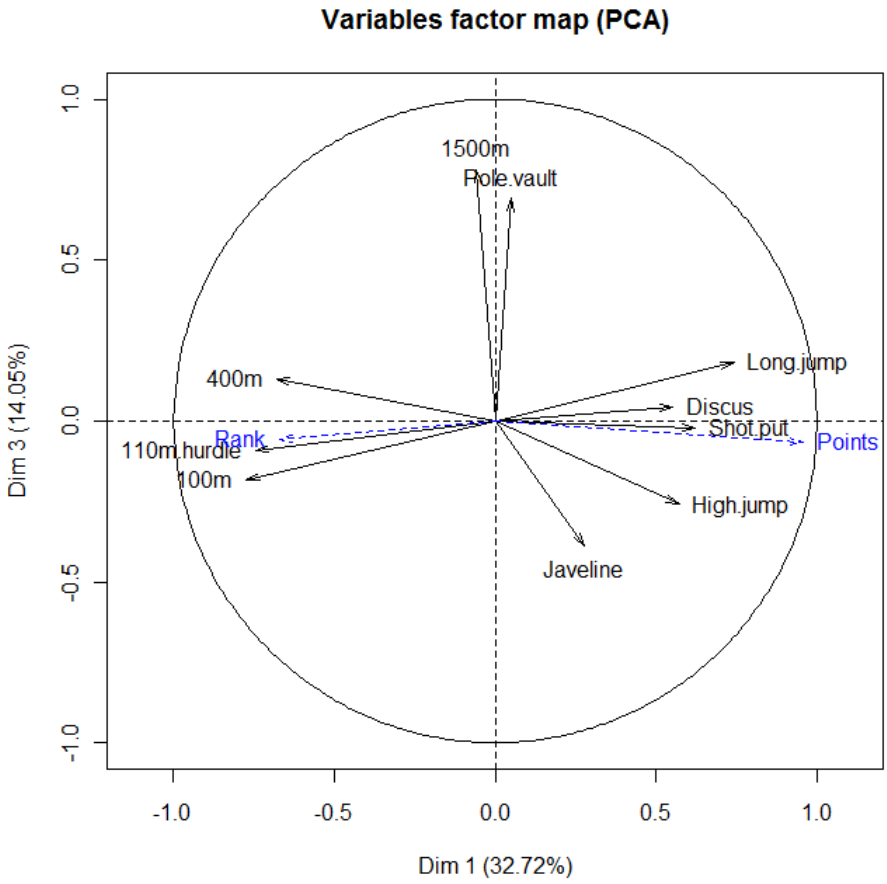
TD 1 – Analyses Gradients Indirects

Exercice 1 : ACP : les décathloniens

Des athlètes décathloniens ont participé à deux compétitions : le Decastar et les jeux olympiques. On dispose de leur performance dans chacune des épreuves du décathlon.

	100m	Long.jump	Shot.put	High.jump	400m	110m.hurdle	Discus	Pole.vault	Javeline	1500m	Rank	Points	Competition
SEBRLE	11.04	7.58	14.83	2.07	49.81	14.69	43.75	5.02	63.19	291.70	1	8217	Decastar
CLAY	10.76	7.40	14.26	1.86	49.37	14.05	50.72	4.92	60.15	301.50	2	8122	Decastar
KARPOV	11.02	7.30	14.77	2.04	48.37	14.09	48.95	4.92	50.31	300.20	3	8099	Decastar
BERNARD	11.02	7.23	14.25	1.92	48.93	14.99	40.87	5.32	62.77	280.10	4	8067	Decastar
YURKOV	11.34	7.09	15.19	2.10	50.42	15.31	46.26	4.72	63.44	276.40	5	8036	Decastar
Sebrle	10.85	7.84	16.36	2.12	48.36	14.05	48.72	5.00	70.52	280.01	1	8893	OlympicG
Clay	10.44	7.96	15.23	2.06	49.19	14.13	50.11	4.90	69.71	282.00	2	8820	OlympicG
Karpov	10.50	7.81	15.93	2.09	46.81	13.97	51.65	4.60	55.54	278.11	3	8725	OlympicG
Macey	10.89	7.47	15.73	2.15	48.97	14.56	48.34	4.40	58.46	265.42	4	8414	OlympicG
Warners	10.62	7.74	14.48	1.97	47.97	14.01	43.73	4.90	55.39	278.05	5	8343	OlympicG





