

LabKey User Conference 2019

Visualizing LabKey Data

October 4, 2019



Outline



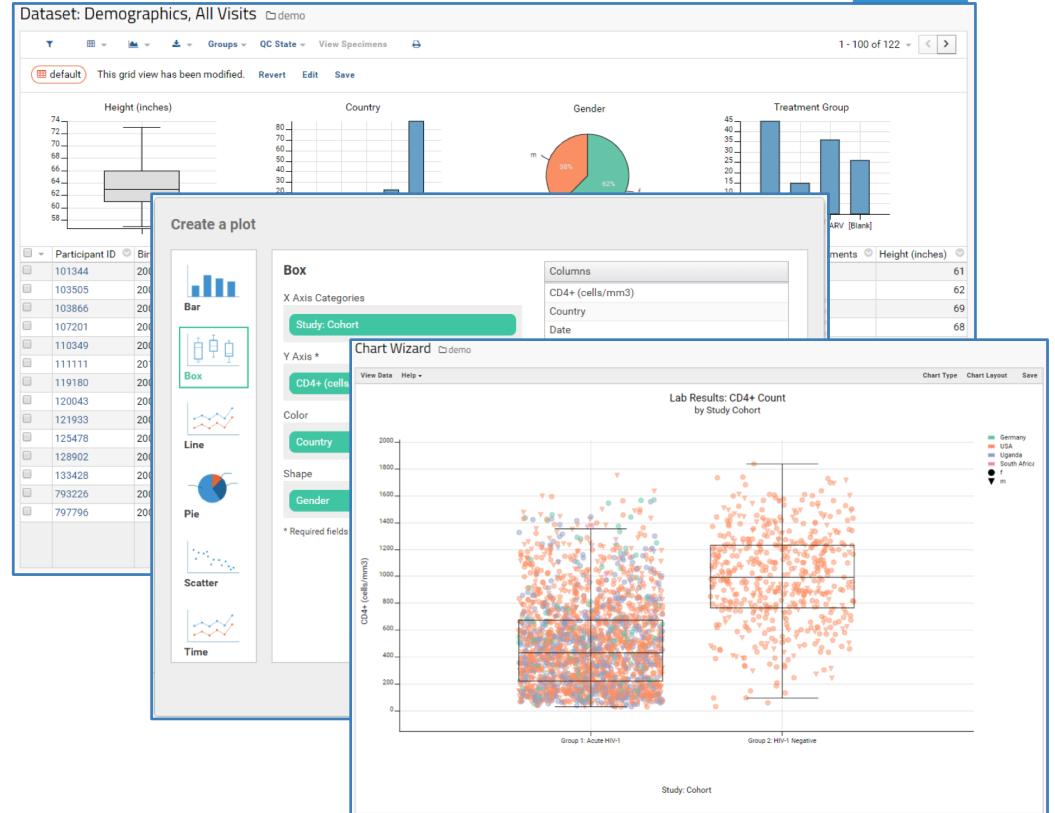
- Built-in LabKey Server Visualizations
 - End User vs Developer
 - Module Specific Customizations
- External Tool Integrations
 - via JDBC/ODBC Connections
 - RStudio, Tableau Desktop, and others
- Live Demo (Tableau)

Built-in End User Visualizations



LabKey grid options

- Column charts ([docs](#))
- Saved reports ([docs](#))
 - bar, box, line, pie, scatter
 - study time charts



Built-in Developer Visualizations



R Reports ([docs](#))

- Use existing R packages, including Rlabkey ([docs](#))
- Built-in support for knitr ([docs](#))

JavaScript Reports ([docs](#))

- Can use LabKey JS APIs
 - LABKEY.QueryWebPart
 - LABKEY.vis.Plot

The screenshot displays two main windows of the LabKey application:

- JavaScript Report Builder**: A window titled "JavaScript Report Builder" with a "demo" tab selected. It contains tabs for "Report", "Data", "Source", and "Help". The "Source" tab shows the following JavaScript code:

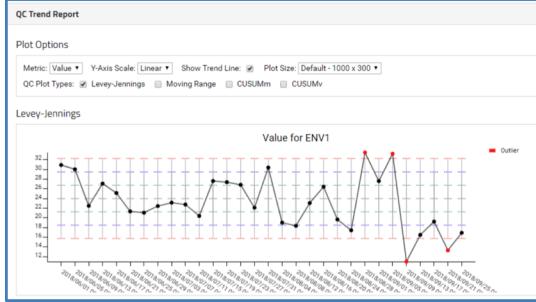
```
1 var jsDiv;
2
3 // When a JavaScript report is viewed, LabKey calls the render() function, passing
4 // a div element. This sample code simply stashes the div, initializes callbacks
5 // to call getRawData() to retrieve the data from the server. See the "Help" tab for
6 // more information.
7 function render(jsDiv)
8 {
9     jsDiv.innerHTML = '';
10    queryData();
11    queryData();
12    LABKEY.Query.setCallback(function(data) {
13        // If you have multiple data sources, you can merge them here.
14        // LABKEY.Query.getMultipleDataSources();
15    });
16 }
17
18 function queryData()
19 {
20     jsDiv.innerHTML = 'Querying data...';
21 }
22
23 function getRawData()
24 {
25     jsDiv.innerHTML = 'Retrieving raw data...';
26 }
```

Below the code are "Options" checkboxes: "Make this report" and "Show source tab".
- R Report Builder**: A window titled "R Report Builder" with a "Demo Study" tab selected. It contains tabs for "Report", "Data", "Source", and "Help". The "Source" tab shows a "Scatter Plot: Blood Pressure" visualization titled "Systolic vs. Diastolic Pressures: All Visits". The plot shows a positive correlation between Systolic (mm Hg) and Diastolic (mm Hg) blood pressure. A color scale legend on the left indicates "labkey.data\$weight_kg" values ranging from 50 to 110. Another scatter plot on the right shows "Body Weight vs. Body Temp: All Visits" with "Body Weight (kg)" on the y-axis and "Body Temp (F)" on the x-axis.

