Golf Course Water Use Survey

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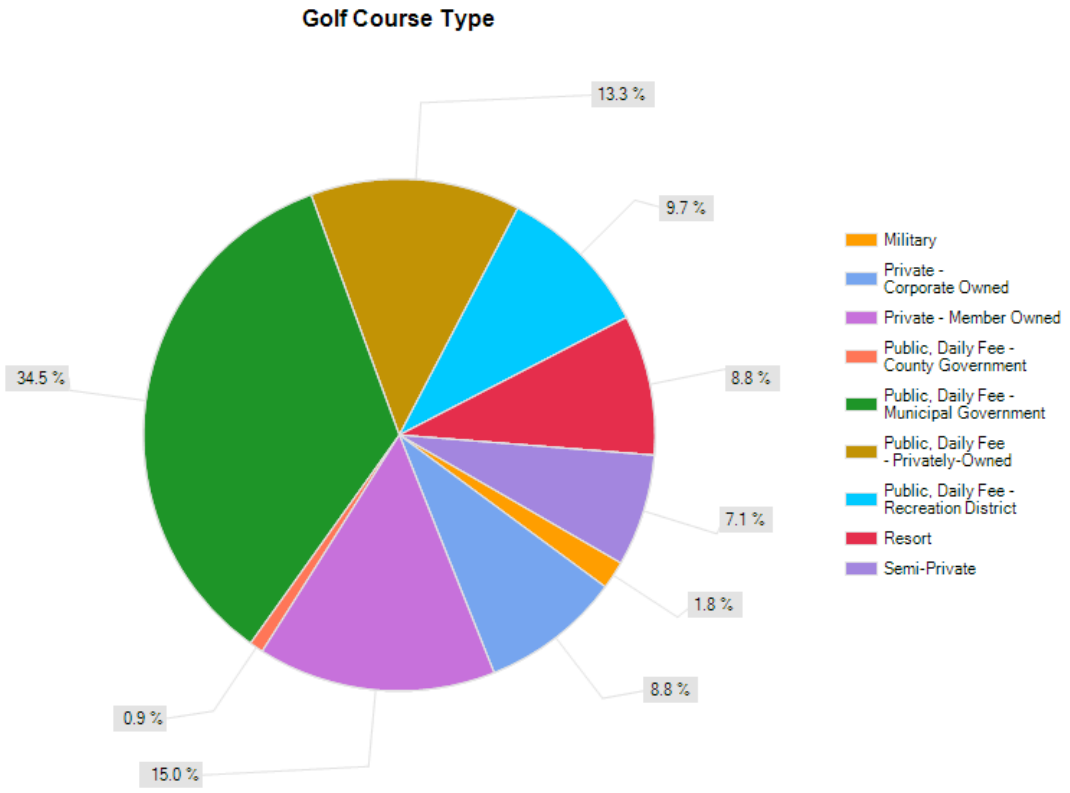
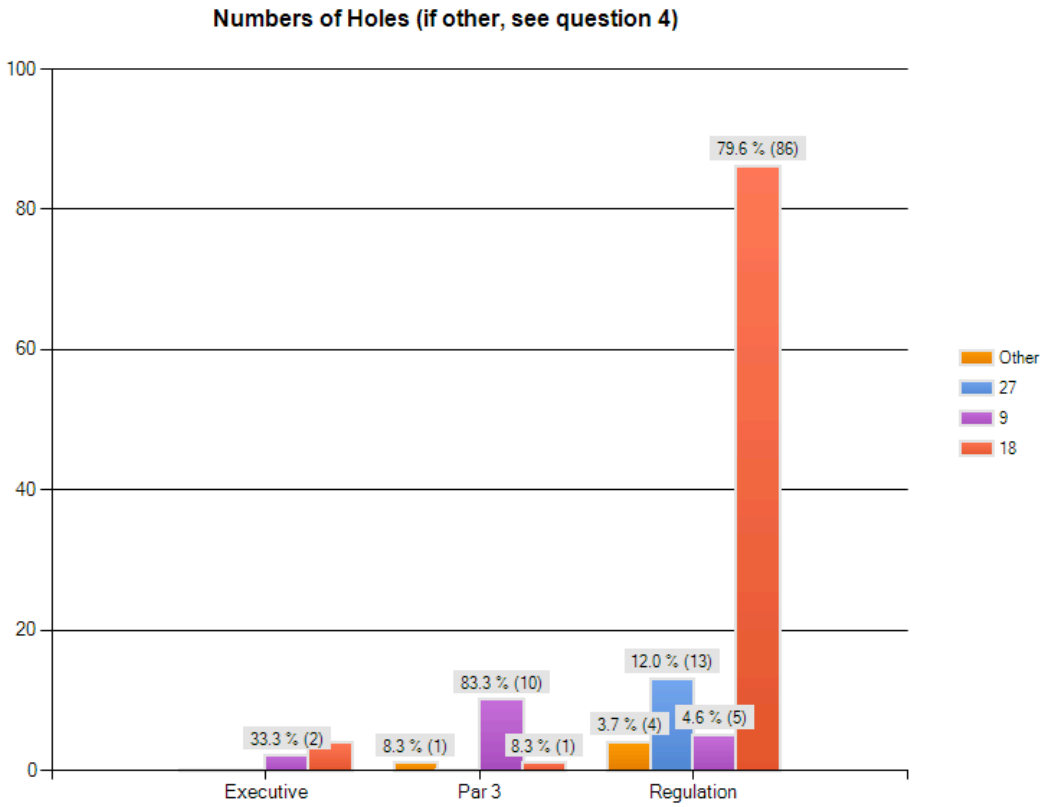
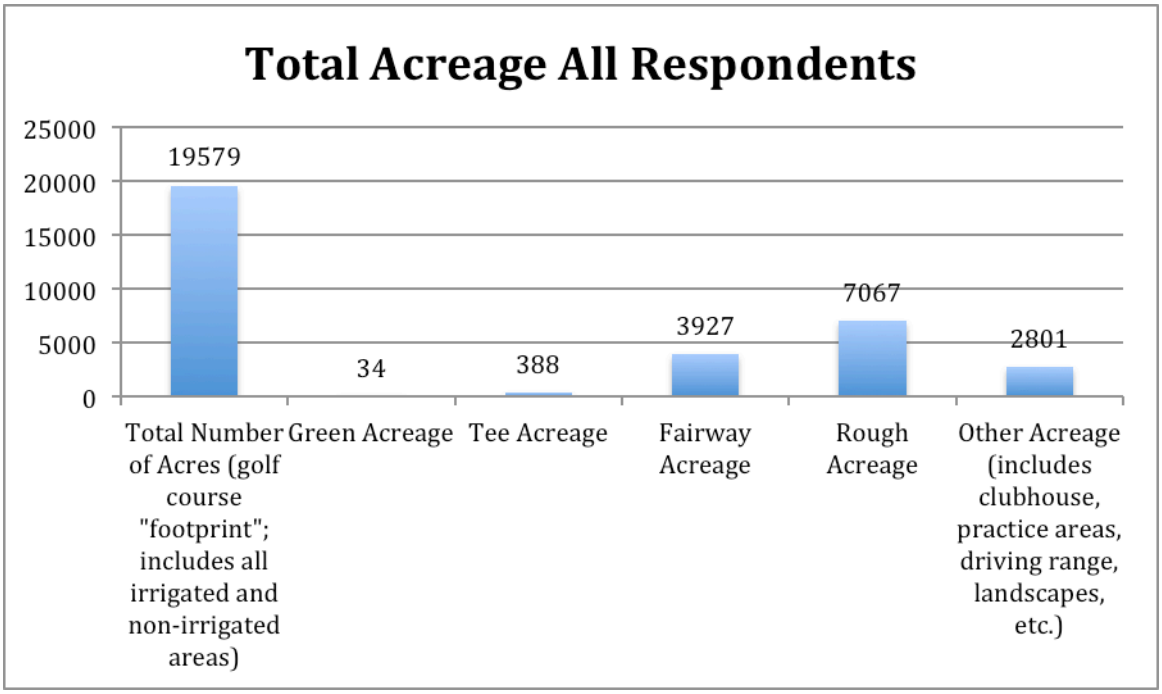
As reported by the 115 respondents, the largest percentage of the golf courses was Public, Daily Fee, Municipal courses at 34.5%. The smallest percentage of the courses was Military at .9%.