VALEURS PROPRES

	eigenvalue	percentage of variance	cumulative percentage of variance
comp 1	3.2719055	32.719055	32.71906
comp 2	1.7371310	17.371310	50.09037
comp 3	1.4049167	14.049167	64.13953
comp 4	1.0568504	10.568504	74.70804
comp 5	0.6847735	6.847735	81.55577
comp 6	0.5992687	5.992687	87.54846
comp 7	0.4512353	4.512353	92.06081
comp 8	0.3968766	3.968766	96.02958
comp 9	0.2148149	2.148149	98.17773
comp 10	0.1822275	1.822275	100.00000

$coord

	Dim.1	Dim.2	Dim.3	Dim.4	Dim.5
SEBRLE	0.791627717	0.77161120	0.8268411940	1.17462736	0.70715903
CLAY	1.234990563	0.57457807	2.1412469664	-0.35484483	-1.97457138
KARPOV	1.358214936	0.48402090	1.9562579869	-1.85652411	0.79521472

$cos2

	Dim.1	Dim.2	Dim.3	Dim.4	Dim.5
SEBRLE	1.116789e-01	1.061026e-01	1.218353e-01	0.2458834524	0.0891175533
CLAY	1.240094e-01	2.684265e-02	3.727871e-01	0.0102377459	0.3170100676
KARPOV	1.599189e-01	2.030911e-02	3.317531e-01	0.2987884939	0.0548190497

$contrib

	Dim.1	Dim.2	Dim.3	Dim.4	Dim.5
SEBRLE	4.671511e-01	0.835950588	1.186888e+00	3.184218572	1.781161720
CLAY	1.136953e+00	0.463534061	7.959744e+00	0.290589297	13.887205174
KARPOV	1.375157e+00	0.328936297	6.643820e+00	7.954334225	2.252360998

Exercice 2 : Les femmes et le travail en 1974

1724 femmes ont répondu à plusieurs questions parmi lesquelles:

- Quelle est selon vous la famille parfait?
  - Both husband and wife work
  - Husband works more than wife
  - Only husband works
- Quelle activité est la meilleur pour une mère quand ses enfants vont à l'école?
  - Stay at home
  - Part-time work
  - Full-time work
- Que pensez-vous de la phrase suivante: « les femmes qui ne travaillent pas sont coupées du monde. »
  - Totally agree
  - Quite agree
  - Quite disagree
  - Totally disagree

	stay.at.home	part-time.work	full-time.work	housewives.cut.from.world.totally.agree	housewives.cut.from.world.quite.agree	housewives.cut.from.world.quite.disagree	housewives.cut.from.world.totally.disagree
both.man.and.woman.work	13	142	106	107	75	40	39
man.morks.more	30	408	117	192	175	100	88
only.man.works	241	573	94	140	215	254	299

Premier tableau (tableau noir)

