

# Calculating Line Lengths and Statistics

QGIS Tutorials and Tips



Author

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















Translations by

SongHyun Choi

QGIS 3.16.1, 3.16.2, 3.16.3 3.16.4 3.16.5 3.16.6 3.16.7 3.16.8 3.16.9 3.16.10 3.16.11 3.16.12 3.16.13 3.16.14 3.16.15 3.16.16 3.16.17 3.16.18 3.16.19 3.16.20 3.16.21 3.16.22 3.16.23 3.16.24 3.16.25 3.16.26 3.16.27 3.16.28 3.16.29 3.16.30 3.16.31 3.16.32 3.16.33 3.16.34 3.16.35 3.16.36 3.16.37 3.16.38 3.16.39 3.16.40 3.16.41 3.16.42 3.16.43 3.16.44 3.16.45 3.16.46 3.16.47 3.16.48 3.16.49 3.16.50 3.16.51 3.16.52 3.16.53 3.16.54 3.16.55 3.16.56 3.16.57 3.16.58 3.16.59 3.16.60 3.16.61 3.16.62 3.16.63 3.16.64 3.16.65 3.16.66 3.16.67 3.16.68 3.16.69 3.16.70 3.16.71 3.16.72 3.16.73 3.16.74 3.16.75 3.16.76 3.16.77 3.16.78 3.16.79 3.16.80 3.16.81 3.16.82 3.16.83 3.16.84 3.16.85 3.16.86 3.16.87 3.16.88 3.16.89 3.16.90 3.16.91 3.16.92 3.16.93 3.16.94 3.16.95 3.16.96 3.16.97 3.16.98 3.16.99 3.16.100 3.16.101 3.16.102 3.16.103 3.16.104 3.16.105 3.16.106 3.16.107 3.16.108 3.16.109 3.16.110 3.16.111 3.16.112 3.16.113 3.16.114 3.16.115 3.16.116 3.16.117 3.16.118 3.16.119 3.16.120 3.16.121 3.16.122 3.16.123 3.16.124 3.16.125 3.16.126 3.16.127 3.16.128 3.16.129 3.16.130 3.16.131 3.16.132 3.16.133 3.16.134 3.16.135 3.16.136 3.16.137 3.16.138 3.16.139 3.16.140 3.16.141 3.16.142 3.16.143 3.16.144 3.16.145 3.16.146 3.16.147 3.16.148 3.16.149 3.16.150 3.16.151 3.16.152 3.16.153 3.16.154 3.16.155 3.16.156 3.16.157 3.16.158 3.16.159 3.16.160 3.16.161 3.16.162 3.16.163 3.16.164 3.16.165 3.16.166 3.16.167 3.16.168 3.16.169 3.16.170 3.16.171 3.16.172 3.16.173 3.16.174 3.16.175 3.16.176 3.16.177 3.16.178 3.16.179 3.16.180 3.16.181 3.16.182 3.16.183 3.16.184 3.16.185 3.16.186 3.16.187 3.16.188 3.16.189 3.16.190 3.16.191 3.16.192 3.16.193 3.16.194 3.16.195 3.16.196 3.16.197 3.16.198 3.16.199 3.16.200 3.16.201 3.16.202 3.16.203 3.16.204 3.16.205 3.16.206 3.16.207 3.16.208 3.16.209 3.16.210 3.16.211 3.16.212 3.16.213 3.16.214 3.16.215 3.16.216 3.16.217 3.16.218 3.16.219 3.16.220 3.16.221 3.16.222 3.16.223 3.16.224 3.16.225 3.16.226 3.16.227 3.16.228 3.16.229 