

Analytical and other software on the Secure Research Environment

The Research Environment runs with the operating system: Microsoft Windows Server 2022 DataCenter edition. The environment is based on the Microsoft Data Science virtual machine template and includes the following software:

- 7-zip
- Acrobat Reader
- Anaconda and MiniConda, including:
 - Pytorch
 - TensorFlow
 - Python 3.8 and 3.10
- Apache Spark 3.1
- cMake
- JAGS, including rjags
- Julia 1.10.5
- Jupyter Notebook, with Kernels for R, Python, Julia, PySpark
- Microsoft Office 2016 Standard edition, including Word, Excel, PowerPoint, and OneNote (*Access not included*)
- Microsoft Photo Viewer
- Windows subsystem for Linux, with Ubuntu
- Nodejs
- PLINK
- PowerBI Desktop
- PowerShell
- PyCharm 2024.2.1, and PyCharm Community Edition, 2024.1.1
- Python 3.12, including PySpark
- R Studio 2024.09.0+375
- R Version 4.4.0 (2024-04-24)
- Review Manager 5.4
- SQL Server Developer Edition (2019), including Management Studio and SQL Server Integration Services (SSIS)
- stan and rstan
- STATA 17
- Visual Studio Code 1.93
- Vowpal Wabbit
- Weka
- OpenBUGS
- xgboost

And in the Premium research environments:

- SAS 9.4, m4*

*Alternative pricing applies for industry users of SAS, email support@vivli.org for details.

Users also have the ability to bring in additional software if the software was specified in the data request, the software runs in the operating system described above, and the user can provide Vivli with any necessary licensing keys. Software licenses must be validated by the software only at installation or setup: software that validates the license on each invocation will not work. Users must attest that the license agreements they need for any of the software they want to bring in can be used in the Vivli research environment.

The following applications have been validated to work on the Vivli Research Environment when an appropriate license can be provided by the researcher – contact Vivli for details on license types:

- SAS Universal Viewer as an alternative to the full academic license for SAS.
- SPSS (Important: the usual academic site license will NOT work; Please contact Vivli for details on the correct license type)
- Matlab
- MedCalc, from <https://medcalc.org>, but not the software available at <https://medcalc.com>
- Monix or other applications from Lixoft.net)

How to add R packages from CRAN not pre-installed in the Vivli Research Environment:

During the course of your analysis, if you find that you need to load R scripts from the CRAN repository, you can do that yourself using the following steps:

- To install a CRAN package in R, use the `install.packages()` function. This simple command downloads the package from a specified repository (by default, CRAN) and installs it on your machine (or);
- In RStudio go to Tools → Install Packages and in the Install from option select Repository (CRAN) and then specify the packages you want.

If you need any other R or Python scripts not pre-installed in the Vivli Research Environment, please reach out to Vivli via chat or support@vivli.org and let them know the names of the additional scripts that you require and they will add them to your research environment.

For the latest guide to working in the Vivli Research Environment, please see here https://vivli.org/wp-content/uploads/2023/01/Software_Available_in_Research_Environment.pdf

R Packages included in the Research Environment 4.2.2, associated with RStudio:

abind	brglm	corrplot	ebal
acepack	brio	covr	editrules
ada	broom	cowplot	ellipse
adabag	BRugs	cpp11	ellipsis
AnnotationDbi	BSgenome	crayon	ensemldb
AnnotationFilter	bslib	credentials	Epi
arules	C50	crosstalk	etm
askpass	cachem	crrp	evaluate
assertthat	cairoDevice	crrstep	exactRankTests
aweb	callr	Cubist	fansi
backports	car	curl	farver
bartMachine	carData	CVST	fastICA
bartMachineJARs	caret	data.table	fastmap
base	caTools	data.tree	fastmatch
base64enc	CBPS	datasets	filelock
BBmisc	cellranger	DBI	forcats
BH	checkmate	dbplyr	foreach
bibtex	checkpoint	ddalpha	foreign
bindr	chron	DelayedArray	forestplot
bindrcpp	class	DEoptimR	formatR
Biobase	classInt	desc	Formula
BiocFileCache	cli	devtools	formula.tools
BiocGenerics	clipr	DiagrammeR	fs
BiocIO	clisymbols	dichromat	futile.logger
BiocManager	cluster	diffobj	futile.options
BiocParallel	cmprsk	digest	future
BiocVersion	cobalt	dimRed	future.apply
biomaRt	coda	doParallel	gam
Biostrings	codetools	downloader	gargle
biovizBase	coin	dplyr	gbm
bit	colorspace	drat	gdata
bit64	combinat	DRR	geepack
bitops	commonmark	DT	generics
blob	compiler	dtplyr	GenomeInfoDb
boot	conquer	e1071	GenomeInfoDbData
brew	corpcor	earth	GenomicAlignments

