

EVALIDator User Guide (Version 1.8.0.01)

The objective of this document is familiarize the user with how to navigate the web-based EVALIDator tool to create a report. Shaded font indicates specific instructions for you to follow. **EVALIDator keywords are in boldface.**

Users are advised to refer to the **FIADB Database Description User Guide for Phase 2**, which describes the Forest Inventory and Analysis Database (FIADB) structure and defines all of the variables in the database. The guide can be downloaded from the FIA Library:

<https://www.fia.fs.fed.us/library/database-documentation/index.php>. EVALIDator reports are created using the FIADB.

1. Start the EVALIDator application – From the FIA Data and Tools page (<https://www.fia.fs.fed.us/tools-data/>), click on the **EVALIDator** button to go to the **Retrieval Type** page (Step 1 of 4).

The screenshot shows the USDA Forest Service website's 'Forest Inventory and Analysis National Program' page. The 'Data and Tools' section is visible, featuring three main cards: 'DATIM', 'EVALIDator', and 'Engagement Portfolio'. The 'EVALIDator' card is highlighted with a red border. The 'EVALIDator' card contains the following text: 'EVALIDator allows users to produce a large variety of population estimates and their sampling errors based on the current FIADB.' The 'Engagement Portfolio' card contains the text: 'The FIA Engagement Portfolio provides rich, interactive experiences for the public while simultaneously making forestry data available to resource professionals and other users.'

2. Step 1 – **Retrieval Type** – this is where you select the type of geographic area, land basis, and summary estimation group of interest.
 - a. Geographic area types are State, Circular, or Polygon.

- i. The default type is **State Retrieval**, so no action is needed if the desired area is a State or County. Note: if you want a circular or polygon retrieval, you will also need to select the State(s) underlying your described circle or polygon in Step 3. **Keep State Retrieval** selected.
- ii. For the circle option, check the radio button next to **Circular Retrieval** and enter the latitude and longitude of the circle center point in decimal degrees, and enter the circle radius in miles. Note: Longitude should be a negative number for the western hemisphere.
- iii. The polygon option can be obtained by adding a SQL filtering clause in the textbox in Step 4, which also contains a tool for sketching a polygon on a map and creating the SQL filtering clause for the textbox.




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United States Department of Agriculture

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Step 1 of 4 (choosing retrieval type and estimate type group)

User Alerts

Retrieval Type

The "State(s) retrieval" type is the default. You should only select the "Circle retrieval" type when the area of interest is a circular area around some point. If you choose the circle option you must also enter the latitude and longitude of point center in decimal degrees (the latitude and longitude of Duluth, for example, is latitude = 46.78 and longitude = -92.12) and enter the circle radius in miles. A location's latitude and longitude can be obtained using [Google Maps \(opens in new window\)](#). (1. locate the point of interest using Google Maps, 2. right click on the location, 3. select "What's here?", 4. click on the green arrow to get the coordinates).

— Select state or circle retrieval —

State(s) retrieval

Circle retrieval

If "Circle retrieval" is selected then specify latitude, longitude and radius of the circle.

Latitude (in decimal degrees)

Longitude (in decimal degrees)

Radius (in miles)

Please select the land basis from the drop-down list.

All land ▲

Forest land ▼

Timberland ▼

Please choose a numerator estimate group, and, for ratio estimates, a denominator estimate group.

Note: An example of a ratio estimate is "volume per acre" where net volume of live trees is the numerator and area of forest land is the denominator.

Please select the numerator estimation group from the drop-down list

Area

Area change total

Annual area change

Tree volume

Tree dry weight

Tree green weight

Tree carbon

Tree number

Tree basal area

Down woody material volume

Down woody material dry weight

Down woody material carbon

Down woody material number

Carbon

Annual net growth volume

To produce ratio estimates select a denominator estimation group from the drop-down list

No denominator - just produce estimates

Area

Tree volume

Tree dry weight

Tree green weight

Tree carbon

Tree number

Tree basal area

Down woody material volume

Down woody material dry weight

Down woody material carbon

Down woody material number

Carbon

Annual net growth volume

Annual net growth dry weight

Continue
Back

- b. Choose the land basis of interest. This will help to sort the final selection of an estimate in Step 2.
 - i. **All land** has only one attribute choice (Area).
 - ii. **Forest land** is a subset of all land, and includes many choices.
 - iii. **Timberland** is a subset of forest land, and also has many choices.
 - iv. Choose **Forest land**.
- c. Choose a numerator attribute group of interest.
 - i. There are currently 32 summary attribute groups available for forest land and timberland estimates. Note: the choice of attribute groups may limit your selections of evaluations in Step 3 – not all attributes are available for all evaluations.
 - ii. Scroll through the list of numerator estimation groups and choose **Annual net growth volume**, leave the denominator estimation group as **No denominator - just produce estimates**, and click on the **Continue** button.

Please select the land basis from the drop-down list.

All land ▲
 Forest land ▼
 Timberland ▼

Please choose a numerator estimate group, and, for ratio estimates, a denominator estimate group.
 Note: An example of a ratio estimate is "volume per acre" where net volume of live trees is the numerator and area of forest land is the denominator.