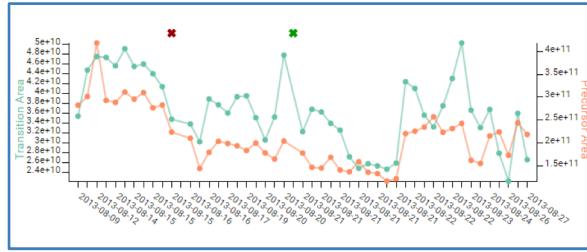
Module-Specific Custom Visualizations



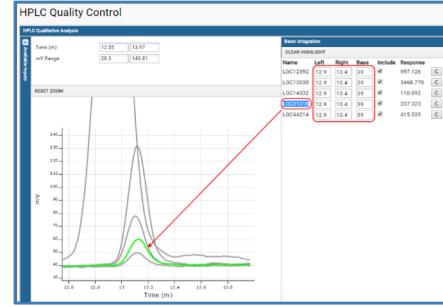
QC Trend Report ([docs](#))



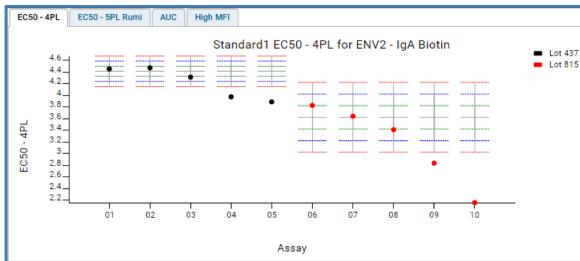
Panorama QC Plots ([docs](#))



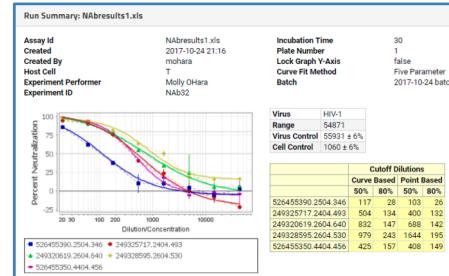
HPLC ([docs](#))



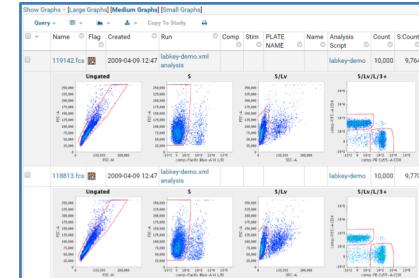
Luminex Levey-Jennings Report ([docs](#))



NAb Run Details Report ([docs](#))



Flow Cytometry ([docs](#))



External Tool Integrations



Reasons and Benefits

- Create very complex and customized reports and visualizations
- Can use well-established products with deep knowledge bases
- Can be live data from LabKey data sources
- Integrate with existing report infrastructure
- Convenience (no file downloads / transfers needed to get data)
- Respect LabKey permissions
- PHI and auditing applies

RStudio



- Richer, sandboxed R development environment ([docs](#))
- User can install private packages
- Roundtrip editable enables collaborative data analysis
- LabKey credentials and permission through Rlabkey
- Open source vs commercial RStudio license

The screenshot shows the RStudio IDE interface with several key features highlighted:

- Data View:** A data frame titled "labkey_NIMHDemographics" is displayed, showing 10 rows of data with columns: Subject ID, Name, Family, Mother, Father, Species, and Occupation.
- Project Selection:** A red box highlights the "Project" dropdown menu in the top right, which is set to "RStudioProTestProject".
- Project Explorer:** On the right side, the "Project Explorer" panel is open, showing the selected project "RStudioProTestProject". It lists various project components: assay, assayExclusion, compliance, exp, data, materials, flow, lists, qc trend report, samples, Schemas, and Queries.
- Console:** The bottom left shows the R console output, indicating the execution of R code to load data from a LabKey project.

★ Premium Feature

RStudio - Shiny



Interactive Shiny app
in integrated RStudio

```
localhost:8080/labkey/_rstudio/
```

