

Investigating and fixing a new CRAN check error in my OneSampleMR package

Tom Palmer, MRC IEU and PHS, Bristol Medical School, University of Bristol
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MRC Integrative
Epidemiology
Unit



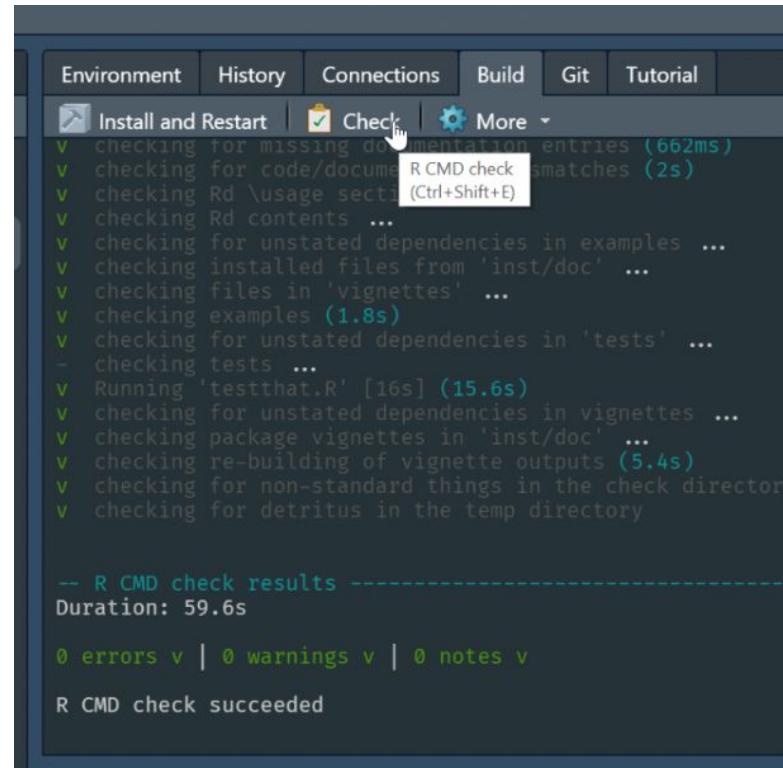
University of
BRISTOL

Overview

- Introduction
- Investigating
- Fixing
- What happened next?
- Conclusion

Introduction

- To be accepted onto CRAN or Bioconductor R packages must pass
R CMD check / devtools::check()
- Further info from my Code Club session
<https://remlapmot.github.io/r-pkg-tips/>
- CRAN have special/pseudo-secret additional check settings
- First submit to <https://builder.r-hub.io/> and <https://win-builder.r-project.org/>
fix then submit to CRAN then 🤘



The screenshot shows the RStudio interface with the 'Build' tab selected. A tooltip for the 'Check' button is displayed, showing the command 'R CMD check' and a keyboard shortcut '(Ctrl+Shift+E)'. The main pane displays the output of an R CMD check, which includes various checks like Rd contents, examples, and vignettes, along with their durations. At the bottom, it shows the results: 0 errors, 0 warnings, 0 notes, and a successful check.

```
v checking for missing documentation entries (662ms)
v checking for code/documentation mismatches (2s)
v checking Rd \usage sections ...
v checking Rd contents ...
v checking for unstated dependencies in examples ...
v checking installed files from 'inst/doc' ...
v checking files in 'vignettes' ...
v checking examples (1.8s)
v checking for unstated dependencies in 'tests' ...
- checking tests ...
v Running 'testthat.R' [16s] (15.6s)
v checking for unstated dependencies in vignettes ...
v checking package vignettes in 'inst/doc' ...
v checking re-building of vignette outputs (5.4s)
v checking for non-standard things in the check directory
v checking for detritus in the temp directory

-- R CMD check results --
Duration: 59.6s

0 errors v | 0 warnings v | 0 notes v

R CMD check succeeded
```

- 2 releases of OneSampleMR accepted onto CRAN ...
- ... then ... email from CRAN Team
 - New problem/s
 - 2 week deadline to fix otherwise package will be removed/archived and hence no longer available using `install.packages()`

CRAN package OneSampleMR

PR

Prof Brian Ripley <ripley@stats.ox.ac.uk>

Sun 08/05/2022 08:49

To: You

Cc: CRAN@R-project.org

Dear maintainer,

Please see the problems shown on
<https://cran.r-project.org/web/checks/check_results_OneSampleMR.html>.