Please select the numerator estimation group from the drop-down list

To produce ratio estimates select a denominator estimation group from the drop-down list

tree volume ▲
 Tree dry weight
 Tree green weight
 Tree carbon
 Tree number
 Tree basal area
 Down woody material volume
 Down woody material dry weight
 Down woody material carbon
 Down woody material number
 Carbon
 Annual net growth volume
 Annual net growth dry weight
 Annual removals volume
 Annual removals dry weight
 Annual removals number ▼

No denominator - just produce estimates ▲
 Area
 Tree volume
 Tree dry weight
 Tree green weight
 Tree carbon
 Tree number
 Tree basal area
 Down woody material volume
 Down woody material dry weight
 Down woody material carbon
 Down woody material number
 Carbon
 Annual net growth volume
 Annual net growth dry weight ▼

Continue Back

3. Step 2 – **Choosing the estimate type**. This will be the estimate reported in your table’s cells.

- a. The combination of the **Forest land** land basis and the **Annual net growth volume** estimate group provides a choice of seven summary estimates. **Choose Average annual net growth of sound volume of trees (at least 5 inches d.b.h./d.r.c) in cubic feet, on forest land.**
- b. There are three radio button selections:
- i. **Radio group to limit to accounting** – this will only appear for growth estimates. Accounting is a method of calculating annual growth, and may not be available for all inventories (evaluations). Note that for some older inventories, and several Rocky Mountain States, growth accounting is not available, so you will need to choose **All applicable evaluations (growth accounting may not be available)** if the inventory you want does not appear in the next selection. **Keep Limit evaluations to only those that can do growth accounting** selected.
 - ii. **Forest land definition** – this selects between National and International definitions of forest land. **Use RPA definition of forest land** filters out some low stature woodlands that occur in the Western U.S. Keep **Use FIA definition of forest land** selected.
 - iii. The last is a radio button to **Limit retrieval to only most recent inventories** or **Show all available inventories**. **Keep Limit retrieval to only most recent inventories** selected.
- c. Note that below the **Continue** and **Back** buttons, there is a summary of what you have chosen so far. This feature appears in all subsequent steps. **Click on the Continue button.**

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Step 2 of 4 (choosing the estimate type)

Please choose an estimate from the drop-down list.

Average annual net growth of sound bole volume of trees (at least 5 inches d.b.h./d.r.c.), in cubic feet, on forest land
 Average annual net growth of merchantable bole volume of growing-stock trees (at least 5 inches d.b.h.), in cubic feet, on forest land
 Average annual net growth of sawlog volume of sawtimber trees, in board feet (Doyle rule), on forest land
 Average annual net growth of sawlog volume of sawtimber trees, in board feet (International 1/4-inch rule), on forest land
 Average annual net growth of sawlog volume of sawtimber trees, in cubic feet, on forest land
 Average annual net growth of merchantable bole volume above the sawlog of sawtimber trees, in cubic feet, on forest land
 Average annual net growth of merchantable bole volume of sawtimber trees, in cubic feet, on forest land

Radio group to limit to accounting

Limit evaluations to only those that can do growth accounting
 All applicable evaluations (growth accounting may not be available)

Forest land definition (FIA=National, [RPA=International \(opens in new window\)](#))

Use FIA definition of forest land
 Use RPA definition of forest land

Show list of all inventories or just most recent inventory for each State

Limit retrieval to only most recent inventories
 Show all available inventories

In step 1 you selected:
State as the report type

4. Step 3 – **Choose the Geographic Area** and Inventory. The next page lists the evaluations (in this case, only the most recent for each State) that can produce the chosen summary attribute. An evaluation is the set of data used to make a particular population estimate. For example, most of the older periodic data are functional for Timberland estimates only, and evaluations without growth accounting will not appear with the current selections. Below the list is information about the number of available evaluations, and instructions on how to select multiple evaluations.

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Step 3 of 4 (choosing the geographic area)

Note: To report trends for a State choose multiple inventories for a State from the drop-down list below (to pick multiple inventories for a state you should have selected the "Show all available inventories" radio button on the previous page) and on the next page choose "EVALID" for the row variable.

List of available evaluations for this estimate.

(2 digit State code|4 digit Year|GrowthAcct(Y/N)|StateName|YearsDataCollected)

```
012018N ALABAMA 2013;2014;2015;2016;2017;2018;2019
022017N ALASKA 2006;2007;2008;2009;2010;2011;2012;2013;2015;2016;2017
602012N AMERICAN SAMOA 2012
042018N ARIZONA 2009;2010;2011;2012;2013;2014;2015;2016;2017;2018
052018N ARKANSAS 2013;2014;2015;2016;2017;2018
062018N CALIFORNIA 2007;2008;2009;2010;2011;2012;2013;2014;2015;2016;2017;2018
082018N COLORADO 2009;2010;2011;2012;2013;2014;2015;2016;2017;2018
092018N CONNECTICUT 2012;2013;2014;2015;2016;2017;2018
102018N DELAWARE 2012;2013;2014;2015;2016;2017;2018
642016N FEDERATED STATES OF 2016
```

There are 57 geographic/temporal areas for which this attribute can be calculated. Please click on the geographic/temporal area(s) of interest to highlight it/them and then click on the Continue button

Note: To add or subtract to the list of selected items hold down the control key while clicking on individual items in the drop-down list.

In step 1 you selected:

State as the report type.

In step 2 you selected:

Net merchantable bole volume of live trees (at least 5 inches d.b.h./d.r.c.), in cubic feet, on timberland as the attribute of interest.

sessionId=B070567C4B8661A8D74EBE92299DDBE9

- a. You can choose as many evaluations as you want for the same attribute by holding down the Ctrl key and clicking on evaluations in the list, however for this example, choose only one evaluation, Minnesota 2015;2016;2017;2018;2019. When you are done, click on the **Continue** button.

```
222018I LOUISIANA 2009;2010;2011;2012;2013;2014;2015;2016
232018Y MAINE 2014;2015;2016;2017;2018
242018Y MARYLAND 2012;2013;2014;2015;2016;2017;2018
252018Y MASSACHUSETTS 2012;2013;2014;2015;2016;2017;2018
262019Y MICHIGAN 2013;2014;2015;2016;2017;2018;2019
272019Y MINNESOTA 2015;2016;2017;2018;2019
282018Y MISSISSIPPI 2013;2014;2015;2016;2017;2018
292019Y MISSOURI 2013;2014;2015;2016;2017;2018;2019
312019Y NEBRASKA 2013;2014;2015;2016;2017;2018;2019
332018Y NEW HAMPSHIRE 2012;2013;2014;2015;2016;2017;2018
342018Y NEW JERSEY 2013;2014;2015;2016;2017;2018
```

This is how your selection would appear if you had previously selected **Show all available inventories**.