File Edit Code View Plots Session Build Debug

app.R

```
49- server <- function(input, output) {  
50  
51  
52-   output[["ggplot3"]]<- renderPlot({  
53-     title<- "Viral Load over Time"  
54-     testdata <- subset(labkey.data, participantid_treatm  
55-  
56-     p <- ggplot(testdata, aes(y = hivloadquant, x = day))  
57-     geom_point(aes(colour = factor(participantid_treatm  
58-     geom_line(aes(colour = factor(participantid_treatm  
59-     xlim(input$dayrange[1], input$dayrange[2]) +  
60-     ylim(input$hivloadrange[1], input$hivloadrange[2]) +  
61-     xlab("day") +  
62-     ylab("hivloadquant") +  
63-     ggtitle(title) +  
64-     theme(plot.title = element_text(hjust = 0.5))  
65-     print(p)  
66-     p + labs(colour = "Treatment Group")  
67-   })  
68- }  
69- }  
70- }  
71- }  
72- }  
73- }  
74- }  
75- }  
76- }  
77- }  
78- }  
79- }  
80- }  
81- }  
82- }  
83- }  
84- }  
85- }  
86- }  
87- }  
88- }  
89- }  
90- }  
91- }  
92- }  
93- }  
94- }  
95- }  
96- }  
97- }  
98- }  
99- }  
100- }  
101- }  
102- }  
103- }  
104- }  
105- }  
106- }  
107- }  
108- }  
109- }  
110- }  
111- }  
112- }  
113- }  
114- }  
115- }  
116- }  
117- }  
118- }  
119- }  
120- }  
121- }  
122- }  
123- }  
124- }  
125- }  
126- }  
127- }  
128- }  
129- }  
130- }  
131- }  
132- }  
133- }  
134- }  
135- }  
136- }  
137- }  
138- }  
139- }  
140- }  
141- }  
142- }  
143- }  
144- }  
145- }  
146- }  
147- }  
148- }  
149- }  
150- }  
151- }  
152- }  
153- }  
154- }  
155- }  
156- }  
157- }  
158- }  
159- }  
160- }  
161- }  
162- }  
163- }  
164- }  
165- }  
166- }  
167- }  
168- }  
169- }  
170- }  
171- }  
172- }  
173- }  
174- }  
175- }  
176- }  
177- }  
178- }  
179- }  
180- }  
181- }  
182- }  
183- }  
184- }  
185- }  
186- }  
187- }  
188- }  
189- }  
190- }  
191- }  
192- }  
193- }  
194- }  
195- }  
196- }  
197- }  
198- }  
199- }  
200- }  
201- }  
202- }  
203- }  
204- }  
205- }  
206- }  
207- }  
208- }  
209- }  
210- }  
211- }  
212- }  
213- }  
214- }  
215- }  
216- }  
217- }  
218- }  
219- }  
220- }  
221- }  
222- }  
223- }  
224- }  
225- }  
226- }  
227- }  
228- }  
229- }  
230- }  
231- }  
232- }  
233- }  
234- }  
235- }  
236- }  
237- }  
238- }  
239- }  
240- }  
241- }  
242- }  
243- }  
244- }  
245- }  
246- }  
247- }  
248- }  
249- }  
250- }  
251- }  
252- }  
253- }  
254- }  
255- }  
256- }  
257- }  
258- }  
259- }  
260- }  
261- }  
262- }  
263- }  
264- }  
265- }  
266- }  
267- }  
268- }  
269- }  
270- }  
271- }  
272- }  
273- }  
274- }  
275- }  
276- }  
277- }  
278- }  
279- }  
280- }  
281- }  
282- }  
283- }  
284- }  
285- }  
286- }  
287- }  
288- }  
289- }  
290- }  
291- }  
292- }  
293- }  
294- }  
295- }  
296- }  
297- }  
298- }  
299- }  
300- }  
301- }  
302- }  
303- }  
304- }  
305- }  
306- }  
307- }  
308- }  
309- }  
310- }  
311- }  
312- }  
313- }  
314- }  
315- }  
316- }  
317- }  
318- }  
319- }  
320- }  
321- }  
322- }  
323- }  
324- }  
325- }  
326- }  
327- }  
328- }  
329- }  
330- }  
331- }  
332- }  
333- }  
334- }  
335- }  
336- }  
337- }  
338- }  
339- }  
340- }  
341- }  
342- }  
343- }  
344- }  
345- }  
346- }  
347- }  
348- }  
349- }  
350- }  
351- }  
352- }  
353- }  
354- }  
355- }  
356- }  
357- }  
358- }  
359- }  
360- }  
361- }  
362- }  
363- }  
364- }  
365- }  
366- }  
367- }  
368- }  
369- }  
370- }  
371- }  
372- }  
373- }  
374- }  
375- }  
376- }  
377- }  
378- }  
379- }  
380- }  
381- }  
382- }  
383- }  
384- }  
385- }  
386- }  
387- }  
388- }  
389- }  
390- }  
391- }  
392- }  
393- }  
394- }  
395- }  
396- }  
397- }  
398- }  
399- }  
400- }  
401- }  
402- }  
403- }  
404- }  
405- }  
406- }  
407- }  
408- }  
409- }  
410- }  
411- }  
412- }  
413- }  
414- }  
415- }  
416- }  
417- }  
418- }  
419- }  
420- }  
421- }  
422- }  
423- }  
424- }  
425- }  
426- }  
427- }  
428- }  
429- }  
430- }  
431- }  
432- }  
433- }  
434- }  
435- }  
436- }  
437- }  
438- }  
439- }  
440- }  
441- }  
442- }  
443- }  
444- }  
445- }  
446- }  
447- }  
448- }  
449- }  
450- }  
451- }  
452- }  
453- }  
454- }  
455- }  
456- }  
457- }  
458- }  
459- }  
460- }  
461- }  
462- }  
463- }  
464- }  
465- }  
466- }  
467- }  
468- }  
469- }  
470- }  
471- }  
472- }  
473- }  
474- }  
475- }  
476- }  
477- }  
478- }  
479- }  
480- }  
481- }  
482- }  
483- }  
484- }  
485- }  
486- }  
487- }  
488- }  
489- }  
490- }  
491- }  
492- }  