GenomicFeatures	hms	lattice	miniCRAN
GenomicRanges	htmlTable	latticeExtra	miniUI
geometry	htmltools	lava	minqa
geosphere	htmlwidgets	lazyeval	misc3d
gert	httpuv	libcoin	missForest
ggmap	httr	lifecycle	mitml
ggplot2	huxtable	linprog	mitools
ggpubr	ids	listenv	mlbench
ggraph	igraph	lme4	mlr
ggrepel	incidence	logistf	mlr3
ggsci	influenceR	loo	mrmr
ggsignif	ini	lpSolve	mnormt
ggtext	inline	lpSolveAPI	ModelMetrics
gh	inum	lubridate	modelr
git2r	ipred	magic	modeltools
gitcreds	ipw	magrittr	multcomp
glmnet	IRanges	mapproj	munsell
glmnetUtils	IRdisplay	maps	mvtnorm
globals	IRkernel	maptools	nlme
glue	irlba	markdown	nloptr
Gmisc	isoband	MASS	NMF
googledrive	ISwR	Matching	nnet
googlesheets4	iterators	MatchIt	nnls
gower	itertools	mathjaxr	numDeriv
gplots	jomo	Matrix	openssl
graphics	jpeg	MatrixGenerics	openxlsx
grDevices	jquerylib	MatrixModels	operator.tools
Greg	jsonlite	matrixStats	ordinal
grid	KEGGREST	maxstat	packrat
gridBase	kernlab	mboost	pamr
gridExtra	KernSmooth	mda	pan
gridtext	klaR	memoise	pander
gsubfn	km.ci	metafor	parallel
gtable	KMsurv	methods	parallelly
gtools	knitr	mets	parallelMap
Gviz	labeling	mfp	ParamHelpers
haven	labelled	mgcv	party
highr	lambda.r	mice	partykit
Hmisc	later	mime	pastecs

pbapply	psych	rgexf	SASxport
pbdZMQ	Publish	RgoogleMaps	scales
pbkrtest	purrr	RGtk2	selectr
pdp	quadprog	Rhtslib	servr
pec	quantreg	rio	sessioninfo
penalized	questionr	riskRegression	sfsmisc
pillar	R.cache	rJava	shape
pkgbuild	R.methodsS3	rjson	shiny
pkgcache	R.oo	RJSONIO	snow
pkgconfig	R.utils	rlang	sourcetools
pkgdepends	R2WinBUGS	rmarkdown	sp
pkgload	R6	rms	SparseM
pkgmaker	randomForest	rngtools	spatial
PKI	randomForestSRC	robustbase	splines
plogr	ranger	ROCR	spls
plot3D	RANN	RODBC	sqldf
plotmo	rappdirs	Rook	SQUAREM
plotrix	rattle	roxygen2	stabs
pls	rcmdcheck	rpart	STAN
plyr	RColorBrewer	rpart.plot	StanHeaders
png	Rcpp	rprojroot	statmod
poilog	RcppArmadillo	Rsamtools	stats
polspline	RcppEigen	rsconnect	stats4
polyclip	RcppParallel	Rsolnp	stepp
polynom	RcppProgress	SQLite	stringi
pracma	RcppRoll	rstan	stringr
praise	RCurl	rstatix	strucchange
prettyunits	readr	Rstudioapi	styler
pROC	readxl	Rtools	subselect
processx	recipes	rtracklayer	SummarizedExperiment
prodlim	registry	RUnit	superpc
profileModel	rematch	rversions	survAUC
progress	rematch2	rvest	survey
progressr	remotes	RWeka	survival
promises	repr	RWekajars	survivalROC
ProtGenerics	reprex	S4Vectors	survivalsvm
proto	reshape2	sandwich	survminer
proxy	restfulr	sas7bdat	survMisc
ps	rex	saas	sys

tcltk	tools	vctr	xgboost
TeachingDemos	translations	VennDiagram	xlsx
testthat	truncnorm	viridis	xlsxjars
TH.data	twang	viridisLite	XML
tibble	tweenr	visNetwork	xml2
tidyr	tzdb	visreg	xopen
tidyselect	ucminf	vroom	xtable
tidyverse	usethis	waldo	XVector
timeDate	utf8	WeightIt	yaml
timereg	utils	whisker	zeallot
timeROC	uuid	withr	zip
tinytex	V8	WriteXLS	zlibbioc
tmvnsim	VariantAnnotation	xfun	zoo