272015Y	MINNESOTA	2011;2012;2013;2014;2015
272016Y	MINNESOTA	2012;2013;2014;2015;2016
272017Y	MINNESOTA	2013;2014;2015;2016;2017
272018Y	MINNESOTA	2014;2015;2016;2017;2018
272019Y	MINNESOTA	2015;2016;2017;2018;2019
282009Y	MISSISSIPPI	2009
282010Y	MISSISSIPPI	2009;2010
282011Y	MISSISSIPPI	2009;2010;2011
282012Y	MISSISSIPPI	2009;2010;2011;2012
282013Y	MISSISSIPPI	2009;2010;2011;2012;2013

5. Step 4 – **Select Page, Row, and Column classification variables**. Here is where you set up your report table by selecting classification variables. Also available are temporal basis for change estimates and inputs for custom classifications. Note that there are links for explanations of the custom classification options that open in a new browser window.

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Step 4 of 4 (choosing classification variables)

Select Page, Row, and Column classification variables.

[Description of temporal basis \(opens in new window\)](#)

Page variable

Note: To avoid being swamped in detail select "None".

None
All live stocking
AppalachianRegionARC
Artificial regen species
Aspect
Azimuth of tree from subplot center
Basal area all live
Cause of death
Condition number
Condition proportion

Page temporal basis

Current

Row variable

Note: For ratio estimates, if you select 'County code and name' as the row variable, you may produce a choropleth map (shaded county map) by scrolling to the bottom of the results page and clicking on the 'Create choropleth map of counties' command button.

All live stocking
AppalachianRegionARC
Artificial regen species
Aspect
Azimuth of tree from subplot center
Basal area all live
Cause of death
Condition number
Condition proportion
Congressional District

Row temporal basis

Current

Experts only! Optional row text area for overriding row labels with either:

- 1) Plot CNs and values [Explanation \(opens in new window\)](#), or,
- 2) User supplied labeling function [Explanation \(opens in new window\)](#)

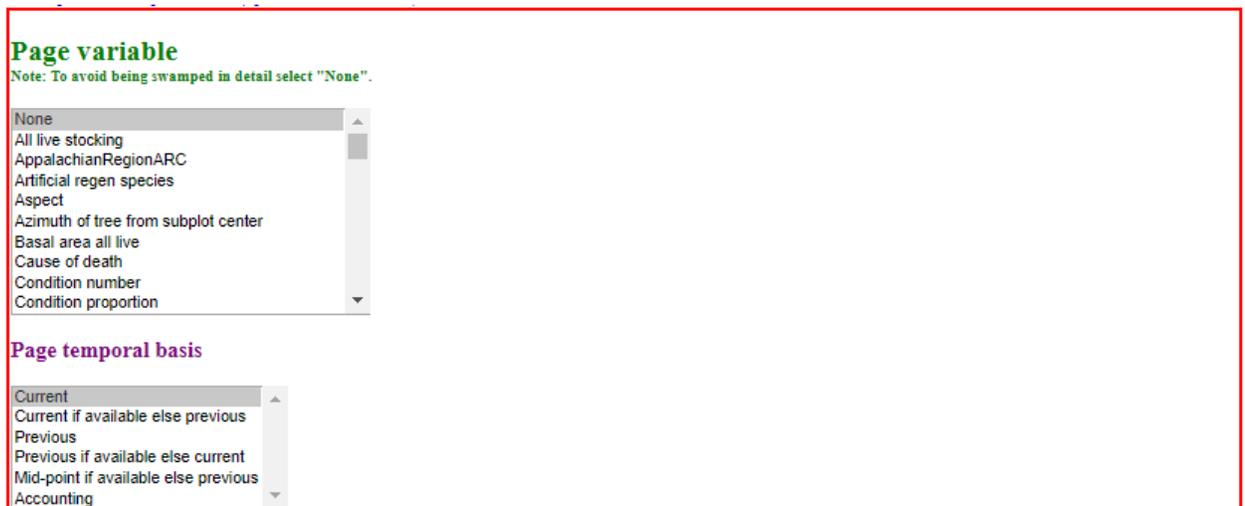
Note: Leave this text area empty unless you want to input plot CNs and values to be used for rows, or, supply a user defined labeling function.

For Area estimates, EVALIDator lists only **Plot** (Geographic) and **Condition** level attributes for table classification variables. **Plot**, **Condition**, and **Tree** level classifications are available for tree estimates. Change estimation may be based on **Current**, **Current if available else previous**, **Previous**, **Previous if available else current**, **Mid-point if available else previous**, or **Accounting** inventory values, while point in time estimations are based on **Current** inventory values.

- a. Select a variable for **Page** (table) break. The default is “None,” which produces a single table and is the best option until you get used to dealing with the results. For this demo, use the default, **None**.

Select a **Row Variable** – there is one option, EVALID, which provides just one row for the geographic area. Note that if you choose more than one survey per geographic area, EVALID should be used, otherwise the report will add the estimates for the same area together (a nonsensical estimate). For this demo, scroll down and select **EVALID**, and for the **Row temporal basis**, choose **Accounting**.

- b. Select a **Column variable** – some of the attributes available as a **Row variable** are not available as a **Column variable**. Unavailable attributes tend to produce a large number of columns, resulting in tables that are difficult to read and manage. For this demo, use the default variable **All live stocking**, but select **Accounting** for the **Column temporal basis**.



The screenshot displays two dropdown menus within a red-bordered box. The first menu, titled "Page variable" in green, has a note below it: "Note: To avoid being swamped in detail select 'None'". The menu is currently set to "None" and lists several other options: "All live stocking", "AppalachianRegionARC", "Artificial regen species", "Aspect", "Azimuth of tree from subplot center", "Basal area all live", "Cause of death", "Condition number", and "Condition proportion". The second menu, titled "Page temporal basis" in purple, is currently set to "Current" and lists options: "Current", "Current if available else previous", "Previous", "Previous if available else current", "Mid-point if available else previous", and "Accounting".