Please correct before 2022-05-22 to safely retain your package on CRAN.

Packages in Suggests should be used conditionally: see 'Writing R Extensions'.
This needs to be corrected even if the missing package(s) become available.
It can be tested by checking with `_R_CHECK_DEPENDS_ONLY_=true`.

The CRAN Team

[Reply](#)

[Reply all](#)

[Forward](#)

Investigating

- Go to package CRAN page
- Then to CRAN checks link

CRAN - Package OneSampleMR

cran.r-project.org/web/packages/OneSampleMR/index.html

OneSampleMR: One Sample Mendelian Randomization and Instrumental Variable Analyses

Useful functions for one-sample (individual level data) Mendelian randomization and instrumental variable analyses. The <[doi:10.1016/j.jeconom.2015.06.004](https://doi.org/10.1016/j.jeconom.2015.06.004)> conditional F-statistic, the multiplicative structural mean model Hernán and Robins stage residual inclusion estimators explained by Terza et al. (2008) <[doi:10.1016/j.jhealeco.2007.09.009](https://doi.org/10.1016/j.jhealeco.2007.09.009)>.

Version:	0.1.2
Depends:	R ($\geq 3.6.0$)
Imports:	Formula , gmm , ivreg , lmtree , msm
Suggests:	haven , knitr , lfe , rmarkdown , testthat ($\geq 3.0.0$)
Published:	2022-05-11
Author:	Tom Palmer [aut, cre], Wes Spiller [aut], Eleanor Sanderson [aut]
Maintainer:	Tom Palmer <remlapmot at hotmail.com>
BugReports:	https://github.com/remlapmot/OneSampleMR/issues/
License:	GPL (≥ 3)
URL:	https://github.com/remlapmot/OneSampleMR , https://remlapmot.github.io/OneSampleMR/
NeedsCompilation:	no
Materials:	README NEWS
CRAN checks:	OneSampleMR results

- Error on 4 Linux sub-architectures
- Those weren't there a few days ago or when I sent in the 2 previous versions

cran.r-project.org/web/checks/check_results_OneSampleMR.html

CRAN Package Check Results for Package [OneSampleMR](#)

Last updated on 2022-05-10 13:50:43 CEST.

Flavor	Version	Tinstall	Tcheck	Ttotal	Status	Flags
r-devel-linux-x86_64-debian-clang	0.1.1	4.52	64.02	68.54	ERROR	
r-devel-linux-x86_64-debian-gcc	0.1.1	3.45	48.58	52.03	ERROR	
r-devel-linux-x86_64-fedora-clang	0.1.1			83.36	ERROR	
r-devel-linux-x86_64-fedora-gcc	0.1.1			77.77	ERROR	
r-devel-windows-x86_64	0.1.1	29.00	97.00	126.00	OK	
r-patched-linux-x86_64	0.1.1	4.64	62.86	67.50	OK	
r-release-linux-x86_64	0.1.1	4.17	62.42	66.59	OK	
r-release-macos-arm64	0.1.1			29.00	OK	
r-release-macos-x86_64	0.1.0			45.00	OK	
r-release-windows-x86_64	0.1.1	27.00	95.00	122.00	OK	
r-oldrel-macos-arm64	0.1.1			28.00	OK	
r-oldrel-macos-x86_64	0.1.1			47.00	OK	
r-oldrel-windows-ix86+x86_64	0.1.1	13.00	84.00	97.00	OK	

- (bottom of previous screen)
- Crucial lines:
 - NOTE: Package **suggested** (in Suggests list in DESCRIPTION file) but not available for checking: 'ivtools'
 - ERROR: Error processing vignette ... there is no package called 'ivtools'

Additional issues

noSuggests

Check Details

Version: 0.1.1

Check: package dependencies

Result: NOTE

Package suggested but not available for checking: 'ivtools'

Flavors: [r-devel-linux-x86_64-debian-clang](#), [r-devel-linux-x86_64-debian-gcc](#)

Version: 0.1.1

Check: re-building of vignette outputs

Result: ERROR

Error(s) in re-building vignettes:

...