Python Packages included in the Research Environment, in the Conda Base environment

adal	containerregistry	azure-mgmt-policyinsights	beautifulsoup4
alabaster	azure-mgmt-	azure-mgmt-	binaryornot
anaconda-client	containerservice	powerbiembedded	bitarray
anyio	azure-mgmt-core	azure-mgmt-rdbms	bkcharts
AnyQt	azure-mgmt-cosmosdb	azure-mgmt-	black
appdirs	azure-mgmt-datafactory	recoveryservices	bleach
applicationinsights	azure-mgmt-datalake-	azure-mgmt-	blinker
argh	analytics	recoveryservicesbackup	bokeh
argon2-cffi	azure-mgmt-datalake-	azure-mgmt-redis	boto
arrow	nspkg	azure-mgmt-relay	botocore
asn1crypto	azure-mgmt-datalake-	azure-mgmt-reservations	Bottleneck
astroid	store	azure-mgmt-resource	brotlipy
astropy	azure-mgmt-datamigration	azure-mgmt-scheduler	bz2file
async-generator	azure-mgmt-devspaces	azure-mgmt-search	CacheControl
atomicwrites	azure-mgmt-devtestlabs	azure-mgmt-servicebus	cached-property
attrs	azure-mgmt-dns	azure-mgmt-servicefabric	certifi
autopep8	azure-mgmt-documentdb	azure-mgmt-signalr	cffi
azure-batch	azure-mgmt-eventgrid	azure-mgmt-sql	chainer
azure-cli-nspkg	azure-mgmt-eventhub	azure-mgmt-storage	chainercv
azure-common	azure-mgmt-hanaonazure	azure-mgmt-subscription	chainerrl
azure-core	azure-mgmt-iotcentral	azure-mgmt-	chardet
azure-datalake-store	azure-mgmt-iothub	trafficmanager	click
azure-graphrbac	azure-mgmt-	azure-mgmt-web	cloudpickle
azure-keyvault	iothubprovisioningservices	azureml	clyent
azure-keyvault-certificates	azure-mgmt-keyvault	azure-nspkg	colorama
azure-keyvault-keys	azure-mgmt-loganalytics	azure-servicebus	commonmark
azure-keyvault-secrets	azure-mgmt-logic	azure-servicefabric	comtypes
azure-mgmt-advisor	azure-mgmt-	azure-	conda
azure-mgmt-	machinelearningcompute	servicemanagement-	conda-package-handling
applicationinsights	azure-mgmt-	legacy	configparser
azure-mgmt-authorization	managementgroups	Babel	contextlib2
azure-mgmt-batch	azure-mgmt-	backcall	cookiecutter
azure-mgmt-batchai	managementpartner	backports.functools-lru-	cPython
azure-mgmt-billing	azure-mgmt-maps	cache	cryptography
azure-mgmt-cdn	azure-mgmt-	backports.shutil-get-	cycler
azure-mgmt-	marketplaceordering	terminal-size	Cython
cognitiveservices	azure-mgmt-media	backports.ssl-match-	cytoolz
azure-mgmt-commerce	azure-mgmt-monitor	hostname	dask
azure-mgmt-compute	azure-mgmt-msi	backports.tempfile	datashape
azure-mgmt-consumption	azure-mgmt-network	backports.weakref	decorator
azure-mgmt-	azure-mgmt-	backports-abc	defusedxml
containerinstance	notificationhubs	baycomp	deprecation
azure-mgmt-	azure-mgmt-nspkg	bcrypt	dictdiffer