Row variable

Note: For ratio estimates, if you select 'County code and name' as the row variable, you may produce a choropleth map (shaded county map) by scrolling to the bottom of the results page and clicking on the 'Create choropleth map of counties' command button.

Distance to road
Disturbance 1
Disturbance 2
Disturbance 3
EMAPHEX
EVALID
Ecoregion section
Ecoregion subsection
Elevation
Forest Service Region

Row temporal basis

Current
Current if available else previous
Previous
Previous if available else current
Mid-point if available else previous
Accounting

Experts only! Optional row text area for overriding row labels with either:

- 1) Plot CNs and values [Explanation \(opens in new window\)](#), or,
- 2) User supplied labeling function [Explanation \(opens in new window\)](#)

Note: Leave this text area empty unless you want to input plot CNs and values to be used for rows, or, supply a user defined labeling function.

Column variable

All live stocking
AppalachianRegionARC
Aspect
Azimuth of tree from subplot center
Basal area all live
Cause of death
Condition number
Condition proportion
Crown class
Crown ratio

Column temporal basis

Current
Current if available else previous
Previous
Previous if available else current
Mid-point if available else previous
Accounting

Experts only! Optional column text area for overriding column labels with either:

- 1) Plot CNs and values [Explanation \(opens in new window\)](#), or,
- 2) User supplied labeling function [Explanation \(opens in new window\)](#)

Note: Leave this text area empty unless you want to input plot CNs and values to be used for columns, or, supply a user defined labeling function.

- c. At the bottom of the page, you have the option of using filters to further refine your report. You also have the option to produce estimates without sampling errors. For all but the most

complex reports, estimates without sampling errors isn't terribly beneficial. **Keep Output estimates and sampling errors** selected.

d. To see what filters are available, choose **ADD/CLEAR Filters** and click on **Continue**.

6. Step 4 continued – **Choosing filters**. The top of the filter page has information about how polygon retrievals can be run, including links to create polygons and create the SQL for them.

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Step 4 of 4 continued (choosing filters)

Note: Polygon retrievals can be run by adding a SQL filtering clause via the textbox on the bottom of this page.

Examples of Oracle Spatial filtering clauses

Example 1. Polygon with 5 vertices in Minnesota (note: first and last coordinate pairs must be the same - run time approximately 1 second)

```
and plot.cn in (SELECT /*+ ordered */ CN FROM fs_fia_spatial.fiadb3_plot_geom c WHERE sdo_relate(c.geom, sdo_geometry(2003, 8265, null, sdo_elem_info_array(1, 1003, 1), sdo_ordinate_array(-93,45, -94,45, -94.5,44.5, -94,44, -93,44, -93,45)), 'mask=ANYINTERACT querytype=WINDOW') = 'TRUE')
```

Example 2. Polygon with a 50km buffer around Interstate 94 and limit to Stearns County, MN (note: run time approximately 2 minutes)

```
and plot.cn in (SELECT /*+ ordered */ CN FROM FS_FIA_SPATIAL.US_INTERSTATES_8265 B, fs_fia_spatial.fiadb3_plot_geom c WHERE (sdo_relate(C.geom,sdo_geom.sdo_buffer (b.geometry,50,0.5,'ARC_TOLERANCE=0.05 UNIT=KM'),'mask=ANYINTERACT querytype=WINDOW') = 'TRUE') and c.cn=plot.cn and b.interstate='I94')
```

Warning! If you use a polygon to specify an area it should be validated to insure that the polygon will work with Oracle Spatial.

[Step 1. Make polygon for filtering clause \(opens in new window\).](#)

[Step 2. Validate polygon for use with Oracle Spatial \(opens in new window\).](#)

Step 3. Copy SQL filtering clause from Step 2 and paste into "Text area" at the bottom of this page.

a. Optional Filters – EVALIDator provides a list of common filters. To filter from the available options, you can click on the radio button next to "Specific . . ." and then click on the desired category (use Ctrl key to select more than one from the list).

All Ownership classes
 Filter based on ownership group variable (COND.OWNGRPCD)
 Specific Ownership class by Ownership Group (You must select one or more of the following ownership groups.)
 To limit the retrieval to specific ownership groups use the control key and the mouse to select the desired ownership groups from the drop-down list below. If no ownership groups are selected then ownership groups will not be used as a filter.

Filter based on ownership class variable (COND.OWNCD)
 Specific Ownership class by Ownership Class (You must choose one or more combinations of ownership classes.)
 To limit the retrieval to specific ownership groups use the control key and the mouse to select the desired ownership classes from the drop-down list below. If no ownership classes are selected then ownership classes will not be used as a filter.

- b. Users who are familiar with Oracle SQL may choose to further customize their query in the box provided at the bottom of the page. This is also the place where you would insert the script for a polygon retrieval. After you've finished making your selections (or not), click on the **Show results** button at the bottom.

Filter based on tree diameter (TREE.DIA)
 All diameters.
 Specific diameters (You must enter the minimum and maximum diameter range.)
 Minimum Diameter
 Maximum Diameter

Text area to input additional SQL where clause: (experts only please - syntax must be exact - example: to limit the retrieval to National Forest ownership put "and cond.owncd=11" in the textbox)

7. EVALIDator will then compute the estimates, sampling errors, and number of plots with a value for each category, as well as a heading summarizing your process. Note that if you selected any filters, the **Filtering clause(s)**: will display them as if you had entered them as SQL in the text box. This can help get you used to using SQL phrases.

EVALIDator Version 1.8.0.01 - View report

Numerator attribute number and description: 0201 Average annual net growth of sound bole volume of trees (at least 5 inches d.b.h./d.r.c.), in cubic feet, on forest land

FIADef as the forest land definition.

State/EVAL_GRP(s):

Minnesota 272019

Page variable=None (based on values from the Current inventory).