3.16.230 3.16.231 3.16.232 3.16.233 3.16.234 3.16.235 3.16.236 3.16.237 3.16.238 3.16.239 3.16.240 3.16.241 3.16.242 3.16.243 3.16.244 3.16.245 3.16.246 3.16.247 3.16.248 3.16.249 3.16.250 3.16.251 3.16.252 3.16.253 3.16.254 3.16.255 3.16.256 3.16.257 3.16.258 3.16.259 3.16.260 3.16.261 3.16.262 3.16.263 3.16.264 3.16.265 3.16.266 3.16.267 3.16.268 3.16.269 3.16.270 3.16.271 3.16.272 3.16.273 3.16.274 3.16.275 3.16.276 3.16.277 3.16.278 3.16.279 3.16.280 3.16.281 3.16.282 3.16.283 3.16.284 3.16.285 3.16.286 3.16.287 3.16.288 3.16.289 3.16.290 3.16.291 3.16.292 3.16.293 3.16.294 3.16.295 3.16.296 3.16.297 3.16.298 3.16.299 3.16.300 3.16.301 3.16.302 3.16.303 3.16.304 3.16.305 3.16.306 3.16.307 3.16.308 3.16.309 3.16.310 3.16.311 3.16.312 3.16.313 3.16.314 3.16.315 3.16.316 3.16.317 3.16.318 3.16.319 3.16.320 3.16.321 3.16.322 3.16.323 3.16.324 3.16.325 3.16.326 3.16.327 3.16.328 3.16.329 3.16.330 3.16.331 3.16.332 3.16.333 3.16.334 3.16.335 3.16.336 3.16.337 3.16.338 3.16.339 3.16.340 3.16.341 3.16.342 3.16.343 3.16.344 3.16.345 3.16.346 3.16.347 3.16.348 3.16.349 3.16.350 3.16.351 3.16.352 3.16.353 3.16.354 3.16.355 3.16.356 3.16.357 3.16.358 3.16.359 3.16.360 3.16.361 3.16.362 3.16.363 3.16.364 3.16.365 3.16.366 3.16.367 3.16.368 3.16.369 3.16.370 3.16.371 3.16.372 3.16.373 3.16.374 3.16.375 3.16.376 3.16.377 3.16.378 3.16.379 3.16.380 3.16.381 3.16.382 3.16.383 3.16.384 3.16.385 3.16.386 3.16.387 3.16.388 3.16.389 3.16.390 3.16.391 3.16.392 3.16.393 3.16.394 3.16.395 3.16.396 3.16.397 3.16.398 3.16.399 3.16.400 3.16.401 3.16.402 3.16.403 3.16.404 3.16.405 3.16.406 3.16.407 3.16.408 3.16.409 3.16.410 3.16.411 3.16.412 3.16.413 3.16.414 3.16.415 3.16.416 3.16.417 3.16.418 3.16.419 3.16.420 3.16.421 3.16.422 3.16.423 3.16.424 3.16.425 3.16.426 3.16.427 3.16.428 3.16.429 3.16.430 3.16.431 3.16.432 3.16.433 3.16.434 3.16.435 3.16.436 3.16.437 3.16.438 3.16.439 3.16.440 3.16.441 3.16.442 3.16.443 3.16.444 3.16.445 3.16.446 3.16.447 3.16.448 3.16.449 3.16.450 3.16.451 3.16.452 3.16.453 3.16.454 3.16.455 3.16.456 3.16.457 3.16.458 3.16.459 3.16.460 3.16.461 3.16.462 3.16.463 3.16.464 3.16.465 3.16.466 3.1

