Créer des packages sous R

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Déjeuner R

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Glossaire

- ***Package***: An extension of the R base system with code, data and documentation in standardized format.
- ***Library***: A directory containing installed packages.
- ***Repository***: A website providing packages for installation (e.g. CRAN, github)
- ***Source***: The original version of a package with human-readable text and code.
- ***Binary***: A compiled version of a package with computer-readable text and code, may work only on a specific platform.
- ***Base packages***: Part of the R source tree, maintained by R Core.
- ***Recommended packages***: Part of every R installation, but not necessarily maintained by R Core.
- ***Contributed packages***: All the rest. This does not mean that these packages are necessarily of lesser quality than the above, e.g., many contributed packages on CRAN are written and maintained by R Core members. We simply try to keep the base distribution as lean as possible.

Plan

1. Pourquoi créer un package?
2. Contenu d'un package
3. Roxygen
4. Petite démonstration

Pourquoi un package?

Le principe

"Because R is programmable, it permits users to develop software for their own use. The package system encourages them then to share this software with others and, to a limited extent, facilitates recognition for software development. This process allows R to grow in a natural, organic manner."

Fox 2009

Pourquoi un package?

Motivations personnelles (entre autres)

- Conserver des fonctions de manière sûre
- Publier des fonctions => reproductibilité
- Gratuit
- Peuvent être activés ou non
- Mises à jour automatisées
- Inclut des exemples
- .zip => non-testé et distribué «manuellement»
- CRAN => testé et disponible pour tous

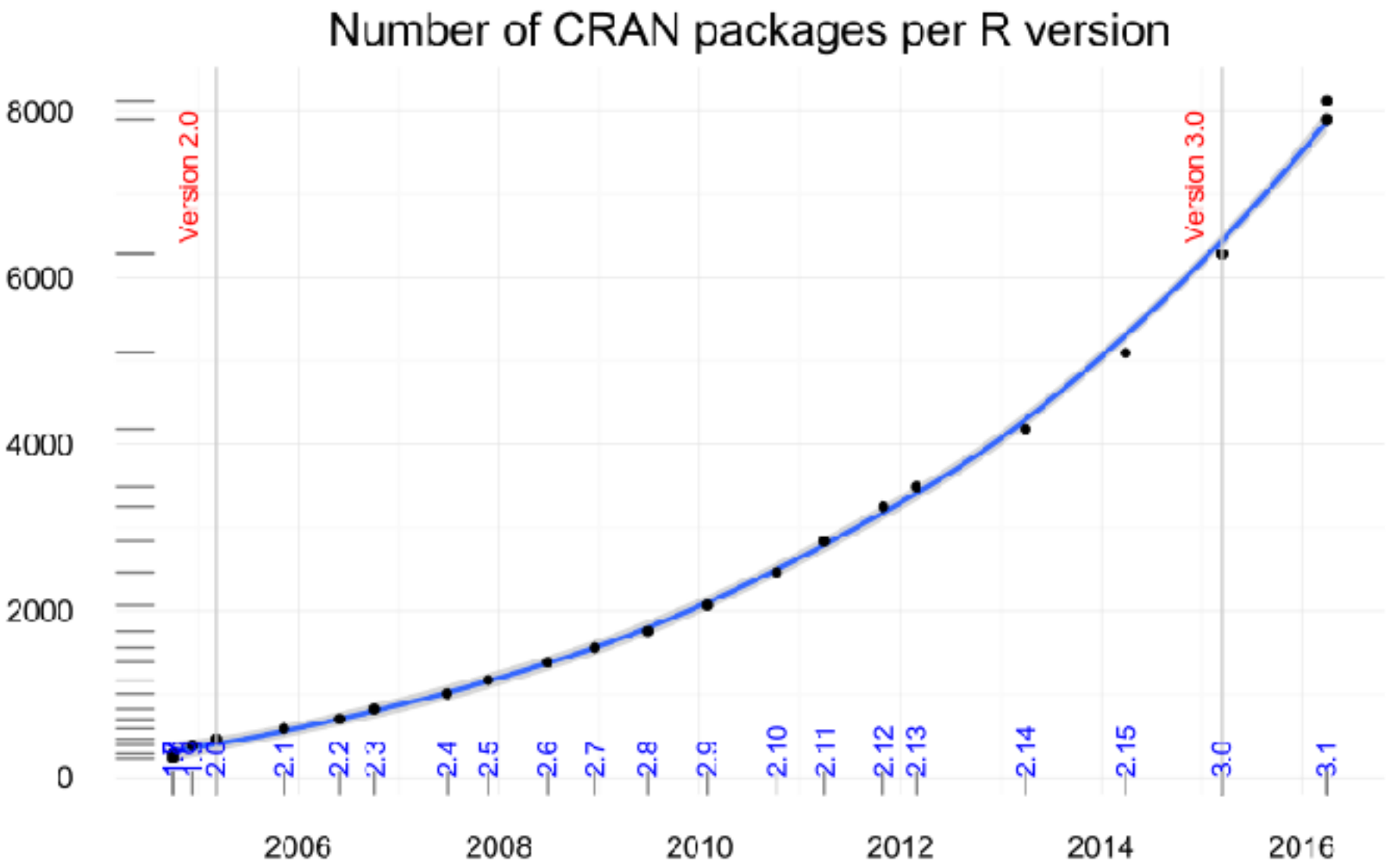
Pourquoi un package?