Row variable=EVALID (based on values from the Accounting inventory).

Column variable=All live stocking (based on values from the Accounting inventory).

Filtering clause(s):

Estimate:

	All live stocking						
EVALID	Total	Overstocked	Fully stocked	Medium stocked	Poorly stocked	Nonstocked	Unavailable
Total	473,043,867	28,330,939	290,328,951	137,171,919	17,972,122	-760,064	-
Minnesota 2019 rscd= 23 evalid= 271903	473,043,867	28,330,939	290,328,951	137,171,919	17,972,122	-760,064	-

Sampling error percent (Confidence level 68%):

Note: for 95% confidence level multiply SE pct by 1.96

	All live stocking						
EVALID	Total	Overstocked	Fully stocked	Medium stocked	Poorly stocked	Nonstocked	Unavailable
Total	2.63	65.95	10.75	18.84	59.60	86.46	-
Minnesota 2019 rscd= 23 evalid= 271903	2.63	65.95	10.75	18.84	59.60	86.46	-

Number of non-zero plots in estimate:

Note: total number of plots in selected evaluations=17416

	All live stocking						
EVALID	Total	Overstocked	Fully stocked	Medium stocked	Poorly stocked	Nonstocked	Unavailable
Total	5,816	1,234	3,402	2,866	1,244	118	-
Minnesota 2019 rscd= 23 evalid= 271903	5,816	1,234	3,402	2,866	1,244	118	-

- a. There will also be descriptions of your estimate and your classification variables. These can be quite lengthy.

Population Estimate Description

Average annual net growth volume in the sound bole of trees (at least 5 inches d.b.h./d.r.c.), in cubic feet, on forest land (for remeasured plots $(V_2 - V_1)/(t_2 - t_1)$) that occurred after deducting mortality volume. Because this value is net growth, it may be a negative number. Negative growth values are usually due to mortality ($V_2 = 0$) but can also occur on live trees that have a net loss in volume because of damage, rot, broken top, or other causes.

Tree: A woody plant usually having one or more erect perennial stems, a stem diameter at breast height of at least 3.0 inches, a more or less definitely formed crown of foliage, and a height of at least 15 feet at maturity.

Forest land: Land at least 10-percent stocked by trees of any size, including land that formerly had such tree cover and that will be naturally or artificially regenerated. Forest land includes transition zones, such as areas between heavily forested and nonforested lands that are at least 10-percent stocked with trees and forest areas adjacent to urban and builtup lands. Also included are pinyon-juniper and chaparral areas in the West and afforested areas. The minimum area for classification of forest land is 1 acre and 120 feet wide measured stem-to-stem from the outer-most edge. Unimproved roads and trails, streams, and clearings in forest areas are classified as forest if less than 120 feet wide.

Page classification variable description

No pages selected.

Row classification variable description

Evaluation ID

Column classification variable description

All live stocking code. A code indicating the stocking of the condition by live trees, including seedlings.

Code Description

- 1 Overstocked (100+ %)
- 2 Fully stocked (60 to 99%)
- 3 Medium stocked(35 to 59%)
- 4 Poorly stocked(10 to 34%)
- 5 Nonstocked(0 to 9%)

- b. After that, there are citations for the method (Green Book) and the EVALIDator web application.

Sampling design/estimation method: post-stratification, as described in:

Bechtold, W.A.; Patterson, P.L., eds. 2005. The Enhanced Forest Inventory and Analysis Program - National Sampling Design and Estimation Procedures. Gen. Tech. Rep. SRS - 80. Asheville, NC: U.S. Department of Agriculture, Forest Service, Southern Research Station. 85 p.

Web citation:

USDA Forest Service, Forest Inventory and Analysis Program, Thu Jan 02 23:53:06 GMT 2020. Forest Inventory EVALIDator web-application Version 1.8.0.01. St. Paul, MN: U.S. Department of Agriculture, Forest Service, Northern Research Station. [Available only on internet: <http://apps.fs.usda.gov/Evalidator/evalidator.jsp>]

- c. And also SQL script for those with direct access to the FIADB and a RESTful Web Service Call to instantly recreate your report.