493- }  
494- }  
495- }  
496- }  
497- }  
498- }  
499- }  
500- }  
501- }  
502- }  
503- }  
504- }  
505- }  
506- }  
507- }  
508- }  
509- }  
510- }  
511- }  
512- }  
513- }  
514- }  
515- }  
516- }  
517- }  
518- }  
519- }  
520- }  
521- }  
522- }  
523- }  
524- }  
525- }  
526- }  
527- }  
528- }  
529- }  
530- }  
531- }  
532- }  
533- }  
534- }  
535- }  
536- }  
537- }  
538- }  
539- }  
540- }  
541- }  
542- }  
543- }  
544- }  
545- }  
546- }  
547- }  
548- }  
549- }  
550- }  
551- }  
552- }  
553- }  
554- }  
555- }  
556- }  
557- }  
558- }  
559- }  
560- }  
561- }  
562- }  
563- }  
564- }  
565- }  
566- }  
567- }  
568- }  
569- }  
570- }  
571- }  
572- }  
573- }  
574- }  
575- }  
576- }  
577- }  
578- }  
579- }  
580- }  
581- }  
582- }  
583- }  
584- }  
585- }  
586- }  
587- }  
588- }  
589- }  
590- }  
591- }  
592- }  
593- }  
594- }  
595- }  
596- }  
597- }  
598- }  
599- }  
600- }  
601- }  
602- }  
603- }  
604- }  
605- }  
606- }  
607- }  
608- }  
609- }  
610- }  
611- }  
612- }  
613- }  
614- }  
615- }  
616- }  
617- }  
618- }  
619- }  
620- }  
621- }  
622- }  
623- }  
624- }  
625- }  
626- }  
627- }  
628- }  
629- }  
630- }  
631- }  
632- }  
633- }  
634- }  
635- }  
636- }  
637- }  
638- }  
639- }  
640- }  
641- }  
642- }  
643- }  
644- }  
645- }  
646- }  
647- }  
648- }  
649- }  
650- }  
651- }  
652- }  
653- }  
654- }  
655- }  
656- }  
657- }  
658- }  
659- }  
660- }  
661- }  
662- }  
663- }  
664- }  
665- }  
666- }  
667- }  
668- }  
669- }  
670- }  
671- }  
672- }  
673- }  
674- }  
675- }  
676- }  
677- }  
678- }  
679- }  
680- }  
681- }  
682- }  
683- }  
684- }  
685- }  
686- }  
687- }  
688- }  
689- }  
690- }  
691- }  
692- }  
693- }  
694- }  
695- }  
696- }  
697- }  
698- }  
699- }  
700- }  
701- }  
702- }  
703- }  
704- }  
705- }  
706- }  
707- }  
708- }  
709- }  
710- }  
711- }  
712- }  
713- }  
714- }  
715- }  
716- }  
717- }  
718- }  
719- }  
720- }  
721- }  
722- }  
723- }  
724- }  
725- }  
726- }  
727- }  
728- }  
729- }  
730- }  
731- }  
732- }  
733- }  
734- }  
735- }  
736- }  
737- }  
738- }  
739- }  
740- }  
741- }  
742- }  
743- }  
744- }  
745- }  
746- }  
747- }  
748- }  
749- }  
750- }  
751- }  
752- }  
753- }  
754- }  
755- }  
756- }  
757- }  
758- }  
759- }  
760- }  
761- }  
762- }  
763- }  
764- }  
765- }  
766- }  
767- }  
768- }  
769- }  
770- }  
771- }  
772- }  
773- }  
774- }  
775- }  
776- }  
777- }  
778- }  
779- }  
780- }  
781- }  
782- }  
783- }  
784- }  
785- }  
786- }  
787- }  
788- }  
789- }  
790- }  
791- }  
792- }  
793- }  
794- }  
795- }  
796- }  
797- }  
798- }  
799- }  
800- }  
801- }  
802- }  
803- }  
804- }  
805- }  
806- }  
807- }  
808- }  
809- }  
810- }  
811- }  
812- }  
813- }  
814- }  
815- }  
816- }  
817- }  
818- }  
819- }  
820- }  
821- }  
822- }  
823- }  
824- }  
825- }  
826- }  
827- }  
828- }  
829- }  
830- }  
831- }  
832- }  
833- }  
834- }  
835- }  
836- }  
837- }  
838- }  
839- }  
840- }  
841- }  
842- }  
843- }  
844- }  
845- }  
846- }  
847- }  
848- }  
849- }  
850- }  
851- }  
852- }  
853- }  
854- }  
855- }  
856- }  
857- }  
858- }  
859- }  
860- }  
861- }  
862- }  
863- }  
864- }  
865- }  
866- }  
867- }  
868- }  
869- }  
870- }  
871- }  
872- }  
873- }  
874- }  
875- }  
876- }  
877- }  
878- }  
879- }  
880- }  
881- }  
882- }  
883- }  
884- }  
885- }  
886- }  
887- }  
888- }  
889- }  
890- }  
891- }  
892- }  
893- }  
894- }  
895- }  
896- }  
897- }  
898- }  
899- }  
900- }  
901- }  
902- }  
903- }  
904- }  
905- }  
906- }  
907- }  
908- }  
909- }  
910- }  
911- }  
912- }  
913- }  
914- }  
915- }  
916- }  
917- }  
918- }  
919- }  
920- }  
921- }  
922- }  
923- }  
924- }  
925- }  
926- }  
927- }  
928- }  
929- }  
930- }  
931- }  
932- }  
933- }  
934- }  
935- }  
936- }  
937- }  
938- }  
939- }  
940- }  
941- }  
942- }  
943- }  
944- }  
945- }  
946- }  
947- }  
948- }  
949- }  
950- }  
951- }  
952- }  
953- }  
954- }  
955- }  
956- }  
957- }  
958- }  
959- }  
960- }  
961- }  
962- }  
963- }  
964- }  
965- }  
966- }  
967- }  
968- }  
969- }  
970- }  
971- }  
972- }  
973- }  
974- }  
975- }  
976- }  
977- }  
978- }  
979- }  
980- }  
981- }  
982- }  
983- }  
984- }  
985- }  
986- }  
987- }  
988- }  
989- }  
990- }  
991- }  
992- }  
993- }  
994- }  
995- }  
996- }  
997- }  
998- }  
999- }  
1000- }
```