Motivations pour le projet R

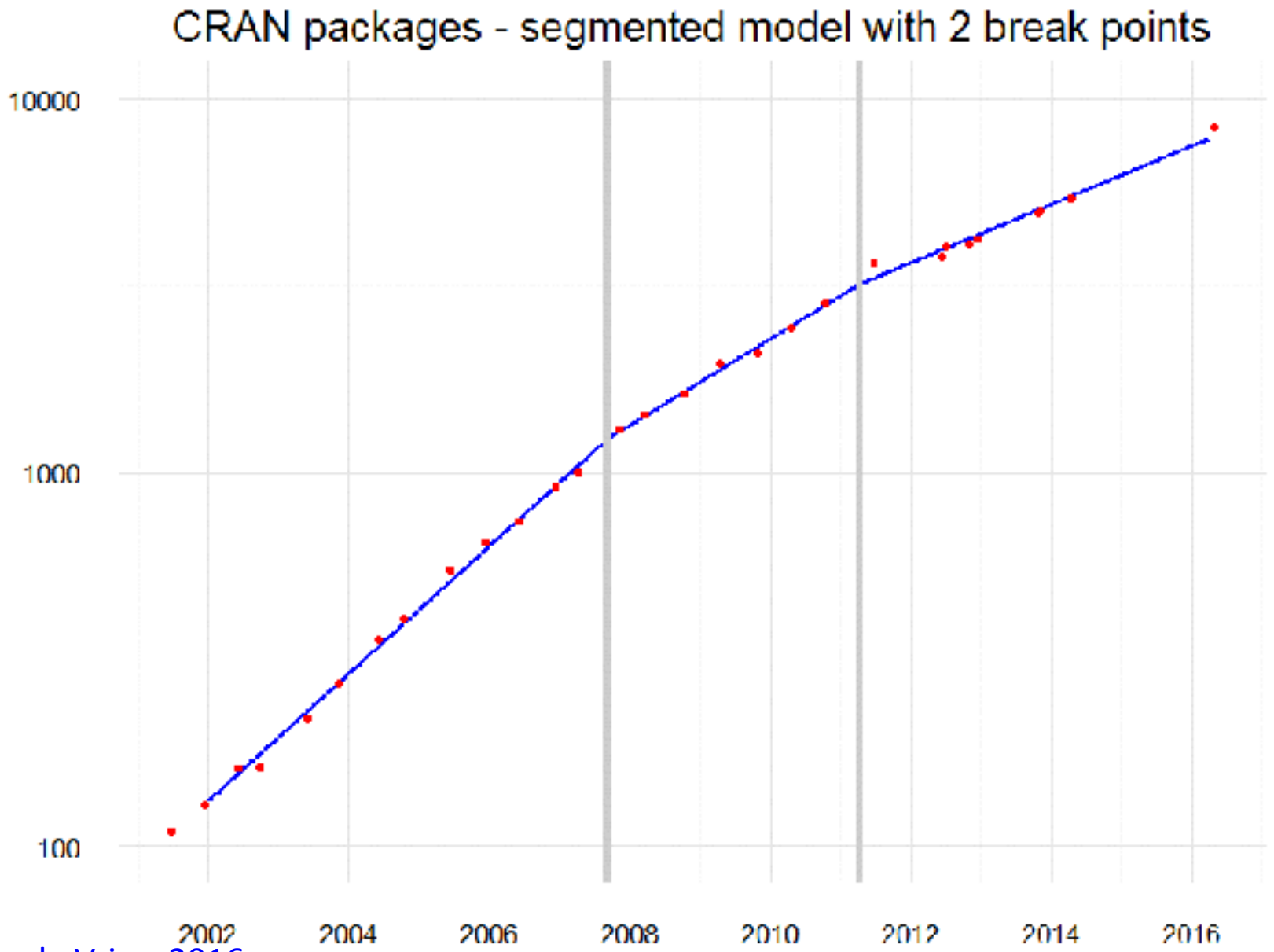
"The package system also serves at least partly to circumvent disputes that might otherwise fracture the R Project."