SQL Script

This SQL script can be used to derive estimates from FIA Data Base (FIADB)

```
select coalesce(pagestr,'0000 Page total'),coalesce(rowstr,'0000 Row total'),coalesce(colstr,'0000 Column total'),sum(estimated_value) from (SELECT case 1 when 1 then '0001 None' end as pagestr, case pop_stratum.valid when 271903 then '0001 Minnesota 2019 rscd= 23 evalid= 271903' end as rowstr, case coalesce( case be.ONEORTWO when 1 then pCOND.alstckd else case grm.component when 'SURVIVOR' then COND.alstckd when 'INGROWTH' then COND.alstckd when 'REVERSION1' then COND.alstckd when 'REVERSION2' then COND.alstckd else pCOND.alstckd end end ,-1) when 1 then '0001 Overstocked' when 2 then '0002 Fully stocked' when 3 then '0003 Medium stocked' when 4 then '0004 Poorly stocked' when 5 then '0005 Nonstocked' when -1 then '0006 Unavailable' else '0007 Other' end as colstr, SUM(((GRM.TPAGROW_UNADJ * (CASE WHEN COALESCE(GRM.SUBPTYP_GRM,0) = 0 THEN (0) WHEN GRM.SUBPTYP_GRM = 1 THEN POP_STRATUM.ADJ_FACTOR_SUBP WHEN GRM.SUBPTYP_GRM = 2 THEN POP_STRATUM.ADJ_FACTOR_MICR WHEN GRM.SUBPTYP_GRM = 3 THEN POP_STRATUM.ADJ_FACTOR_MACR ELSE (0) END) * (CASE WHEN BE.ONEORTWO = 2 THEN (CASE WHEN (GRM.COMPONENT = 'SURVIVOR' OR GRM.COMPONENT = 'INGROWTH' OR GRM.COMPONENT LIKE 'REVERSION%') THEN (TREE.VOLCFSND/PLOT.REMPER) WHEN (GRM.COMPONENT LIKE 'CUT%' OR GRM.COMPONENT LIKE 'DIVERSION%') THEN (TRE_MIDPT.VOLCFSND/PLOT.REMPER) ELSE (0) END) ELSE (CASE WHEN (GRM.COMPONENT = 'SURVIVOR' OR GRM.COMPONENT = 'CUT1' OR GRM.COMPONENT = 'DIVERSION1' OR GRM.COMPONENT = 'MORTALITY1') THEN CASE WHEN TRE_BEGIN.TRE_CN IS NOT NULL THEN -(TRE_BEGIN.VOLCFSND/PLOT.REMPER) ELSE -(PTREE.VOLCFSND/PLOT.REMPER) END ELSE (0) END) END))*POP_STRATUM.EXPNNS) AS ESTIMATED_VALUE FROM FS_FIADB.BEGINEND BE, FS_FIADB.POP_STRATUM.POP_STRATUM JOIN FS_FIADB.POP_PLOT_STRATUM.ASSGN.POP_PLOT_STRATUM.ASSGN ON (POP_STRATUM.CN = POP_PLOT_STRATUM.ASSGN.STRATUM_CN) JOIN FS_FIADB.PLOT.PLOT ON (POP_PLOT_STRATUM.ASSGN.PLT_CN = PLOT.CN) JOIN FS_FIADB.PLOTGEOM.PLOTGEOM ON (PLOT.CN = PLOTGEOM.CN) JOIN FS_FIADB.PLOT.PPLOT ON (PLOT.PREV_PLT_CN = PPLOT.CN) JOIN FS_FIADB.COND.PCOND ON (PLOT.PREV_PLT_CN = PCOND.PLT_CN) JOIN FS_FIADB.COND.COND ON (PLOT.CN = COND.PLT_CN) JOIN FS_FIADB.TREE.TREE ON (TREE.CONDID = COND.CONDID AND TREE.PLT_CN = PLOT.CN AND TREE.PREV.COND = PCOND.CONDID) LEFT OUTER JOIN FS_FIADB.TREE.PTREE ON (TREE.PREV_TRE_CN = PTREE.CN) LEFT OUTER JOIN FS_FIADB.TREE.GRM_BEGIN.TRE_BEGIN ON (TREE.CN = TRE_BEGIN.TRE_CN) LEFT OUTER JOIN FS_FIADB.TREE.GRM_MIDPT.TRE_MIDPT ON (TREE.CN = TRE_MIDPT.TRE_CN) LEFT OUTER JOIN (SELECT TRE_CN, DIA_BEGIN, DIA_MIDPT, DIA_END, SUBP_COMPONENT_AL_FOREST AS COMPONENT, SUBP_SUBPTYP_GRM_AL_FOREST AS SUBPTYP_GRM, SUBP_TPAGROW_UNADJ_AL_FOREST AS TPAGROW_UNADJ FROM FS_FIADB.TREE.GRM_COMPONENT) GRM ON (TREE.CN = GRM.TRE_CN) WHERE 1=1 AND ((pop_stratum.rscd=23 and pop_stratum.evalid=271903)) and 1=1 GROUP BY case 1 when 1 then '0001 None' end,case pop_stratum.valid when 271903 then '0001 Minnesota 2019 rscd= 23 evalid= 271903' end ,case coalesce( case be.ONEORTWO when 1 then pCOND.alstckd else case grm.component when 'SURVIVOR' then COND.alstckd when 'INGROWTH' then COND.alstckd when 'REVERSION1' then COND.alstckd when 'REVERSION2' then COND.alstckd else pCOND.alstckd end end ,-1) when 1 then '0001 Overstocked' when 2 then '0002 Fully stocked' when 3 then '0003 Medium stocked' when 4 then '0004 Poorly stocked' when 5 then '0005 Nonstocked' when -1 then '0006 Unavailable' else '0007 Other' end ) tmpzzz group by cube(pagestr,rowstr,colstr) order by pagestr, rowstr, colstr
```

RESTful Web Service Call

This RESTful Web Service call can be used to generate estimates directly from browser address line

```
https://apps.fs.usda.gov/Evaluator/rest/Evaluator/fullreport?reptype=State&lat=0&lon=0&radius=0&snum=Average annual net growth of sound bole volume of trees (at least 5 inches d.b.h./d.r.c.), in cubic feet, on forest land&denom=No denominator - just produce estimates&wc=272019&pselected=None&rselected=EVALID&cselected=All live stocking&ptime=Current&time=Accounting&ctime=Accounting&wf=&wnum=&wnumdenom=&FIAorRPA=FIADef&outputFormat=HTML&estOnly=N&schemaName=FS_FIADB.
```

- d. All or parts of the report output can be copied and pasted into a spreadsheet or word document for saving.
8. Users can continue to run more tables – click on the browser Back button to go back to EVALIDator, Step 1.
9. **Ratio Estimates** – Users can select attributes for a numerator and denominator to derive ratio estimates (such as volume/acre or growth/volume). This will demo a growing-stock volume per acre.
 - a. Back on EVALIDator, Step 1, select Timberland as the land basis, Tree volume as the numerator, and Area as the denominator, then click Continue.

Please select the land basis from the drop-down list.

All land ▲
Forest land ▲
Timberland ▼

Please choose a numerator estimate group, and, for ratio estimates, a denominator estimate group.

Note: An example of a ratio estimate is "volume per acre" where net volume of live trees is the numerator and area of forest land is the denominator.