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- **Geographic Coordinate System (GCS)**
- **Projected Coordinate Reference System (CRS)**
- **Geographic Coordinate System (GCS)**

□ □ □ □ □

`Natural  
 <<http://www.naturalearthdata.com/downloads/10m-cultural-vectors/railroads/>>`\_□□  
 □□ □□□ □□ □□□□□ □□□□. □□□□ `North America supplement <[http://www.naturalearthdata.com/http://www.naturalearthdata.com/download/10m/cultural/ne\\_10m\\_railroads\\_north\\_america.zip](http://www.naturalearthdata.com/http://www.naturalearthdata.com/download/10m/cultural/ne_10m_railroads_north_america.zip)>`\_□□□□□□ □□□□ □□□□.

For convenience, you may directly download a copy of the dataset from the link below:

ne\_10m\_railroads\_north\_america.zip

□□□ □□ [NATURALEARTH]

1. `menuselection: `Layer --> Add Vector Layer``



2. ``ne\_10m\_railroads\_north\_america.zip`` □□□ □□□ :guilabel: `OK` □ □□□□□.



3. In the Select layers to add... dialog, choose *ne\_10m\_railroads\_north\_america.shp* layer.



Attribute table - ne\_10m\_railroads\_north\_america :: Features total: 1127, filtered: 1127, selected: 0

|    | scalerank | featurecla | sov_a3 | uident | add | natrscale | continent     |
|----|-----------|------------|--------|--------|-----|-----------|---------------|
| 0  | 8         | Railroad   | USA    | 1506   | 0   | 0         | North America |
| 1  | 9         | Railroad   | USA    | 1606   | 1   | 5         | North America |
| 2  | 8         | Railroad   | USA    | 1706   | 0   | 0         | North America |
| 3  | 8         | Railroad   | USA    | 1806   | 0   | 0         | North America |
| 4  | 8         | Railroad   | USA    | 1906   | 0   | 0         | North America |
| 5  | 8         | Railroad   | USA    | 2006   | 0   | 0         | North America |
| 6  | 8         | Railroad   | USA    | 2106   | 0   | 0         | North America |
| 7  | 9         | Railroad   | USA    | 2206   | 1   | 5         | North America |
| 8  | 8         | Railroad   | USA    | 2306   | 0   | 0         | North America |
| 9  | 8         | Railroad   | USA    | 2406   | 0   | 0         | North America |
| 10 | 8         | Railroad   | USA    | 2506   | 0   | 0         | North America |
| 11 | 8         | Railroad   | USA    | 2606   | 0   | 0         | North America |
| 12 | 8         | Railroad   | USA    | 2706   | 0   | 0         | North America |
| 13 | 8         | Railroad   | USA    | 2806   | 0   | 0         | North America |
| 14 | 9         | Railroad   | USA    | 2906   | 1   | 5         | North America |
| 15 | 9         | Railroad   | USA    | 3006   | 1   | 5         | North America |
| 16 | 8         | Railroad   | USA    | 3106   | 0   | 0         | North America |
| 17 | 8         | Railroad   | USA    | 3206   | 0   | 0         | North America |
| 18 | 8         | Railroad   | USA    | 3306   | 0   | 0         | North America |
| 19 | 8         | Railroad   | USA    | 3506   | 0   | 0         | North America |
| 20 | 8         | Railroad   | USA    | 3606   | 0   | 0         | North America |
| 21 | 8         | Railroad   | USA    | 3706   | 0   | 0         | North America |
| 22 | 8         | Railroad   | USA    | 3806   | 0   | 0         | North America |
| 23 | 9         | Railroad   | USA    | 3906   | 1   | 5         | North America |

Show All Features

6. Click the Attribute Table button in the toolbar: `guiabel: 'Select features using an expression'`.

Attribute table - ne\_10m\_railroads\_north\_america :: Features total: 1127, filtered: 1127, selected: 0

|    | scalerank | Select features using an expression | uident | add  | natrscale | continent       |
|----|-----------|-------------------------------------|--------|------|-----------|-----------------|
| 0  | 8         | Railroad                            | USA    | 1506 | 0         | 0 North America |
| 1  | 9         | Railroad                            | USA    | 1606 | 1         | 5 North America |
| 2  | 8         | Railroad                            | USA    | 1706 | 0         | 0 North America |
| 3  | 8         | Railroad                            | USA    | 1806 | 0         | 0 North America |
| 4  | 8         | Railroad                            | USA    | 1906 | 0         | 0 North America |
| 5  | 8         | Railroad                            | USA    | 2006 | 0         | 0 North America |
| 6  | 8         | Railroad                            | USA    | 2106 | 0         | 0 North America |
| 7  | 9         | Railroad                            | USA    | 2206 | 1         | 5 North America |
| 8  | 8         | Railroad                            | USA    | 2306 | 0         | 0 North America |
| 9  | 8         | Railroad                            | USA    | 2406 | 0         | 0 North America |
| 10 | 8         | Railroad                            | USA    | 2506 | 0         | 0 North America |
| 11 | 8         | Railroad                            | USA    | 2606 | 0         | 0 North America |
| 12 | 8         | Railroad                            | USA    | 2706 | 0         | 0 North America |
| 13 | 8         | Railroad                            | USA    | 2806 | 0         | 0 North America |
| 14 | 9         | Railroad                            | USA    | 2906 | 1         | 5 North America |
| 15 | 9         | Railroad                            | USA    | 3006 | 1         | 5 North America |
| 16 | 8         | Railroad                            | USA    | 3106 | 0         | 0 North America |
| 17 | 8         | Railroad                            | USA    | 3206 | 0         | 0 North America |
| 18 | 8         | Railroad                            | USA    | 3306 | 0         | 0 North America |
| 19 | 8         | Railroad                            | USA    | 3506 | 0         | 0 North America |
| 20 | 8         | Railroad                            | USA    | 3606 | 0         | 0 North America |
| 21 | 8         | Railroad                            | USA    | 3706 | 0         | 0 North America |
| 22 | 8         | Railroad                            | USA    | 3806 | 0         | 0 North America |
| 23 | 9         | Railroad                            | USA    | 3906 | 1         | 5 North America |