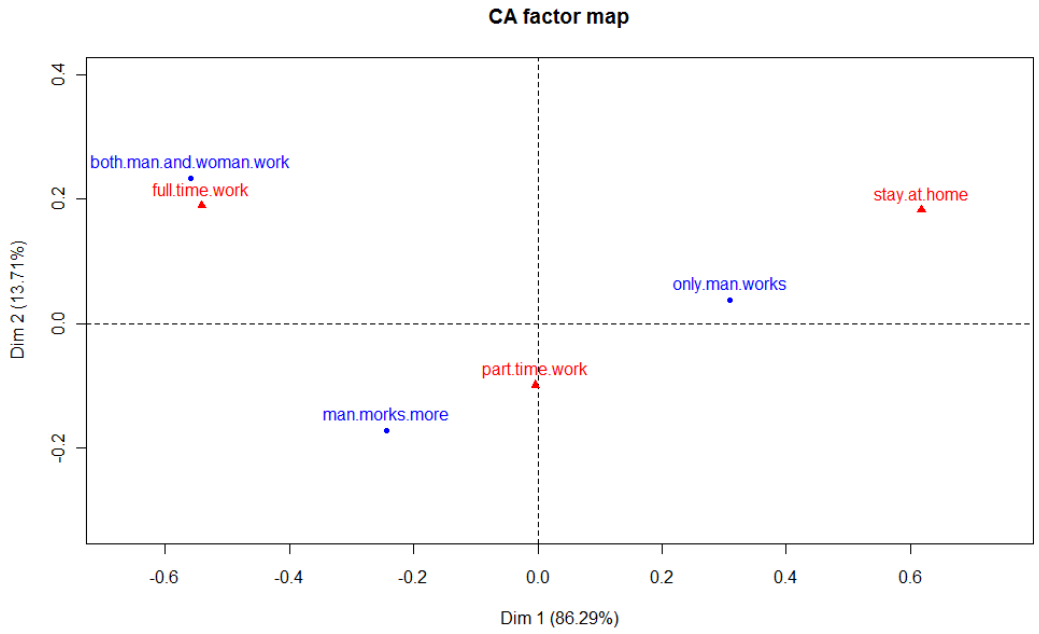
```
VALEURS PROPRES
      eigenvalue percentage of variance cumulative percentage of variance
dim 1 0.11684002               86.29218                          86.29218
dim 2 0.01856045               13.70782                         100.00000
COLOMNS
$coord
                       Dim 1      Dim 2
stay.at.home     0.618376453  0.1826620
part.time.work -0.003638471 -0.0996542
```

```
full.time.work -0.541113279  0.1893869

$contrib
                      Dim 1    Dim 2
stay.at.home    53.913227013 29.61346
part.time.work   0.007380551 34.85341
full.time.work  46.079392436 35.53314

$cos2
                     Dim 1      Dim 2
stay.at.home    0.919747391 0.08025261
part.time.work  0.001331276 0.99866872
full.time.work  0.890871382 0.10912862

$inertia
  stay.at.home part.time.work full.time.work
   0.068488618    0.006477573    0.060434283
```



Premier tableau (tableau gris)

```
VALEURS PROPRES
      eigenvalue percentage of variance cumulative percentage of variance
dim 1 0.11684002               86.29218                           86.29218
dim 2 0.01856045               13.70782                          100.00000


COLUMNS
$coord
                      Dim 1      Dim 2
stay.at.home     0.618376453  0.1826620
part.time.work -0.003638471 -0.0996542
full.time.work -0.541113279  0.1893869

$contrib
                      Dim 1    Dim 2
stay.at.home    53.913227013 29.61346
part.time.work   0.007380551 34.85341
full.time.work  46.079392436 35.53314
```

```
$cos2
                     Dim 1       Dim 2
stay.at.home    0.919747391 0.08025261
part.time.work 0.001331276 0.99866872
full.time.work 0.890871382 0.10912862

$inertia
  stay.at.home part.time.work full.time.work
   0.068488618    0.006477573    0.060434283


ROWS
$coord
                             Dim 1       Dim 2
both.man.and.woman.work -0.5586051  0.23338696
man.morks.more          -0.2437595 -0.17220664
only.man.works           0.3095622  0.03817256

$contrib
                           Dim 1     Dim 2
both.man.and.woman.work 40.43165 44.429144
man.morks.more          16.37145 51.435978
only.man.works          43.19691  4.134878

$cos2
                             Dim 1       Dim 2
both.man.and.woman.work 0.8513830 0.14861696
man.morks.more          0.6670724 0.33292758
only.man.works          0.9850220 0.01497797

$inertia
both.man.and.woman.work          man.morks.more          only.man.works
             0.05548659              0.02867515              0.05123873
```