--- re-building 'compare-smm-fits.Rmd' using rmarkdown

Quitting from lines 18-20 (compare-smm-fits.Rmd)

Error: processing vignette 'compare-smm-fits.Rmd' failed with diagnostics:
there is no package called 'ivtools'

--- failed re-building 'compare-smm-fits.Rmd'

- (part of) DESCRIPTION file

```
20   R (>= 3.0.0)
21
22   Imports:
23     Formula,
24     gmm,
25     ivreg,
26     lmtest,
27     msm
28
29   Suggests:
30     AER,
31     haven,
32     ivtools,
33     knitr,
34     lfe,
35     rmarkdown,
36     testthat (>= 3.0.0)
37
38   VignetteBuilder:
39     knitr
40
41   Config/testthat/edition: 3
42   Encoding: UTF-8
43
44   Roxygen: list(markdown = TRUE)
45
46   RoxygenNote: 7.1.2
```

- Investigate ivtools check results
- Error for the same 4 Linux sub-architectures
- Similar but not identical crucial line:
 - ERROR: Package **required** (in Imports list in DESCRIPTION file) but not available: 'ahaz'

CRAN Package Check Results for Package [ivtools](#)

Last updated on 2022-05-11 13:52:51 CEST.

Flavor	Version	Tinstall	Tcheck	Ttotal	Status	Flags
r-devel-linux-x86_64-debian-clang	2.3.0	0.42	11.74	12.16	ERROR	
r-devel-linux-x86_64-debian-gcc	2.3.0	0.37	8.87	9.24	ERROR	
r-devel-linux-x86_64-fedora-clang	2.3.0			13.65	ERROR	
r-devel-linux-x86_64-fedora-gcc	2.3.0			12.79	ERROR	
r-devel-windows-x86_64	2.3.0	34.00	126.00	160.00	OK	
r-patched-linux-x86_64	2.3.0	26.72	95.62	122.34	OK	
r-release-linux-x86_64	2.3.0	22.76	94.25	117.01	OK	
r-release-macos-arm64	2.3.0			41.00	OK	
r-release-macos-x86_64	2.3.0			57.00	OK	
r-release-windows-x86_64	2.3.0	38.00	130.00	168.00	OK	
r-oldrel-macos-arm64	2.3.0			51.00	OK	
r-oldrel-macos-x86_64	2.3.0			74.00	OK	
r-oldrel-windows-ix86+x86_64	2.3.0	64.00	165.00	229.00	OK	

Check Details

Version: 2.3.0

Check: package dependencies

Result: **ERROR**

Package required but not available: 'ahaz'

See section 'The DESCRIPTION file' in the 'Writing R Extensions' manual.

Flavors: [r-devel-linux-x86_64-debian-clang](#), [r-devel-linux-x86_64-debian-gcc](#), [r-devel-l](#)

- Investigate ahaz check results
- Error on the same 4 Linux sub-architectures
- Crucial line:
 - Installation failed
- ... we have found the source of the error

cran.r-project.org/web/checks/check_results_ahaz.html

CRAN Package Check Results for Package [ahaz](#)

Last updated on 2022-05-11 13:52:42 CEST.