Show All Features

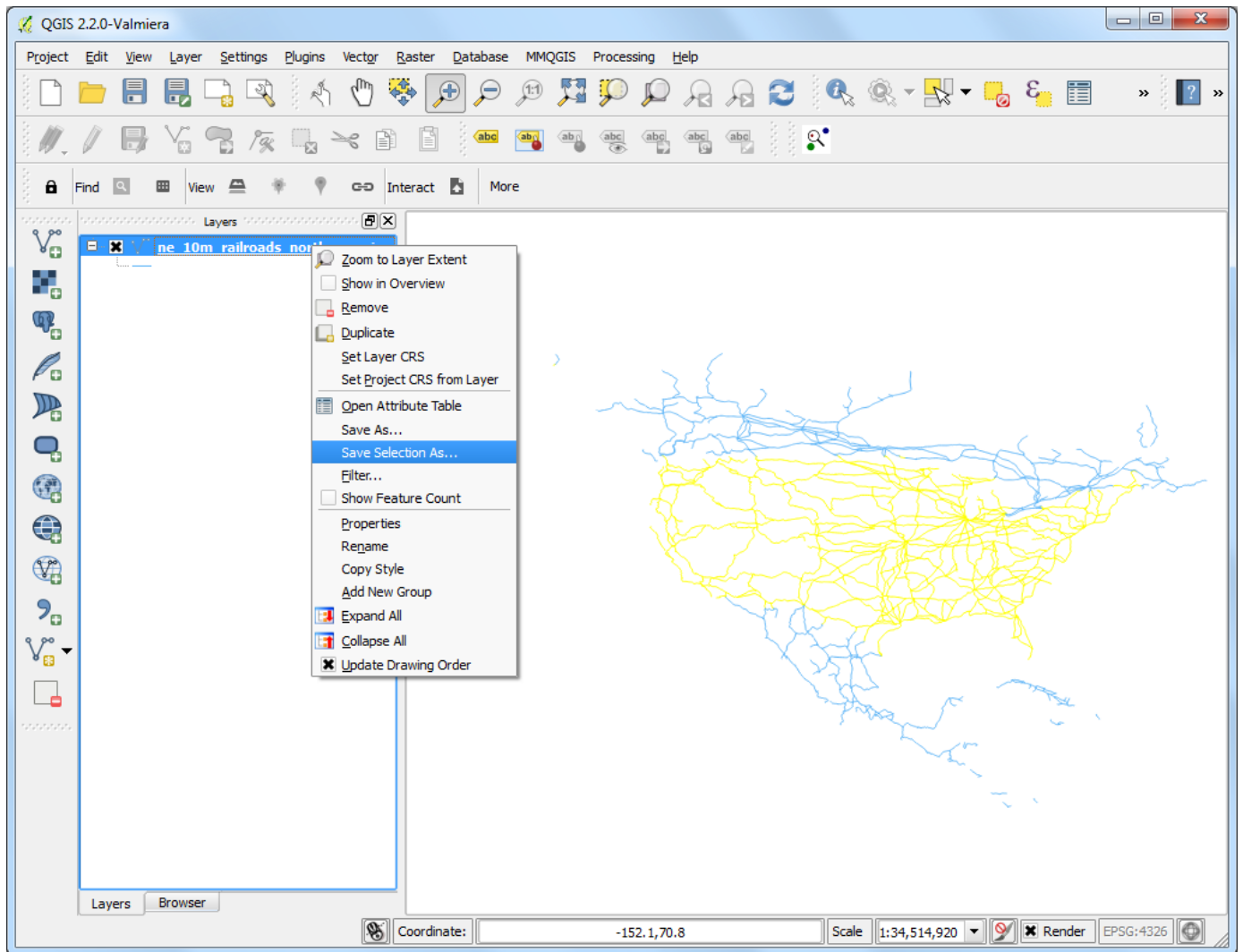
7. Select By Expression dialog box. Functions list Fields and Values sov\_a3, Expression: "sov\_a3" = 'USA', Select, Close.



