

Comment identifier toutes les lois de probabilités définies dans ?

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1 On récupère tout de qui est défini dans stats

```
noms <- ls("package:stats")
```

Il y en a 447 en tout. Définition d'une fonction utilitaire pour tester le premier caractère d'un nom :

```
startwith <- function(nom, char)
{
  substr(nom, 1, 1) == char
}
(dnoms <- noms[sapply(noms, startwith, "d")])
[1] "dbeta"          "dbinom"        "dcauchy"       "dchisq"
[5] "decompose"     "delete.response" "deltat"       "dendrapply"
[9] "density"       "density.default" "deriv"        "deriv3"
[13] "deviance"      "dexp"          "df"           "df.kernel"
[17] "df.residual"   "dfbeta"        "dfbetas"      "dffits"
[21] "dgamma"        "dgeom"         "dhyper"       "diffinv"
[25] "dist"          "dlnorm"        "dlogis"       "dmultinom"
[29] "dnbinom"       "dnorm"         "dpois"        "drop.scope"
[33] "drop.terms"    "drop1"         "dsignrank"    "dt"
[37] "dummy.coef"    "dummy.coef.lm" "dunif"        "dweibull"
[41] "dwilcox"

(pnoms <- noms[sapply(noms, startwith, "p")])
[1] "p.adjust"      "p.adjust.methods" "pacf"
[4] "pairwise.prop.test" "pairwise.t.test" "pairwise.table"
[7] "pairwise.wilcox.test" "pbeta" "pbinom"
[10] "pbirthday"     "pcauchy" "pchisq"
[13] "pexp"          "pf"      "pgamma"
[16] "pgeom"         "phyper"  "plclust"
[19] "plnorm"       "plogis"  "plot.ecdf"
[22] "plot.spec.coherency" "plot.spec.phase" "plot.stepfun"
[25] "plot.ts"      "pnbinom" "pnorm"
[28] "poisson"      "poisson.test" "poly"
[31] "polym"        "power"    "power.anova.test"
[34] "power.prop.test" "power.t.test" "ppoints"
[37] "ppois"        "ppr"     "prcomp"
[40] "predict"      "predict.glm" "predict.lm"
[43] "preplot"     "princomp" "printCoefmat"
[46] "profile"     "proj"    "promax"
[49] "prop.test"   "prop.trend.test" "psignrank"
[52] "pt"          "ptukey"  "punif"
[55] "pweibull"    "pwilcox"

(qnoms <- noms[sapply(noms, startwith, "q")])
[1] "qbeta"          "qbinom"        "qbirthday"     "qcauchy"       "qchisq"
[6] "qexp"           "qf"            "qgamma"        "qgeom"         "qhyper"
[11] "qlnorm"        "qlogis"        "qnbinom"       "qnorm"         "qpois"
[16] "qqline"        "qqnorm"        "qqplot"        "qsignrank"     "qt"
[21] "qtukey"        "quade.test"    "quantile"      "quasi"         "quasibinomial"
[26] "quasipoisson" "qunif"         "qweibull"     "qwilcox"
```

```
(rnoms <- noms[sapply(noms, startwith, "r")])
[1] "r2dtable"      "rbeta"        "rbinom"       "rcauchy"      "rchisq"
[6] "read.ftable"  "rect.hclust"  "reformulate"  "relevel"     "reorder"
[11] "replications" "reshape"      "resid"        "residuals"   "residuals.glm"
[16] "residuals.lm" "rexp"        "rf"          "rgamma"      "rgeom"
[21] "rhyper"      "rlnorm"      "rlogis"      "rmultinom"   "rnbinom"
[26] "rnorm"       "rpois"       "rsignrank"   "rstandard"  "rstudent"
[31] "rt"         "runif"       "runmed"      "rweibull"   "rwilcox"
[36] "rWishart"
```

