

Analytical and other software on the Secure Research Environment

The Research Environment runs with the operating system: Microsoft Windows Server 2019 DataCenter edition. The environment is based on the Microsoft Data Science virtual machine template and includes the following software:

- R Version 4.1.1 (2021-08-10)
- R Studio Desktop 1.4.1717
- Miniconda 3, including an environment for Python 3.8.5 and environments for pytorch and tensorflow
- Python, 3.8.5 as part of the miniconda 3 base environment
- Jupyter Notebook, as part of the miniconda 3 environment
- Microsoft Office 2016 Standard edition, including Word, Excel, PowerPoint, and OneNote (*Access not included*)
- JuliaPro 1.5.4-1
- PyCharm Community Edition, 2020.3.2
- PLINK
- JAGS
- stan and rstan
- Apache Spark 2.2.0
- SparkML and pySpark
- Apache Drill 1.11.0
- MAPR Drill driver
- VIM 8.0.606
- TensorFlow
- MXNet, MXNet Model Server
- Microsoft Cognitive Toolkit (CNTK)
- Weka
- Vowpal Wabbit
- xgboost
- Team Data Science Process (TDSP) Utilities
- VOTT (Visual Object Tagging Tool) 1.6.11
- Microsoft Machine Learning Server
- PowerBI
- SQL Server Developer Edition (2017), including Management Studio and SQL Server Integration Services (SSIS)
- Visual Studio Code 1.17.1
- Nodejs
- 7-zip
- Evince PDF Viewer
- Acrobat Reader
- Microsoft Photo Viewer
- PowerShell
- Review Manager 5.4
- Microsoft subsystem for Linux, with Ubuntu
- WinBUGS and OpenBUGS



And in the Premium research environments:

- STATA 17
- SAS 9.4, m4 (academic license)

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>
- Monlix or other applications from Lixoft.net)

R Packages included in the Research Environment 4.1.1, associated with RStudio:

abind	bindr	brio	classInt
acepack	bindrcpp	broom	cli
ada	Biobase	BRugs	clipr
adabag	BiocFileCache	BSgenome	clisymbols
AnnotationDbi	BiocGenerics	bslib	cluster
AnnotationFilter	BiocIO	C50	cmprsk
arules	BiocManager	cachem	cobalt
askpass	BiocParallel	cairoDevice	coda
assertthat	BiocVersion	callr	codetools
aweb	biomaRt	car	coin
backports	Biostrings	carData	colorspace
bartMachine	biovizBase	caret	combinat
bartMachineJARs	bit	caTools	commonmark
base	bit64	CBPS	compiler
base64enc	bitops	cellranger	conquer
BBmisc	blob	checkmate	corpcor
BH	boot	checkpoint	corrplot
bibtex	brew	chron	covr
	brglm	class	cowplot



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cpp11	etm	ggsci	influenceR
crayon	evaluate	ggsignif	ini
credentials	exactRankTests	ggtext	inline
crosstalk	fansi	gh	inum
crrp	farver	git2r	ipred
crrstep	fastICA	gitcreds	ipw
Cubist	fastmap	glmnet	IRanges
curl	fastmatch	glmnetUtils	IRdisplay
CVST	filelock	globals	IRkernel
data.table	forcats	glue	irlba
data.tree	foreach	Gmisc	isoband
datasets	foreign	googledrive	ISwR
DBI	forestplot	googlesheets4	iterators
dbplyr	formatR	gower	itertools
ddalpha	Formula	gplots	jomo
DelayedArray	formula.tools	graphics	jpeg
DEoptimR	fs	grDevices	jquerylib
desc	futile.logger	Greg	jsonlite
devtools	futile.options	grid	KEGGREST
DiagrammeR	future	gridBase	kernlab
dichromat	future.apply	gridExtra	KernSmooth
diffobj	gam	gridtext	klaR
digest	gargle	gsubfn	km.ci
dimRed	gbm	gtable	KMsurv
doParallel	gdata	gtools	knitr
downloader	geepack	Gviz	labeling
dplyr	generics	haven	labelled
drat	GenomeInfoDb	highr	lambda.r
DRR	GenomeInfoDbData	Hmisc	later
DT	GenomicAlignments	hms	lattice
dtplyr	GenomicFeatures	htmlTable	latticeExtra
e1071	GenomicRanges	htmltools	lava
earth	geometry	htmlwidgets	lazyeval
ebal	geosphere	httpuv	libcoin
editrules	gert	httr	lifecycle
ellipse	ggmap	huxtable	linprog
ellipsis	ggplot2	ids	listenv
ensembldb	ggpubr	igraph	lme4
Epi	ggrepel	incidence	logistf