Please select the numerator estimation group from the drop-down list

Area ▲
Area change total ▲
Annual area change ▲
Tree volume ▲
Tree dry weight ▲
Tree green weight ▲
Tree carbon ▲
Tree number ▲
Tree basal area ▲
Down woody material volume ▲
Down woody material dry weight ▲
Down woody material carbon ▲
Down woody material number ▲
Carbon ▲
Annual net growth volume ▼

To produce ratio estimates select a denominator estimation group from the drop-down list

No denominator - just produce estimates ▲
Area ▲
Tree volume ▲
Tree dry weight ▲
Tree green weight ▲
Tree carbon ▲
Tree number ▲
Tree basal area ▲
Down woody material volume ▲
Down woody material dry weight ▲
Down woody material carbon ▲
Down woody material number ▲
Carbon ▲
Annual net growth volume ▼
Annual net growth dry weight ▼

Continue Back

- b. In Step 2, select **Net merchantable bole of growing-stock trees (at least 5 inches d.b.h.) in cubic feet, on timberland** as the numerator. Observe that **Area of timberland, in acres** is the only denominator available. Keep **Limit retrieval to only most recent inventories** selected. Click **Continue**.

Please choose an estimate from the drop-down list.

Net merchantable bole volume of live trees (at least 5 inches d.b.h./d.r.c.), in cubic feet, on timberland
Net merchantable bole volume of growing-stock trees (at least 5 inches d.b.h.), in cubic feet, on timberland
Net sawlog volume of sawtimber trees, in cubic feet, on timberland
Sound sawlog volume of sawtimber trees, in cubic feet, on timberland
Net sawlog volume of sawtimber trees, in board feet (International 1/4-inch rule), on timberland
Net merchantable bole volume of standing dead trees (at least 5 inches d.b.h./d.r.c.), in cubic feet, on timberland
Net sawlog volume of sawtimber trees, in board feet (Doyle rule), on timberland

Please choose a denominator from the drop-down list.

Area of timberland, in acres

Show list of all inventories or just most recent inventory for each State

- Limit retrieval to only most recent inventories
 Show all available inventories

[Continue](#) [Back](#)

In step 1 you selected:
State as the report type

- c. Select **Colorado 2009;2010;2011;2012;2013;2014;2015;2016;2017;2018** and click **Continue**.

List of available evaluations for this estimate.

(2 digit State code|4 digit Year|GrowthAcct(Y/N)|StateName|YearsDataCollected)

012019N ALABAMA 2013;2014;2015;2016;2017;2018;2019
022017N ALASKA 2006;2007;2008;2009;2010;2011;2012;2013;2015;2016;2017
602012N AMERICAN SAMOA 2012
042018N ARIZONA 2009;2010;2011;2012;2013;2014;2015;2016;2017;2018
052018N ARKANSAS 2013;2014;2015;2016;2017;2018
062018N CALIFORNIA 2007;2008;2009;2010;2011;2012;2013;2014;2015;2016;2017;2018
082018N COLORADO 2008;2010;2011;2012;2013;2014;2015;2016;2017;2018
092018N CONNECTICUT 2012;2013;2014;2015;2016;2017;2018
102018N DELAWARE 2012;2013;2014;2015;2016;2017;2018
642016N FEDERATED STATES OF 2016

There are 57 geographic/temporal areas for which this attribute can be calculated. Please click on the geographic/temporal area(s) of interest to highlight it/them and then click on the Continue button

Note: To add or subtract to the list of selected items hold down the control key while clicking on individual items in the drop-down list.

[Continue](#) [Back](#)

In step 1 you selected:
State as the report type.

In step 2 you selected:
Net merchantable bole volume of growing-stock trees (at least 5 inches d.b.h.), in cubic feet, on timberland as the numerator.
Area of timberland, in acres as the denominator.

- d. Leave the **Page variable** selection as **None** (the default), select **County code and name** as the **Row Variable**, and keep the default **Column variable**, All live stocking. Keep all other defaults, and click **Continue**.

Page variable

Note: To avoid being swamped in detail select "None".

None	▲
All live stocking	
AppalachianRegionARC	
Artificial regen species	
Aspect	
Basal area all live	
Condition number	
Condition proportion	
Congressional District	
Distance to road	▼

Row variable

Note: For ratio estimates, if you select 'County code and name' as the row variable, you may produce a choropleth map (shaded county map) by scrolling to the bottom of the results page and clicking on the 'Create choropleth map of counties' command button.

Artificial regen species	▲
Aspect	
Basal area all live	
Condition number	
Condition proportion	
Congressional District	
County code and name	
CountyGroup	
Distance to road	
Disturbance 1	▼

Column variable

All live stocking	▲
AppalachianRegionARC	
Aspect	
Basal area all live	
Condition number	
Condition proportion	
Distance to road	
Disturbance 1	
Disturbance 2	
Disturbance 3	▼

- e. The output files will appear at the top of the **View report** page. Note that for Ratio estimates, there will six output tables (with no Page variable selection).
 - i. A **Ratio estimate** table, in this case, the merchantable bole volume of growing-stock trees per acre on timberland. Note that since this is a per-acre estimate, cell values will not add to row or cell totals.

EVALIDator Version 1.8.0.01 - View report

Numerator attribute number and description: 0018 Net merchantable bole volume of growing-stock trees (at least 5 inches d.b.h.), in cubic feet, on timberland

Denominator attribute number and description: 0003 Area of timberland, in acres

FIADEF as the forest land definition.

State/EVAL_GRP(s):

Colorado 082018

Page variable=None (based on values from the Current inventory).

Row variable=County code and name (based on values from the Current inventory).

Column variable=All live stocking (based on values from the Current inventory).

Filtering clause(s) applied to numerator:

Filtering clause(s) applied to numerator and denominator:

Ratio estimate:

	All live stocking					
County code and name	Total	Overstocked	Fully stocked	Medium stocked	Poorly stocked	Nonstocked
Total	2,004.3802	3,706.9840	2,911.6538	1,768.3008	884.3100	84.8871
08001 CO Adams	-	-	-	-	-	-
08005 CO Arapahoe	1,502.6234	-	-	-	1,502.6234	-
08007 CO Archuleta	2,558.7716	3,084.0126	4,097.4306	2,089.2168	1,124.1026	-
08009 CO Baca	1,177.5721	-	-	1,471.9651	-	-
08011 CO Bent	324.8749	-	-	-	324.8749	-
08013 CO Boulder	1,270.7304	2,039.6855	2,235.6827	1,274.4703	740.0464	124.5447
08015 CO Chaffee	2,073.2505	5,159.0462	2,921.6889	1,368.9685	843.3886	141.0827
08019 CO Clear Creek	2,461.6386	6,536.1305	3,029.5313	1,606.1076	1,422.6480	-

- ii. A **Numerator estimate** table. This is the total merchantable bole volume of growing-stock trees on timberland. These cell values will add to row and column totals.