On progresse. Maintenant on peut enlever le premier caractère.

```
suffix <- function(nom)
{
  substr(nom, 2, nchar(nom))
}
(dnoms <- sapply(dnoms, suffix, USE.NAMES = FALSE))
[1] "beta"          "binom"         "cauchy"        "chisq"
[5] "ecompose"     "elete.response" "eltat"        "endrapply"
[9] "ensity"      "ensity.default" "eriv"         "eriv3"
[13] "eviance"     "exp"          "f"            "f.kernel"
[17] "f.residual"  "fbeta"        "fbetas"       "ffits"
[21] "gamma"      "geom"         "hyper"        "iffinv"
[25] "ist"        "lnorm"        "logis"        "multinom"
[29] "nbinom"     "norm"         "pois"         "rop.scope"
[33] "rop.terms"  "rop1"         "signrank"     "t"
[37] "ummy.coef"  "ummy.coef.lm" "unif"         "weibull"
[41] "wilcox"

(pnoms <- sapply(pnoms, suffix, USE.NAMES = FALSE))
[1] ".adjust"      ".adjust.methods" "acf"
[4] "airwise.prop.test" "airwise.t.test" "airwise.table"
[7] "airwise.wilcox.test" "beta"          "binom"
[10] "birthday"    "cauchy"        "chisq"
[13] "exp"        "f"            "gamma"
[16] "geom"       "hyper"        "lclust"
[19] "lnorm"     "logis"        "lot.ecdf"
[22] "lot.spec.coherency" "lot.spec.phase" "lot.stepfun"
[25] "lot.ts"    "nbinom"       "norm"
[28] "oisson"   "oisson.test" "oly"
[31] "olym"     "ower"         "ower.anova.test"
[34] "ower.prop.test" "ower.t.test" "points"
[37] "pois"     "pr"          "rcomp"
[40] "redict"  "redict.glm"  "redict.lm"
[43] "replot"  "rincomp"    "rintCoefmat"
[46] "rofile"  "roj"        "romax"
[49] "rop.test" "rop.trend.test" "signrank"
[52] "t"      "tukey"      "unif"
[55] "weibull" "wilcox"

(qnoms <- sapply(qnoms, suffix, USE.NAMES = FALSE))
[1] "beta"          "binom"         "birthday"      "cauchy"      "chisq"
[6] "exp"          "gamma"         "geom"          "hyper"       "hyper"
[11] "lnorm"        "logis"         "nbinom"        "norm"        "pois"
[16] "qline"        "qnorm"         "qplot"         "signrank"    "t"
[21] "tukey"        "uade.test"     "uantile"       "uasi"        "uasibinomial"
[26] "uasipoisson" "unif"          "weibull"       "wilcox"

(rnoms <- sapply(rnoms, suffix, USE.NAMES = FALSE))
[1] "2dtable"      "beta"          "binom"         "cauchy"      "chisq"
[6] "ead.ftable"  "ect.hclust"   "eformulate"    "elevel"     "eorder"
[11] "eplications" "eshape"       "esid"          "esiduals"   "esiduals.glm"
[16] "esiduals.lm" "exp"          "f"            "gamma"      "geom"
[21] "hyper"      "lnorm"        "logis"        "multinom"   "nbinom"
[26] "norm"       "pois"         "signrank"     "standard"   "student"
[31] "t"         "unif"         "unmed"        "weibull"    "wilcox"
[36] "Wishart"
```

On cherche ceux qui sont présents dans les quatre groupes :

```
(dpqr <- dnoms[dnoms %in% pnoms & dnoms %in% qnoms & dnoms %in% rnoms])
```

```
[1] "beta"      "binom"    "cauchy"   "chisq"    "exp"      "f"        "gamma"
[8] "geom"      "hyper"    "lnorm"    "logis"    "nbinom"   "norm"     "pois"
[15] "signrank" "t"        "unif"     "weibull"  "wilcox"
```