localhost:8080/labkey/_rstudio/?view=shiny

LabKey RStudio Shiny Demo - Viral Load over time

Treatment groups:

- HIV+ / ARV Treatment
- HIV+ / Natural Controller
- HIV+ / No ARV Treatment
- HIV- / No ARV Treatment

Day range:

Viral load range:

Viral Load over Time

Treatment Group

Red line: HIV+ / ARV Treatment

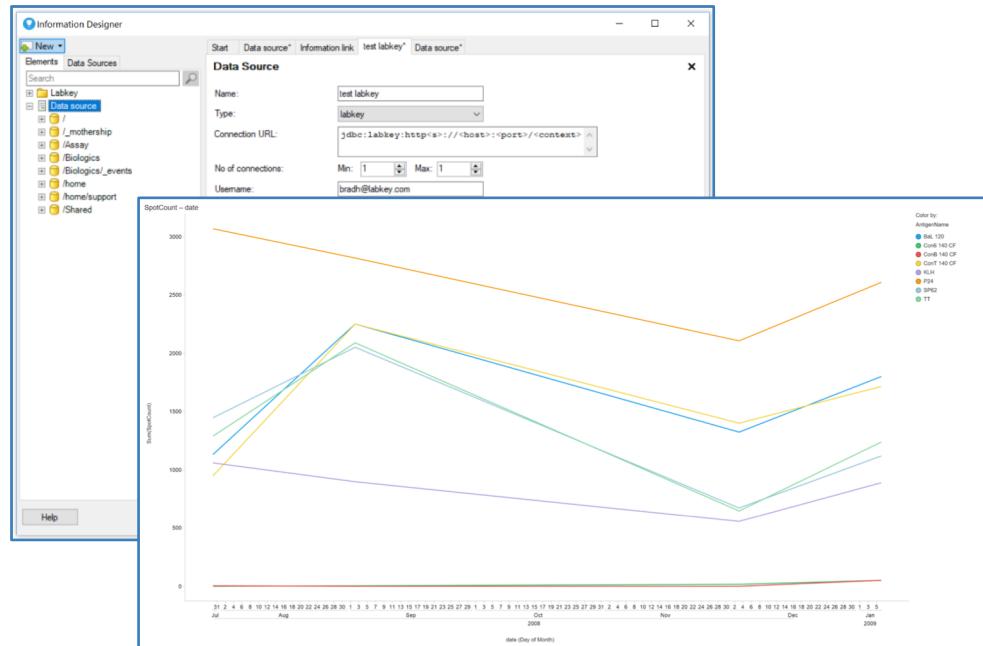
The screenshot shows the RStudio interface with an R script named 'app.R' open. The script contains code for a shiny application, specifically a ggplot3 visualization titled 'Viral Load over Time'. It filters data from 'labkey.data' based on participant ID and day range, then plots viral load quant against day for four treatment groups: HIV+ / ARV Treatment, HIV+ / Natural Controller, HIV+ / No ARV Treatment, and HIV- / No ARV Treatment. The plot shows several peaks in viral load over time, with the HIV+ / ARV Treatment group generally having higher peaks compared to others.

★ Premium Feature

Spotfire



- Build visualizations in an external Spotfire Server ([docs](#))
- Uses LabKey's JDBC driver
- Configured as a “data source” in Spotfire UI
- Provide connection URL, username, and password



★ Premium Feature

External ODBC Connections



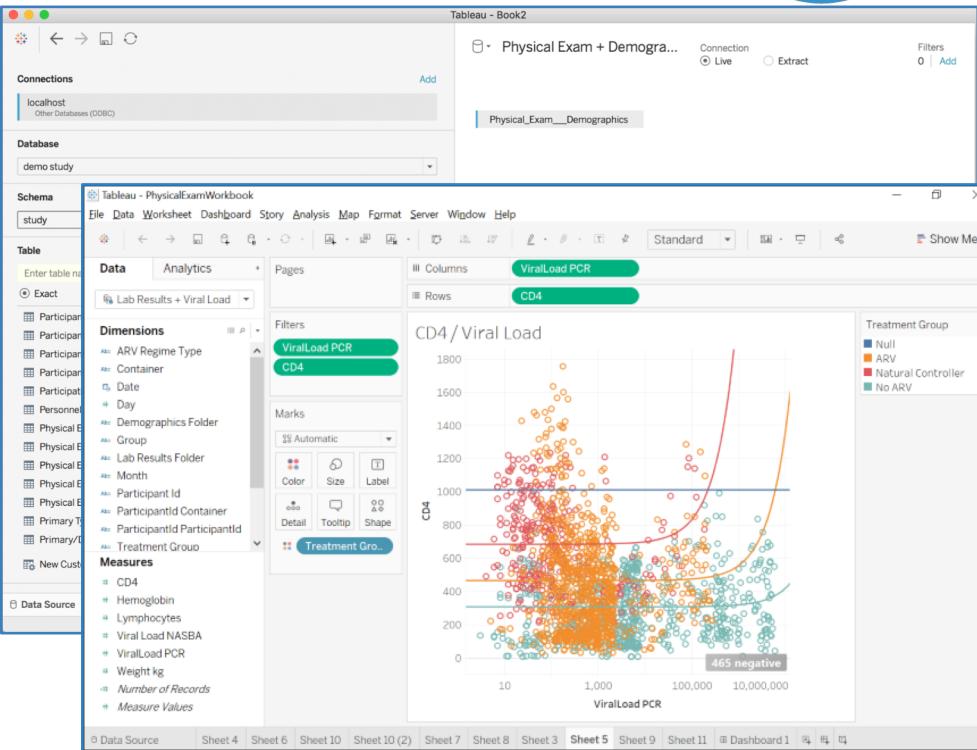
- Uses PostgreSQL wire protocol to expose LabKey virtual schema ([docs](#))
- ODBC client applications execute LabKey SQL queries against schema
 - Respects all security settings present in the LabKey folder/project
 - Only read access is supported; data cannot be inserted or updated
- Requires standard PostgreSQL ODBC driver and DSN configuration
- New (in 19.2.4): support for secure connections (TLS) for high security and compliant environments

★ Premium Feature

Tableau



- Integration with Tableau Desktop ([docs](#))
- Connect using “Other Database (ODBC)” option
- LabKey project as Database
- List LabKey schemas and queries
- Use standard Tableau chart creation options over measures/dimensions



Other Supported ODBC Clients



- Microsoft Excel
- Microsoft Access
- MATLAB
- SSRS - SQL Server Reporting Services

The screenshot displays two MATLAB windows. The top window is the 'Database Explorer' titled 'MyLabKeyData'. It shows a 'Data Browser' pane with a tree view of database schema, including 'Catalog /Testing' and 'Schema study'. Under 'study', nodes like 'Location', 'Objective', 'PE2', 'Participant', 'ParticipantCategory', 'ParticipantGroup', 'ParticipantGroupCohort', 'ParticipantGroupMap', 'ParticipantVisit', 'Personnel', and 'Physical Exam' are listed. A checkbox next to 'Physical Exam' is checked. The bottom window is the 'Power Query Editor' for 'Query4'. It has a 'Properties' ribbon tab selected, with a red box highlighting the 'Advanced Editor' button. Below the ribbon, the 'Advanced Editor' dialog is open, showing the M code for the query:

```
let
    Source = Odbc.Query("dsn=MyLabKeyData", "SELECT * FROM study.PhysicalExam")
in
    Source
```

A green checkmark at the bottom indicates 'No syntax errors have been detected.'