Numerator estimate:

	All live stocking					
County code and name	Total	Overstocked	Fully stocked	Medium stocked	Poorly stocked	Nonstocked
Total	20,942,031,998	2,171,668,814	9,900,823,865	6,839,551,642	2,001,961,877	28,025,801
08001 CO Adams	-	-	-	-	-	-
08005 CO Arapahoe	8,606,276	-	-	-	8,606,276	-
08007 CO Archuleta	972,533,127	10,317,639	507,197,973	381,683,621	73,333,894	-
08009 CO Baca	8,823,854	-	-	8,823,854	-	-
08011 CO Bent	2,067,279	-	-	-	2,067,279	-
08013 CO Boulder	219,025,288	38,995,475	62,990,828	78,794,379	36,512,903	1,731,703
08015 CO Chaffee	527,246,682	40,561,999	360,134,570	83,953,343	40,673,509	1,923,261
08019 CO Clear Creek	249,403,842	37,065,823	131,068,508	59,083,303	22,186,208	-

- iii. A **Denominator estimate** table. This is the total acres of timberland, and cell values will add to row and column totals. Note that if you divide values in **Numerator estimate** cells by values in **Denominator estimate** cells, you will get the values in corresponding **Ratio estimate** cells.

Denominator estimate:

	All live stocking					
County code and name	Total	Overstocked	Fully stocked	Medium stocked	Poorly stocked	Nonstocked
Total	10,448,134	585,832	3,400,412	3,867,867	2,263,869	330,154
08001 CO Adams	1,452	-	-	-	-	1,452
08005 CO Arapahoe	5,728	-	-	-	5,728	-
08007 CO Archuleta	380,078	3,346	123,784	182,692	65,238	5,018
08009 CO Baca	7,493	-	-	5,995	-	1,499
08011 CO Bent	6,363	-	-	-	6,363	-
08013 CO Boulder	172,362	19,118	28,175	61,825	49,339	13,904
08015 CO Chaffee	254,309	7,862	123,262	61,326	48,226	13,632
08019 CO Clear Creek	101,316	5,671	43,264	36,787	15,595	-

- iv. A **Sampling error percent** table. These are the sampling errors for the **Ratio estimates**. Note that if you run the numerator and denominator reports separately, these sampling errors are different than either the numerator or denominator sampling errors, or any simple arithmetic between the two. That's because the sampling error calculation for ratios includes a co-variance term between the numerator and denominator.

Sampling error percent (Confidence level 68%):

Note: for 95% confidence level multiply SE pct by 1.96

	All live stocking					
County code and name	Total	Overstocked	Fully stocked	Medium stocked	Poorly stocked	Nonstocked
Total	1.91	6.50	2.59	2.42	3.17	17.54
08001 CO Adams	-	-	-	-	-	-
08005 CO Arapahoe	0.00	-	-	-	0.00	-
08007 CO Archuleta	8.34	67.15	9.51	7.82	10.87	-
08009 CO Baca	28.34	-	-	0.00	-	-
08011 CO Bent	0.00	-	-	-	0.00	-
08013 CO Boulder	13.77	25.65	25.30	12.11	14.97	63.64
08015 CO Chaffee	12.54	28.14	11.70	24.97	16.61	75.78
08019 CO Clear Creek	14.80	0.00	15.94	14.41	24.62	-

- v. A **Number of non-zero plots numerator** table. Note that the number of plot for the numerator will be less than or equal to the number of plots in the next table (**Number of non-zero plots denominator**). That's because the numerator must be a subset of the denominator.

Number of non-zero plots numerator:

Note: total number of plots in selected evaluations=10815

	All live stocking					
County code and name	Total	Overstocked	Fully stocked	Medium stocked	Poorly stocked	Nonstocked
Total	1,768	126	598	691	415	41
08001 CO Adams	-	-	-	-	-	-
08005 CO Arapahoe	1	-	-	-	1	-
08007 CO Archuleta	59	2	19	29	11	-
08009 CO Baca	1	-	-	1	-	-
08011 CO Bent	1	-	-	-	1	-
08013 CO Boulder	27	4	5	10	9	2
08015 CO Chaffee	43	1	21	11	10	1
08019 CO Clear Creek	20	1	9	7	3	-

- vi. A **Number of non-zero plots denominator** table. The number of plots in denominator cells will be greater than or equal to the number of plots in numerator cells. (It's possible to have timberland plots with area but no growing-stock volume, but it's not possible to have timberland plots with growing-stock volume but no area.)

Number of non-zero plots denominator:

Note: total number of plots in selected evaluations=10815

	All live stocking					
County code and name	Total	Overstocked	Fully stocked	Medium stocked	Poorly stocked	Nonstocked
Total	1,843	142	611	694	433	87
08001 CO Adams	1	-	-	-	-	1
08005 CO Arapahoe	1	-	-	-	1	-
08007 CO Archuleta	60	2	19	29	11	1
08009 CO Baca	2	-	-	1	-	1
08011 CO Bent	1	-	-	-	1	-
08013 CO Boulder	27	4	5	10	9	2
08015 CO Chaffee	47	2	21	11	11	3
08019 CO Clear Creek	20	1	9	8	3	-

- f. The Ratio estimate **View report page** will also have all of the descriptions, citations, SQL script, and RESTful Web Service options as the estimate-only View report pages.