Flavor	Version	Tinstall	Tcheck	Ttotal	Status	Flags
r-devel-linux-x86_64-debian-clang	1.14	0.45	11.98	12.43	ERROR	
r-devel-linux-x86_64-debian-gcc	1.14	0.52	9.06	9.58	ERROR	
r-devel-linux-x86_64-fedora-clang	1.14			14.65	ERROR	
r-devel-linux-x86_64-fedora-gcc	1.14			13.56	ERROR	
r-devel-windows-x86_64	1.14	25.00	106.00	131.00	NOTE	
r-patched-linux-x86_64	1.14	9.95	85.16	95.11	NOTE	
r-release-linux-x86_64	1.14	10.22	85.12	95.34	NOTE	
r-release-macos-arm64	1.14			37.00	NOTE	
r-release-macos-x86_64	1.14			48.00	NOTE	
r-release-windows-x86_64	1.14	24.00	103.00	127.00	NOTE	
r-oldrel-macos-arm64	1.14			44.00	NOTE	
r-oldrel-macos-x86_64	1.14			67.00	NOTE	
r-oldrel-windows-ix86+x86_64	1.14	24.00	130.00	154.00	NOTE	

[Additional issues](#)

[BLAS](#)

[Check Details](#)

Version: 1.14
 Check: whether package can be installed
 Result: **ERROR**
 Installation failed.
 Flavors: [r-devel-linux-x86_64-debian-clang](#), [r-devel-linux-x86_64-debian-gcc](#), [r-devel](#)

- Click on one of the errors then on the installation log file
- Some C code has failed to build
 - maybe R-devel requires different settings/C code syntax
 - maybe CRAN have changed their setup

```

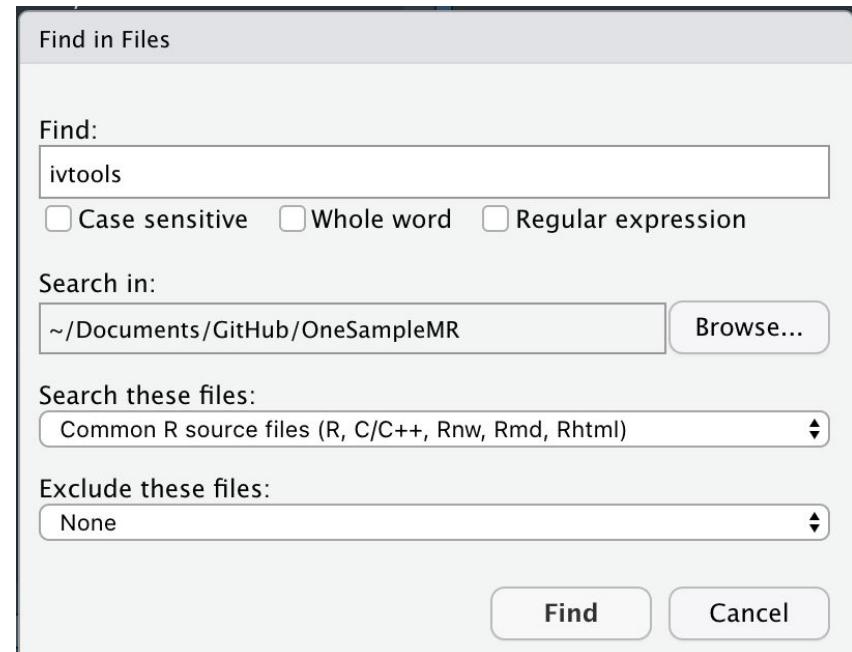
← → ⌂ 🔒 r-project.org/nosvn/R.check/r-devel-linux-x86_64-debian-clang/ahaz-00ins

* installing to library '/home/hornik/tmp/R.check/r-devel-clang/Work/build/Packages'
* installing *source* package 'ahaz' ...
** package 'ahaz' successfully unpacked and MD5 sums checked
** using staged installation
** libs
make[1]: Entering directory '/tmp/Rtmp18ymNJ/R.INSTALL3fd8b71c803768/ahaz/src'
clang-14 -I"/home/hornik/tmp/R.check/r-devel-clang/Work/build/include" -DNDEBUG -I/u
ahaz.c:15:13: error: conflicting types for 'dgemv_'
extern void F77_SUB(dgemv)(const char *trans, const int *m, const int *n,
                           ^
/home/hornik/tmp/R.check/r-devel-clang/Work/build/include/R_ext/RS.h:82:24: note: expa
#define F77_SUB(x)          F77_CALL(x)
                           ^
/home/hornik/tmp/R.check/r-devel-clang/Work/build/include/R_ext/RS.h:77:22: note: expa
#define F77_CALL(x)          x ## _
                           ^
<scratch space>:50:1: note: expanded from here
dgemv_
^
/home/hornik/tmp/R.check/r-devel-clang/Work/build/include/R_ext/BLAS.h:107:1: note: pr
F77_NAME(dgemv)(const char *trans, const int *m, const int *n,
^