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loo	ModelMetrics	pkgmaker	randomForest
lpSolve	modelr	PKI	randomForestSRC
lpSolveAPI	modeltools	plogr	ranger
lubridate	multcomp	plot3D	RANN
magic	munsell	plotmo	rappdirs
magrittr	mvtnorm	plotrix	rattle
mapproj	nlme	pls	rcmdcheck
maps	nloptr	plyr	RColorBrewer
maptools	NMF	png	Rcpp
markdown	nnet	poilog	RcppArmadillo
MASS	nnls	pol spline	RcppEigen
Matching	numDeriv	polyclip	RcppParallel
MatchIt	openssl	polynom	RcppProgress
mathjaxr	openxlsx	pracma	RcppRoll
Matrix	operator.tools	praise	RCurl
MatrixGenerics	ordinal	prettyunits	readr
MatrixModels	packrat	PROC	readxl
matrixStats	pamr	processx	recipes
maxstat	pan	prodlim	registry
mboost	pander	profileModel	rematch
mda	parallel	progress	rematch2
memoise	parallelly	progressr	remotes
metafor	parallelMap	promises	repr
methods	ParamHelpers	ProtGenerics	reprex
mets	party	proto	reshape2
mfp	partykit	proxy	restfulr
mgcv	pastecs	ps	rex
mice	pbapply	psych	rgexf
mime	pbdZMQ	Publish	RgoogleMaps
miniCRAN	pbkrtest	purrr	RGtk2
miniUI	pdp	quadprog	Rhtslib
minqa	pec	quantreg	rio
misc3d	penalized	questionr	riskRegression
missForest	pillar	R.cache	rJava
mitml	pkgbuild	R.methodsS3	rjson
mitools	pkgcache	R.oo	RJSONIO
mlbench	pkgconfig	R.utils	rlang
mlr	pkgdepends	R2WinBUGS	rmarkdown
mnormt	pkgload	R6	rms

rngtools	sessioninfo	survivalROC	VariantAnnotation
robustbase	sfsmisc	survivalsvm	vctr
ROCR	shape	survminer	VennDiagram
RODBC	shiny	survMisc	viridis
Rook	snow	sys	viridisLite
roxygen2	sourcetools	tcltk	visNetwork
rpart	sp	TeachingDemos	visreg
rpart.plot	SparseM	testthat	vroom
rprojroot	spatial	TH.data	waldo
Rsamtools	splines	tibble	WeightIt
rsconnect	spls	tidyr	whisker
Rsolnp	sqldf	tidyselect	withr
RSQLite	SQUAREM	tidyverse	WriteXLS
rstan	stabs	timeDate	xfun
rstatix	STAN	timereg	xgboost
rstudioapi	StanHeaders	timeROC	xlsx
rtracklayer	statmod	tinytex	xlsxjars
RUnit	stats	tmvnsim	XML
rversions	stats4	tools	xml2
rvest	stepp	translations	xopen
RWeka	stringi	truncnorm	xtable
RWekajars	stringr	twang	XVector
S4Vectors	strucchange	tweenr	yaml
sandwich	styler	tzdb	zeallot
sas7bdat	subselect	ucminf	zip
sass	SummarizedExperiment	usethis	zlibbioc
SASxport	superpc	utf8	zoo
scales	survAUC	utils	
selectr	survey	uuid	
servr	survival	V8	

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	cff
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	cryptograph
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	multipledispatch	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
funcsgis	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	mkl-fft	patsy	PyQt5-Qt5
ipython	mkl-random	pbr	PyQt5-sip
ipython-genutils	mkl-service	pep8	pyqtgraph
ipywidgets	mock	pepct	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	widgetsnbextension
pywin32-ctypes	singledispatch	testpath	wincertstore
pywinpty	sip	textdistance	win-inet-pton
PyYAML	six	text-unidecode	win-unicode-console
pyzmq	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	xmldict
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 9 October 2021.