"The package system provides a variety of integrative functions, including quality control; enforcement of standards; provision of a common documentation format (…)"

Fox 2009



[Andrie de Vries, 2016]



Andrie de Vries, 2016

Contenu

Package MASS: binary / source

- data => données intégrées au package
- inst => autres (divers)
- man => aide pour le package lui-même
- po
- R => code (fonctions)
- src => C++ / Fortran /…
- tests => validation
- Description => «carte de visite» du package
- Index
- Licence
- MD5
- Namespace => déclare les dépendances, classes, méthodes,…
- Vignettes => manuels de l'utilisateur (libre)

Roxygen

- Pourquoi tout faire à la main?
- Rstudio & Roxygen génèrent automatiquement
  - Les fichiers de code (R)
  - Les fichiers d'aide (man)
  - Le fichier Namespace
- Ne reste plus qu'à ajouter (si nécessaire)
  - Les données (data)
  - Les manuels d'utilisateurs (vignettes)

Roxygen

MortHump

```
#' @title Isolate the young adult mortality hump from a set of age-specific mortality rates
#'
#' @description This function estimates a model of mortality on the provided set of age-specific death rates. Both parametric and non-parametric models
are available.
#' They are all designed to estimate the size of the young adult mortality hump, i.e. the deviation in the force of mortality often observed during
adolescence and early adulthood.
#'
#' @param data data frame produced with \code{HMD2MH} or similarly structured
#'
#' @details
#' @return Returns an object of class \code{morthump} containing the arguments used to fit the model as well as the estimated coefficients.
#'
#' @examples
#'
#' data("CHE2010m")
#'
#' # fits the Heligman-Pollard model (parametrical)
#' fit <- morthump(data = CHE2010m, model = "hp")
#'
#' @references
#'
#' Camarda, C. G., Eilers, P. H. C., & Gampe, J. (2016). Sums of smooth exponentials to decompose complex series of counts. Statistical Modelling.
#' @seealso
#' \link{sse.fit}, \link{summary.morthump}, \link{plot.morthump}
#'
#' @export
#'
#' @import MortalitySmooth
#' @import Matrix
#' @importFrom graphics abline arrows axis box legend lines matplot par plot points polygon segments text title
```

[Créer des packages dans Rstudio]

[Roxygen]

Démonstration