Other ODBC Clients



- Other tools reported to be compatible with LabKey via the ODBC connection
 - SQLDbx, PrimalSQL, Power BI, JMP
 - Have not been extensively tested at this point
- Let us know if integration with other ODBC client applications would be useful to you

Demo

Using Tableau Desktop

Thank you

Questions?

Xing Yang
xyang@labkey.com

Cory Nathe
cnathe@labkey.com

MATLAB



- Use Database Explorer
- May need to install Database Toolbox
- Select target schema and table
- Custom SQL statement

The screenshot shows the MATLAB Database Explorer interface. The left pane displays a tree view of database schemas and tables under 'Catalog /Testing'. The 'study' schema is expanded, showing tables like Location, LocationSpecimenList, MedicallHistory, Objective, PE2, Participant, ParticipantCategory, ParticipantGroup, ParticipantGroupCohort, ParticipantGroupMap, ParticipantVisit, and Personnel. A specific table, 'Physical Exam', is selected. The right pane contains a 'SQL Query' editor with the following code:

```
SELECT *
FROM "/Testing".study."Physical Exam"
```

Below the query is a 'Data Preview (First 10 Rows)' table:

	ParticipantId	Isid	ParticipantSequenceNum	sourceid	Created	CreatedBy	Modified
1	101	um:isid:L...	101 20080426.0000		2019-09...	1005	2019-09...
2	101	um:isid:L...	101 20080526.0000		2019-09...	1005	2019-09...
3	101	um:isid:L...	101 20080623.0000		2019-09...	1005	2019-09...
4	101	um:isid:L...	101 20080721.0000		2019-09...	1005	2019-09...
5	101	um:isid:L...	101 20080818.0000		2019-09...	1005	2019-09...
6	101	um:isid:L...	101 20080915.0000		2019-09...	1005	2019-09...

Microsoft Excel and Access



Excel (Office 365 version)

- Get data from ODBC source
- Select schema/query from Navigator dialog
- Use custom LabKey SQL query in Advanced Options dialog
- Control refresh behavior (ex. when the sheet is opened)

Access

- Snapshot or dynamic modes

The screenshot shows the Microsoft Excel interface with the Power Query Editor open. The 'Navigator' pane on the left lists various tables and datasets. The 'PhysicalExam' table is selected and highlighted with a red box. In the 'Power Query Editor' window, the 'Advanced Editor' button is also highlighted with a red box. The code area contains a custom SQL query:

```
let
    Source = Odbc.Query("dsn=MyLabKeyData", "SELECT * FROM study.PhysicalExam")
in
    Source
```

A status message at the bottom right indicates: "No syntax errors have been detected." There are 'Done' and 'Cancel' buttons at the bottom right of the editor.

Demo - LKS: Explore Research Study



LabKey Trunk

Explore Research Study ▾ Overview Data and Reports Participants Specimens Manage

Example Longitudinal Study

[Study Overview](#) [Study Timeline](#) [Regimen Performance](#)

HIV Disease Progression: A Comparison of ARV Treatment Regimens

This study compares various anti-retroviral (ARVs) treatment regimens by monitoring HIV-1 disease progression in 122 participants. Disease metrics include: viral load, CD4 counts, and white blood cell counts. 2 different methods of measuring viral load were used in tandem, PCR and NASBA.

ARV treatment was initiated in the 8th week. Dosage was evaluated every 4 weeks during treatment.

Treatment Regimens	Datasets Collected	Visualizations
<ul style="list-style-type: none">DRVETRNo Treatment	<ul style="list-style-type: none">DemographicsMedical HistoryPhysical ExamPhysical Exam + DemographicsBlood ChemistryViral Load (PCR)Viral Load (NASBA)	<ul style="list-style-type: none">CD4 Cell CountsLymphocyte Cell CountsLymphocytes vs. CD4Cohort Regression

Findings

Participants under the ETR Regimen fared better than those under the DRV Regimen. In general, participants under any ARV regimen fared better than those without treatment.

Note that all data presented here is fictional and created by random data generators.

Demo - LKS: Data and Reports



LabKey Trunk

Explore Research Study ▾ Overview Data and Reports Participants Specimens Manage

Example Longitudinal Study ▾ Explore Research Study

Data Views ↗

Filter name, category, etc.