8. Back in the main QGIS window, you will see that all lines that fall in USA are selected and appear in yellow.



9. `ne_10m_railroads_north_america`, `:guilabel: Save Selection As...`



10. `guiabel: `Browse`` `usa_railroads.shp``  
`CRS`` `guiabel: `Browse``

## Note

CRS `EPSG:4326`  
`(CRS)` `**degrees**`  
`square degrees**` `**meters` `**feet**`





11. :guilabel: Filter` :guilabel: north america equ` :guilabel: CRS`  
:guilabel: North\_America\_Equidistant\_Conic EPSG:102010`  
:guilabel: OK`



12. □ □□□ □□ □□ □□□ Save vector layer as... □□□□□□ □□ □□ □□ □□  
:guilabel: `Add saved file to map` □ □□□ :guilabel: `OK` □ □□□□.



13. □□ □□□□ □□□ □□□ □□□□ □□□  
 usa\_railroads`~■■■■■ QGIS■ ■■■■. ■■■■ ``ne\_10m\_railroads\_north\_america  
 □□□□ □□□□ □□□□ □□□ □□□ □□□□ □□□ □□□ □□□.





15. `Toggle editing` `Open field calculator`

Attribute table - usa\_railroads :: Features total: 752, filtered: 752, selected: 0



|    | scalerank | featuredata | sov_a3 | uident |   | continent     |
|----|-----------|-------------|--------|--------|---|---------------|
| 0  | 8         | Railroad    | USA    | 1506   | 0 | North America |
| 1  | 9         | Railroad    | USA    | 1606   | 1 | North America |
| 2  | 8         | Railroad    | USA    | 1706   | 0 | North America |
| 3  | 8         | Railroad    | USA    | 1806   | 0 | North America |
| 4  | 8         | Railroad    | USA    | 1906   | 0 | North America |
| 5  | 8         | Railroad    | USA    | 2006   | 0 | North America |
| 6  | 8         | Railroad    | USA    | 2106   | 0 | North America |
| 7  | 9         | Railroad    | USA    | 2206   | 1 | North America |
| 8  | 8         | Railroad    | USA    | 2306   | 0 | North America |
| 9  | 8         | Railroad    | USA    | 2406   | 0 | North America |
| 10 | 8         | Railroad    | USA    | 2506   | 0 | North America |
| 11 | 8         | Railroad    | USA    | 2606   | 0 | North America |
| 12 | 8         | Railroad    | USA    | 2706   | 0 | North America |
| 13 | 8         | Railroad    | USA    | 2806   | 0 | North America |
| 14 | 9         | Railroad    | USA    | 2906   | 1 | North America |
| 15 | 9         | Railroad    | USA    | 3006   | 1 | North America |
| 16 | 8         | Railroad    | USA    | 3106   | 0 | North America |
| 17 | 8         | Railroad    | USA    | 3206   | 0 | North America |
| 18 | 8         | Railroad    | USA    | 3306   | 0 | North America |
| 19 | 8         | Railroad    | USA    | 3506   | 0 | North America |
| 20 | 8         | Railroad    | USA    | 3606   | 0 | North America |
| 21 | 8         | Railroad    | USA    | 3706   | 0 | North America |
| 22 | 8         | Railroad    | USA    | 3806   | 0 | North America |
| 23 | 9         | Railroad    | USA    | 3906   | 1 | North America |

Show All Features

16. `Field Calculator` `Create a new field` `Output field name` `**length_km**` `Output field type` `Decimal number (real)` `Precision` `**2**` `Function list` `Geometry` `$length` `Expression` `$length / 1000` `CRS` `meters` `**km**` `OK`



17. 在 Attribute Table 中，单击 `length_km` 列，单击 `Toggle editing` 按钮。







Basics statistics

Input Vector Layer  
usa\_railroads

☐ Use only selected features

Target field  
length\_km

Statistics output

| Parameter               | Value          |
|-------------------------|----------------|
| Mean                    | 127.751569149  |
| StdDev                  | 125.80562595   |
| Sum                     | 96069.18       |
| Min                     | 0.01           |
| Max                     | 936.6          |
| N                       | 752.0          |
| CV                      | 0.984767755... |
| Number of unique values | 743            |

Press Ctrl+C to copy results to the clipboard

0% OK Close