```

Fixing

- Open OneSampleMR repo as RStudio project (i.e., double click .Rproj file)
- Search for "ivtools" using Find in Files (Ctrl/Cmd + Shift + F) (restrict to Common R source files)



- Only used in a vignette and some test files

The screenshot shows the RStudio interface with the 'Find in Files' search results window open. The title bar reads 'Results for "ivtools" in ~/Documents/GitHub/OneSampleMR'. The search results list several R files containing the 'ivtools' package library call.

```

Console Terminal × Find in Files × Jobs ×
Results for "ivtools" in ~/Documents/GitHub/OneSampleMR
~/Documents/GitHub/OneSampleMR/vignettes/compare-smm-fits.Rmd
19: library(ivtools)
22: ## Comparison fit using the ivtools package
24: * Example from the `ivtools::ivglm()` helpfile. First simulate some exa
~/Documents/GitHub/OneSampleMR/tests/testthat/test-tsps.R
 3: # Data generation from the example in the ivtools::ivglm() helpfile —
16: # ivtools for comparison fit
17: library(ivtools)
52: # ivtools for comparison fit
53: library(ivtools)
88: # ivtools for comparison fit
89: library(ivtools)
126: # ivtools for comparison fit
127: library(ivtools)

~/Documents/GitHub/OneSampleMR/tests/testthat/test-tsri.R
 3: # Data generation from the example in the ivtools::ivglm() helpfile —
16: # ivtools for comparison fit
17: library(ivtools)
85: # ivtools for comparison fit
86: library(ivtools)
122: # ivtools for comparison fit
123: library(ivtools)
161: # ivtools for comparison fit
162: library(ivtools)

~/Documents/GitHub/OneSampleMR/tests/testthat/test-msmm.R
589: # Data generation from the example in the ivtools::ivglm() helpfile
599: # ivtools for comparison fit
600: library(ivtools)
640: # Data generation from the example in the ivtools::ivglm() helpfile

~/Documents/GitHub/OneSampleMR/R/asmm.R
31: #' # Data generation from the example in the ivtools::ivglm() helpfile

~/Documents/GitHub/OneSampleMR/R/msmm.R
116: #' # Data generation from the example in the ivtools::ivglm() helpfile

```

- When were ahaz and ivtools last updated?
 - ivtools: 2020-02-24
 - ahaz: 2013-06-03
- Question to the group: what strategies would solve the error for
 - ahaz
 - ivtools
 - OneSampleMR
 - ... and will the solutions be the same?

cran.r-project.org/web/packages/ahaz/index.html

ahaz: Regularization for semiparametric additive hazards regression

Computationally efficient procedures for regularized estimation with the semiparametric additive hazards regression model.

Version:	1.14
Depends:	R (\geq 2.10), survival , Matrix
Published:	2013-06-03
Author:	Anders Gorst-Rasmussen
Maintainer:	Anders Gorst-Rasmussen <agorstras@gmail.com>
License:	GPL-2
URL:	http://www.gorst.dk/software.htm
NeedsCompilation:	yes
Citation:	ahaz citation info
In views:	MachineLearning , Survival
CRAN checks:	ahaz results
Documentation:	
Reference manual:	ahaz.pdf
Downloads:	
Package source:	ahaz_1.14.tar.gz
Windows binaries:	r-devel: ahaz_1.14.zip , r-release: ahaz_1.14.zip , r-oldrel: ahaz_1.14.zip
macOS binaries:	r-release (arm64): ahaz_1.14.tgz , r-oldrel (arm64): ahaz_1.14.tgz , r-release (x86_64): ahaz_1.14.tgz , r-oldrel (x86_64): ahaz_1.14.tgz
Old sources:	ahaz archive

- My fix

- Removed use of ivtools in OneSampleMR and resubmitted to CRAN
- Back to no errors

← → ⌂ ⌂ cran.r-project.org/web/checks/check_results_OneSampleMR.html

CRAN Package Check Results for Package [OneSampleMR](#)

Last updated on 2022-05-15 08:54:57 CEST.