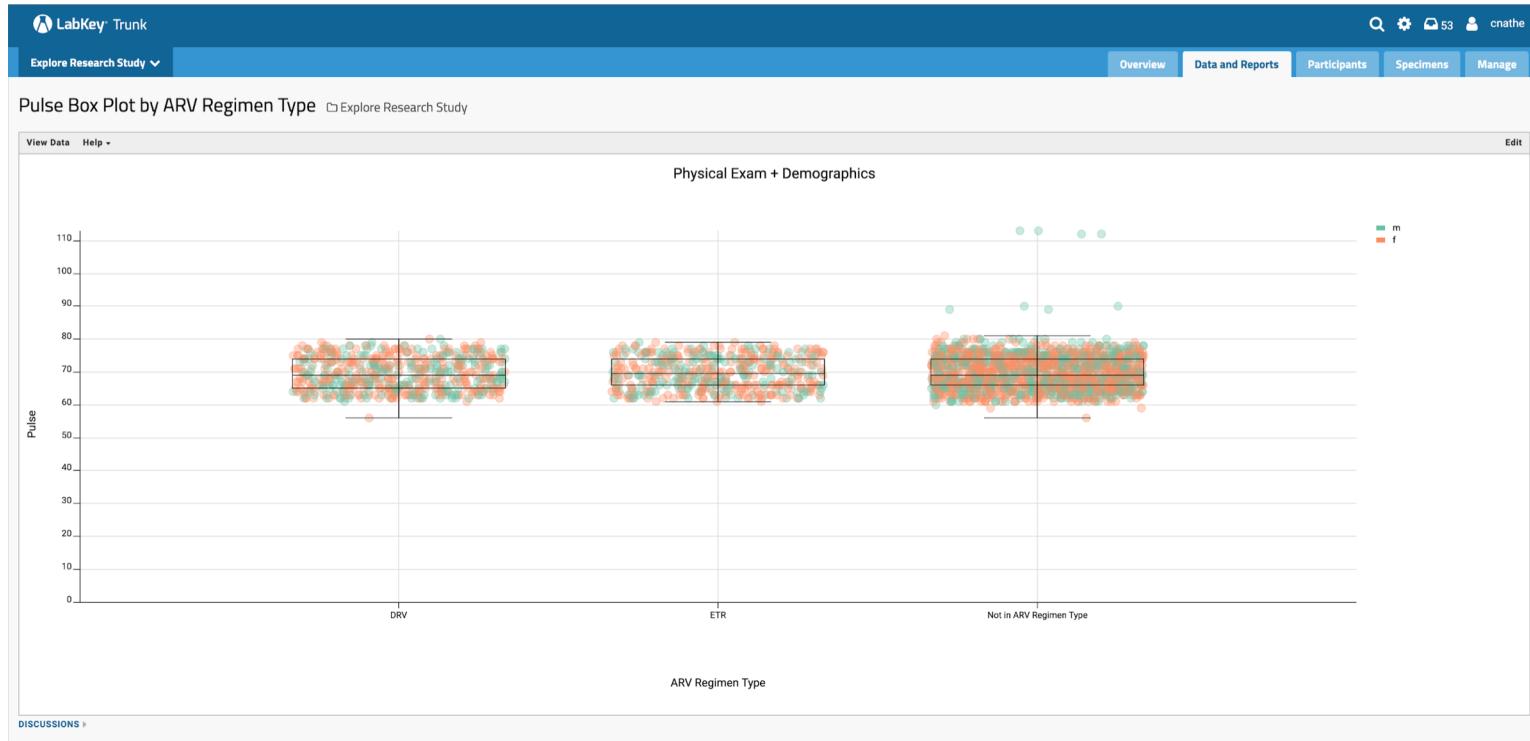
Mine

Name	Details	Status	Modified
Reports	<ul style="list-style-type: none">CD4 Levels by ARV Regimen TypeLymphocyte / CD4 ScatterMean Lymphocyte Levels Per Treatment GroupR Cohort Regression: Lymphocytes vs. CD4	<ul style="list-style-type: none"><input checked="" type="checkbox"/><input checked="" type="checkbox"/><input checked="" type="checkbox"/><input checked="" type="checkbox"/>	<ul style="list-style-type: none">2019-09-232019-09-192019-09-192019-09-19
Clinical	<ul style="list-style-type: none">DemographicsMedicalHistoryPhysical ExamPulse Box Plot by ARV Regimen Type	<ul style="list-style-type: none"><input checked="" type="checkbox"/><input checked="" type="checkbox"/><input checked="" type="checkbox"/><input checked="" type="checkbox"/>	<ul style="list-style-type: none">2019-09-192019-09-192019-09-192019-09-23
Assay/Mechanistic	<ul style="list-style-type: none">Lab Results - Blood ChemistryViral Load (PCR Method)Viral Measurements ComparedViralLoad (NASBA Method)	<ul style="list-style-type: none"><input checked="" type="checkbox"/><input checked="" type="checkbox"/><input checked="" type="checkbox"/><input checked="" type="checkbox"/>	<ul style="list-style-type: none">2019-09-192019-09-192019-09-192019-09-19

Lymphocyte / CD4 Scatter

Source: Reports
Created By:cnathe
Type: XY Scatter Plot
Status: Final

Demo - LKS: Box Plot



Demo - Tableau: Home



The screenshot shows the Tableau Home interface with the following sections:

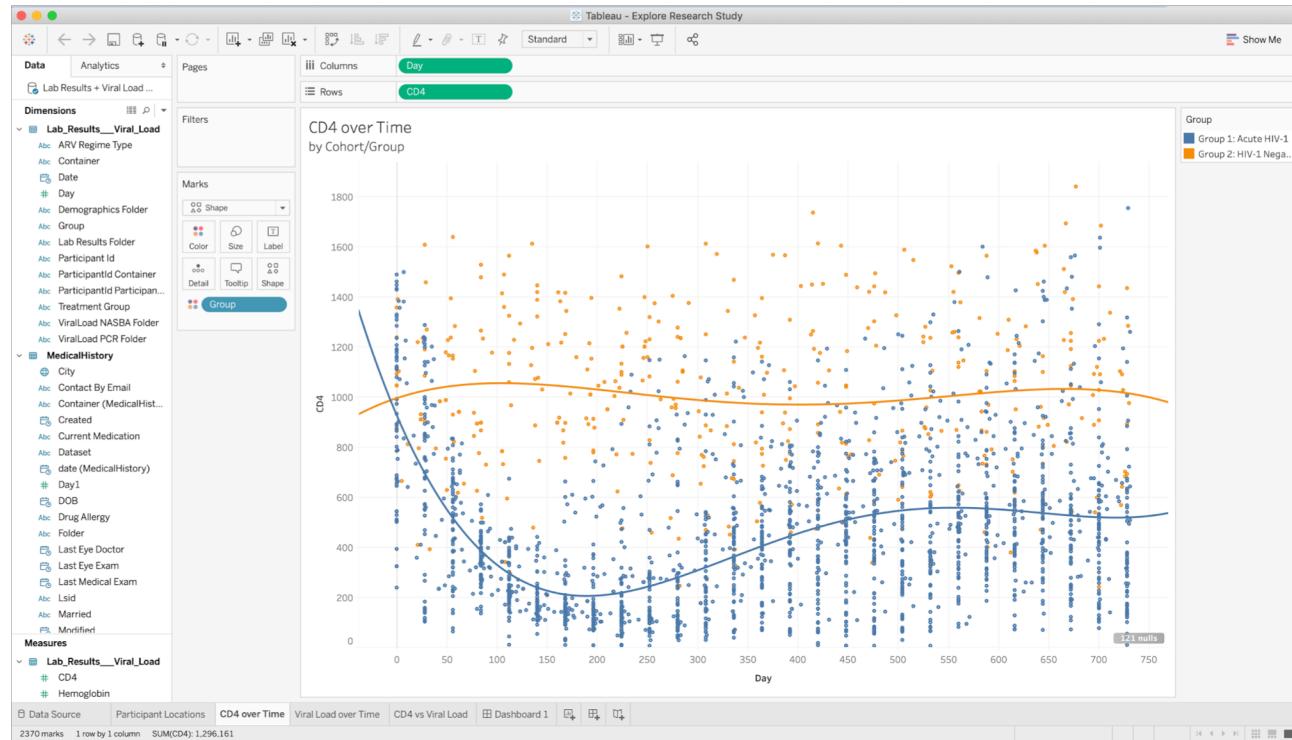
- Connect:** Options for connecting to files (Microsoft Excel, Text file, JSON file, PDF file, Spatial file, Statistical file, More...) and servers (Tableau Server, MySQL, Oracle, Amazon Redshift, Other Databases (ODBC), More...). It also lists Saved Data Sources (Sample - Superstore, World Indicators).
- Open:** Displays two recent workbooks: "Explore Research Study" (map of Alaska) and "Demo Study CD4" (map of a study area).
- Discover:** A central section with "Open a Workbook" link, followed by a "Training" section with links to Getting Started, Connecting to Data, Visual Analytics, Understanding Tableau, and More training videos...; a "Resources" section with links to Get Tableau Prep, Blog, and Forums; and a "More Samples" section featuring "Superstore" (map of US states), "Regional" (map of US states), and "World Indicators" (bar chart).
- Bottom Right:** A call-to-action box with the text "SEE YOU AT TC19", "Don't get left out(lier)", "Register now →", and a "Update to 2019.3 Now" button.