Et voila, on en a trouvé 19 ici. On recolle dpqr en tête :

```
(ddpqr <- paste("d",dpqr, sep = ""))
[1] "dbeta"      "dbinom"    "dcauchy"   "dchisq"    "dexp"      "df"
[7] "dgamma"     "dgeom"     "dhyper"    "dlnorm"    "dlogis"    "dnbinom"
[13] "dnorm"      "dpois"     "dsignrank" "dt"        "dunif"     "dweibull"
[19] "dwilcox"

(pdpqr <- paste("p",dpqr, sep = ""))
[1] "pbeta"      "pbinom"    "pcauchy"   "pchisq"    "pexp"      "pf"
[7] "pgamma"     "pgeom"     "phyper"    "plnorm"    "plogis"    "pnbinom"
[13] "pnorm"      "ppois"     "psignrank" "pt"        "punif"     "pweibull"
[19] "pwilcox"

(qdpqr <- paste("q",dpqr, sep = ""))
[1] "qbeta"      "qbinom"    "qcauchy"   "qchisq"    "qexp"      "qf"
[7] "qgamma"     "qgeom"     "qhyper"    "qlnorm"    "qlogis"    "qnbinom"
[13] "qnorm"      "qpois"     "qsignrank" "qt"        "qunif"     "qweibull"
[19] "qwilcox"

(rdpqr <- paste("r",dpqr, sep = ""))
[1] "rbeta"      "rbinom"    "rcauchy"   "rchisq"    "rexp"      "rf"
[7] "rgamma"     "rgeom"     "rhyper"    "rlnorm"    "rlogis"    "rnbinom"
[13] "rnorm"      "rpois"     "rsignrank" "rt"        "runif"     "rweibull"
[19] "rwilcox"
```

On en fait un `data.frame` :

```
data.frame(cbind(ddpqr,pdpqr, qdpqr, rdpqr), row.names = dpqr) -> data
names(data) <- c("d","p","q","r")
data
```

	d	p	q	r
beta	dbeta	pbeta	qbeta	rbeta
binom	dbinom	pbinom	qbinom	rbinom
cauchy	dcauchy	pcauchy	qcauchy	rcauchy
chisq	dchisq	pchisq	qchisq	rchisq
exp	dexp	pexp	qexp	rexp
f	df	pf	qf	rf
gamma	dgamma	pgamma	qgamma	rgamma
geom	dgeom	pgeom	qgeom	rgeom
hyper	dhyper	phyper	qhyper	rhyper
lnorm	dlnorm	plnorm	qlnorm	rlnorm
logis	dlogis	plogis	qlogis	rlogis
nbinom	dnbinom	pnbinom	qnbinom	rnbinom
norm	dnorm	pnorm	qnorm	rnorm
pois	dpois	ppois	qpois	rpois
signrank	dsignrank	psignrank	qsignrank	rsignrank
t	dt	pt	qt	rt
unif	dunif	punif	qunif	runif
weibull	dweibull	pweibull	qweibull	rweibull
wilcox	dwilcox	pwilcox	qwilcox	rwilcox

Que l'on exporte dans une jolie table \LaTeX , voir table 1 page 4.

```
library(xtable)
print(xtable(data, caption = "Les lois de probabilité définies dans \\Rlogo",
  label = "dpqr"),
  file = "dpqrtable.tex")
```

	d	p	q	r
beta	dbeta	pbeta	qbeta	rbeta
binom	dbinom	pbinom	qbinom	rbinom
cauchy	dcauchy	pcauchy	qcauchy	rcauchy
chisq	dchisq	pchisq	qchisq	rchisq
exp	dexp	pexp	qexp	rexp
f	df	pf	qf	rf
gamma	dgamma	pgamma	qgamma	rgamma
geom	dgeom	pgeom	qgeom	rgeom
hyper	dhyper	phyper	qhyper	rhyper
lnorm	dlnorm	plnorm	qlnorm	rlnorm
logis	dlogis	plogis	qlogis	rlogis
nbinom	dnbinom	pnbinom	qnbinom	rnbinom
norm	dnorm	pnorm	qnorm	rnorm
pois	dpois	ppois	qpois	rpois
signrank	dsignrank	psignrank	qsignrank	rsignrank
t	dt	pt	qt	rt
unif	dunif	punif	qunif	runif
weibull	dweibull	pweibull	qweibull	rweibull
wilcox	dwilcox	pwilcox	qwilcox	rwilcox

 TABLE 1 – Les lois de probabilité définies dans 