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diff-match-patch	isodate	more-itertools	pickleshare
dill	isort	mpl-scatter-density	Pillow
distlib	itsdangerous	mpmath	pip
distributed	jdcal	msgpack	pkginfo
docutils	jedi	msrest	pluggy
echo	Jinja2	msrestazure	ply
entrypoints	jinja2-time	multiplatformdispatch	poyo
et-xmlfile	jmespath	mypy-extensions	progress
fastcache	joblib	nbclassic	prometheus-client
fast-histogram	json5	nbclient	prompt-toolkit
fastrlock	jsonschema	nbconvert	protobuf
filelock	jupyter	nbformat	psutil
flake8	jupyter-client	nbpresent	ptyprocess
Flask	jupyter-console	nest-asyncio	py
Flask-Cors	jupyter-core	networkx	py4j
freetype-py	jupyterlab	nltk	pyarrow
fsspec	jupyterlab-launcher	nose	pycodestyle
funcsgs	jupyterlab-pygments	notebook	pycosat
future	jupyterlab-server	numba	pycparser
gevent	jupyterlab-widgets	numexpr	pycrypto
glob2	jupyter-packaging	numpy	pycurl
glue-core	jupyter-server	numpydoc	pydash
glue-vispy-viewers	Keras-Applications	oauthlib	pydocstyle
glueviz	Keras-Preprocessing	odo	pydocumentdb
greenlet	keyring	olefile	pydot
gym	keyrings.alt	openpyxl	pyerfa
h11	kiwisolver	openTSNE	pyflakes
h5py	lazy-object-proxy	Orange3	pyglet
HeapDict	libarchive-c	orange-canvas-core	Pygments
helpdev	lightgbm	orange-widget-base	pygpu
html5lib	llvmlite	packaging	PyJWT
httpcore	locket	pandas	pylint
httpx	lockfile	pandas-datareader	pyls-black
idna	lxml	pandocfilters	pyls-spyder
imagecodecs	Mako	paramiko	pymongo
imageio	Markdown	parso	PyNaCl
imagesize	MarkupSafe	partd	pyodbc
importlib-metadata	matplotlib	path	PyOpenGL
inflection	mccabe	pathlib2	pyOpenSSL
iniconfig	menuinst	pathspect	pyparsing
intervaltree	mistune	pathtools	PyQt5
ipykernel	mkf-fft	patsy	PyQt5-Qt5
ipython	mkf-random	pbr	PyQt5-sip
ipython-genutils	mkf-service	pep8	pyqtgraph
ipywidgets	mock	pexpect	PyQtWebEngine

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PyQtWebEngine-Qt5	rope	sphinxcontrib-	traitlets
pyreadline	Rtree	serializinghtml	typing-extensions
pyrsistent	ruamel.yaml	sphinxcontrib-websupport	uamqp
PySocks	ruamel.yaml.clib	spyder	ujson
pyspark	ruamel-yaml	spyder-kernels	unicodcsv
pytest	s3transfer	SQLAlchemy	urllib3
python-dateutil	scikit-image	statsmodels	vispy
python-jsonrpc-server	scikit-learn	subprocess32	vowpalwabbit
python-language-server	scipy	sympy	watchdog
python-louvain	seaborn	tables	wcwidth
python-slugify	Send2Trash	tabulate	webencodings
pytz	serverfiles	tblib	Werkzeug
PyWavelets	setuptools	tensorflow-tensorboard	wheel
pywin32	simplegeneric	terminado	widetsnbextension
pywin32-ctypes	singledispatch	testpath	wincertstore
pywinpty	sip	textdistance	win-inet-pton
PyYAML	six	text-unidecode	win-unicode-console
pymzmq	smart-open	Theano	wrapt
qasync	sniffio	threadpoolctl	xgboost
QDarkStyle	snowballstemmer	three-merge	xlrd
qstylizer	sortedcollections	tiffio	XlsxWriter
QtAwesome	sortedcontainers	tinycss2	xlwings
qtconsole	soupsieve	toml	xlwt
QtPy	Sphinx	tomlkit	xmltodict
regex	sphinxcontrib-applehelp	toolz	yapf
requests	sphinxcontrib-devhelp	torch	zict
requests-file	sphinxcontrib-htmlhelp	torchvision	zipp
requests-oauthlib	sphinxcontrib-jsmath	tornado	zope.event
rfc3986	sphinxcontrib-qthelp	tqdm	zope.interface

This document describes the software contained on Research Environments provisioned after 20 January 2023.