Flavor	Version	Tinstall	Tcheck	Ttotal	Status	Flags
r-devel-linux-x86_64-debian-clang	0.1.2	5.12	64.65	69.77	OK	
r-devel-linux-x86_64-debian-gcc	0.1.2	3.57	48.78	52.35	OK	
r-devel-linux-x86_64-fedora-clang	0.1.2			86.35	OK	
r-devel-linux-x86_64-fedora-gcc	0.1.2			84.16	OK	
r-devel-windows-x86_64	0.1.2	31.00	94.00	125.00	OK	
r-patched-linux-x86_64	0.1.2	3.72	61.19	64.91	OK	
r-release-linux-x86_64	0.1.2	4.64	62.09	66.73	OK	
r-release-macos-arm64	0.1.2			34.00	OK	
r-release-macos-x86_64	0.1.2			41.00	OK	
r-release-windows-x86_64	0.1.2	24.00	113.00	137.00	OK	
r-oldrel-macos-arm64	0.1.2			29.00	OK	
r-oldrel-macos-x86_64	0.1.2			42.00	OK	
r-oldrel-windows-ix86+x86_64	0.1.2	11.00	79.00	90.00	OK	

What happened next?

- ahaz was updated



A screenshot of a web browser displaying the CRAN package page for 'ahaz'. The URL in the address bar is 'cran.r-project.org/web/packages/ahaz/index.html'. The page title is 'ahaz: Regularization for Semiparametric Additive Hazards Regression'. A brief description follows: 'Computationally efficient procedures for regularized estimation with the semiparametric additive hazards regression model.' Below this, various package details are listed in a table-like format:

Version:	1.15
Depends:	R (\geq 2.10), survival , Matrix , methods
Published:	2022-05-13
Author:	Anders Gorst-Rasmussen
Maintainer:	Anders Gorst-Rasmussen <agorstras at gmail.com>
License:	GPL-2
NeedsCompilation:	yes
Citation:	ahaz citation info
In views:	MachineLearning , Survival
CRAN checks:	ahaz results

What was the fix in the ahaz package?

- Want to see diff in source code between v1.14 and v1.15
- But ahaz is not on GitHub/other source control site from the author
- Could make own Git/GitHub repo from CRAN sources (i.e., download .tar.gz files)
- Use R-hub unofficial CRAN mirror (/compare repo page)
<https://github.com/cran/ahaz/compare>
- Compare tags v1.14 to v1.15
- Git/GitHub has 2 and 3 dot syntax
<https://github.com/cran/ahaz/compare/1.14...1.15>

```
12 // # BLAS #
13 // #####
14 + extern double F77_NAME(ddot)(const int *n, const double *dx, const int *incx,
15                               const double *dy, const int *incy);
16
17 + #ifdef FC_LEN_T
18 + extern void F77_NAME(dgemv)(const char *trans, const int *m, const int *n,
19 +                             const double *alpha, const double *a, const int *lda,
20 +                             const double *x, const int *incx, const double *beta,
21 +                             double *y, const int *incy, size_t);
22 + #else
23 + extern void F77_NAME(dgemv)(const char *trans, const int *m, const int *n,
24                             const double *alpha, const double *a, const int *lda,
25                             const double *x, const int *incx, const double *beta,
26                             double *y, const int *incy);
27 + #endif
28
29 double dot(int n, const double * x, const double * v)
```

- ahaz now reports either ok or a check note

cran.r-project.org/web/checks/check_results_ahaz.html

CRAN Package Check Results for Package [ahaz](#)

Last updated on 2022-05-18 07:48:51 CEST.