Demo - Tableau: Workbook Login



The screenshot shows the Tableau interface with a "Sign In" dialog box overlaid. The dialog box is titled "Other Databases (ODBC)" and has fields for "Username" (cnathe@labkey.com) and "Password". The main workspace shows a data source named "Lab Results + Viral Load" with various dimensions and measures listed. A specific view is selected with "ViralLoad PCR" in the columns shelf and "CD4" in the rows shelf. The bottom navigation bar includes tabs for "Data Source", "Participant Locations", "CD4 over Time", "Viral Load over Time", "CD4 vs Viral Load", and "Dashboard 1".

Demo - Tableau: Workbook Plot



Demo - Tableau: New ODBC Connection



The screenshot shows the Tableau desktop interface with the following details:

- Left Sidebar (Connect):** Lists various connection options including "To a File" (Microsoft Excel, Text file, JSON file, PDF file, Spatial file, Statistical file, More...), "To a Server" (Tableau Server, MySQL, Oracle, Amazon Redshift, Other Databases (ODBC), More...), and "Saved Data Sources" (Sample - Superstore, World Indicators).
- Middle Panel (Open):** Displays a preview of the "Explore Research Study" workbook, showing three sample workbooks: Superstore, Regional, and World Indicators.
- Center Dialog (Other Databases (ODBC)):**
 - Connect Using:** A note stating "Generic ODBC requires additional configuration for publishing to succeed. Select DSN (data source name) for cross-platform portability. A DSN with the same name must be configured on Tableau Server."
 - DSN:** A dropdown menu.
 - Driver:** Set to "PostgreSQL Unicode".
 - Connection Attributes:** Fields for "Server" (localhost), "Port" (5435), "Database" (/Explore Research Study), "Username" (cnathe@labkey.com), and "Password" (redacted).
 - String Extras:** A text input field.
- Right Sidebar (Discover):**
 - Open a Workbook:** A link to "Open a Workbook".
 - Training:** Links to "Getting Started", "Connecting to Data", "Visual Analytics", "Understanding Tableau", and "More training videos...".
 - Resources:** Links to "Get Tableau Prep", "Blog - Available today: Explain Data, Tableau Catalog, and Tableau Server Management A...", and "Forums".
 - More Samples:** A section featuring a "Sign In" button and links to "SEE YOU AT TC19" and "Don't get left out(iser) Register now →".
 - Bottom:** A call-to-action button "Update to 2019.3 Now".

Demo - Tableau: Data Source Selection



Tableau - Explore Research Study

Physical Exam + Demographics (study.Physical Exam + Demographics...)

Connection: Live | Extract | Filters: 0 | Add

Physical_Exam___Demographics

Table: Enter table name: Physical_Exam___Demographics

Sort fields: Data source order

Show aliases | Show hidden fields | 1,000 rows

Participant Id	Day	Weight kg	Temp C	Pulse	Respirations	Pregnancy	Gender	Height	Treatment Group	ARV Regime Type	Group
101	0	90	37.10000	74	18	0	m	74	ARV	ETR	Group 1: Ac
101	28	87	38.30000	66	17	0	m	74	ARV	ETR	Group 1: Ac
101	56	85	36.40000	75	21	0	m	74	ARV	ETR	Group 1: Ac
101	84	87	36.60000	63	19	0	m	74	ARV	ETR	Group 1: Ac
101	112	85	36.50000	70	23	0	m	74	ARV	ETR	Group 1: Ac
101	140	86	37.60000	62	16	0	m	74	ARV	ETR	Group 1: Ac
101	168	84	35.80000	73	23	0	m	74	ARV	ETR	Group 1: Ac
101	196	85	36.10000	69	22	0	m	74	ARV	ETR	Group 1: Ac
101	224	88	36.30000	68	18	0	m	74	ARV	ETR	Group 1: Ac
101	252	86	36.70000	63	20	0	m	74	ARV	ETR	Group 1: Ac
101	280	85	36.60000	73	19	0	m	74	ARV	ETR	Group 1: Ac
101	308	82	36.70000	63	19	0	m	74	ARV	ETR	Group 1: Ac
101	336	83	36.90000	76	19	0	m	74	ARV	ETR	Group 1: Ac
101	364	82	37.80000	71	24	0	m	74	ARV	ETR	Group 1: Ac

Data Source: Participant Locations, CD4 over Time, Viral Load over Time, CD4 vs Viral Load, Dashboard 1,

Demo - Tableau: Box Plot