Flavor	Version	Tinstall	Tcheck	Ttotal	Status	Flags
r-devel-linux-x86_64-debian-clang	1.15	11.92	89.13	101.05	OK	
r-devel-linux-x86_64-debian-gcc	1.15	8.85	68.07	76.92	OK	
r-devel-linux-x86_64-fedora-clang	1.15			127.26	NOTE	
r-devel-linux-x86_64-fedora-gcc	1.15			82.65	NOTE	
r-devel-windows-x86_64	1.15	25.00	103.00	128.00	OK	
r-patched-linux-x86_64	1.15	9.10	86.70	95.80	OK	
r-release-linux-x86_64	1.15	7.86	84.15	92.01	OK	
r-release-macos-arm64	1.15			40.00	OK	
r-release-macos-x86_64	1.15			54.00	OK	
r-release-windows-x86_64	1.15	21.00	104.00	125.00	OK	
r-oldrel-macos-arm64	1.15			34.00	OK	
r-oldrel-macos-x86_64	1.15			54.00	OK	
r-oldrel-windows-ix86+x86_64	1.15	23.00	130.00	153.00	OK	

Check Details

Version: 1.15
 Check: compiled code
 Result: NOTE
 File ‘ahaz/libs/ahaz.so’:
 Found no calls to: ‘R_registerRoutines’, ‘R_useDynamicSymbols’

It is good practice to register native routines and to disable symbol search.

See ‘Writing portable packages’ in the ‘Writing R Extensions’ manual.
 Flavors: [r-devel-linux-x86_64-fedora-clang](#), [r-devel-linux-x86_64-fedora-gcc](#)

- ivtools now reports ok

← → ⌂ ⌄ 🔒 cran.r-project.org/web/checks/check_results_ivtools.html

CRAN Package Check Results for Package [ivtools](#)

Last updated on 2022-05-18 07:49:00 CEST.

Flavor	Version	Tinstall	Tcheck	Ttotal	Status	Flags
r-devel-linux-x86_64-debian-clang	2.3.0	24.21	100.52	124.73	OK	
r-devel-linux-x86_64-debian-gcc	2.3.0	19.59	74.95	94.54	OK	
r-devel-linux-x86_64-fedora-clang	2.3.0			156.50	OK	
r-devel-linux-x86_64-fedora-gcc	2.3.0			98.82	OK	
r-devel-windows-x86_64	2.3.0	31.00	126.00	157.00	OK	
r-patched-linux-x86_64	2.3.0	20.57	92.57	113.14	OK	
r-release-linux-x86_64	2.3.0	22.56	93.44	116.00	OK	
r-release-macos-arm64	2.3.0			41.00	OK	
r-release-macos-x86_64	2.3.0			57.00	OK	
r-release-windows-x86_64	2.3.0	29.00	125.00	154.00	OK	
r-oldrel-macos-arm64	2.3.0			51.00	OK	
r-oldrel-macos-x86_64	2.3.0			74.00	OK	
r-oldrel-windows-ix86+x86_64	2.3.0	61.00	152.00	213.00	OK	

- TODO: Could put ivtools back in OneSampleMR
 - being more careful to remember to use conditionally in every case
 - the vignette build should not have failed
 - <https://r-pkgs.org/description.html#guarding-the-use-of-a-suggested-package>

8.1.1 Guarding the use of a suggested package

Inside a function in your own package, check for the availability of a suggested package with `requireNamespace("pkg", quietly = TRUE)`. There are two basic scenarios:

```
# the suggested package is required
my_fun <- function(a, b) {
  if (!requireNamespace("pkg", quietly = TRUE)) {
    stop(
      "Package \"pkg\" must be installed to use this function.",
      call. = FALSE
    )
  }
  # code that includes calls such as pkg::f()
}

# the suggested package is optional; a fallback method is available
my_fun <- function(a, b) {
  if (requireNamespace("pkg", quietly = TRUE)) {
    pkg::f()
  } else {
    g()
  }
}
```

Conclusion

- Your package can be removed from/archived on CRAN because of a problem with one of its dependency packages ... which feels like it's not really *your fault!*
- Advice: include as few packages as possible in your Imports and Suggests lists