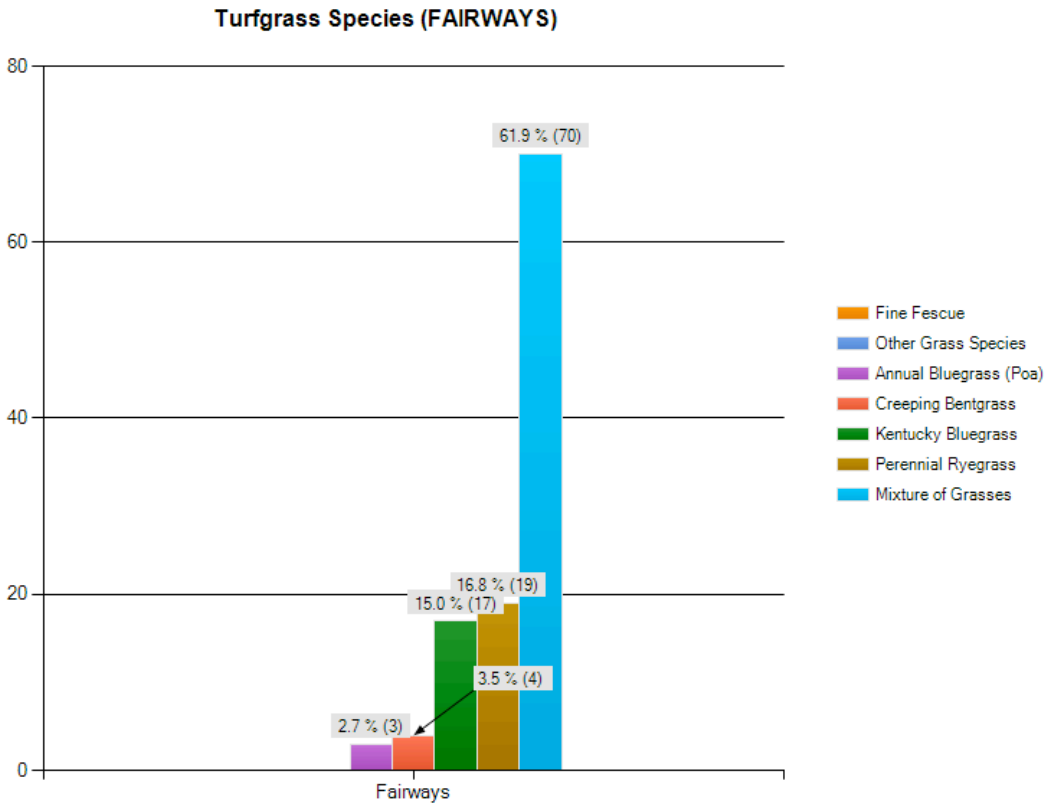




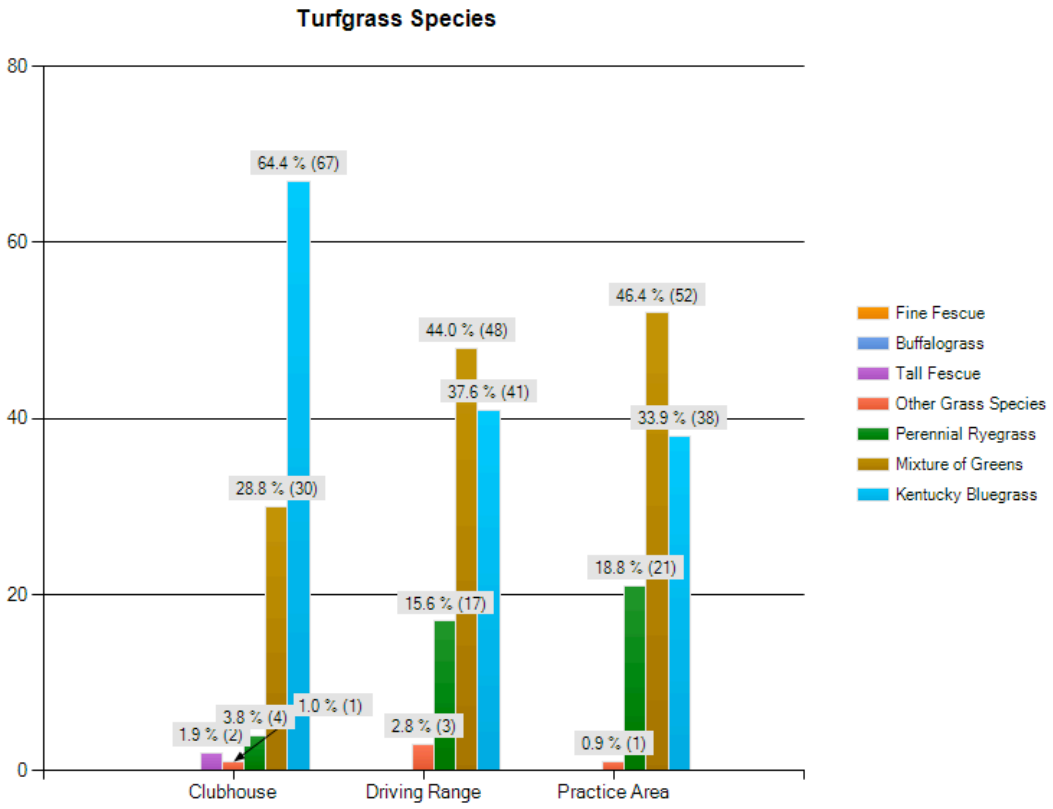
Above: This illustration simply represents the number of Executive, Par 3, and Regulation courses that were reported. The color key represents the number of holes on each course.



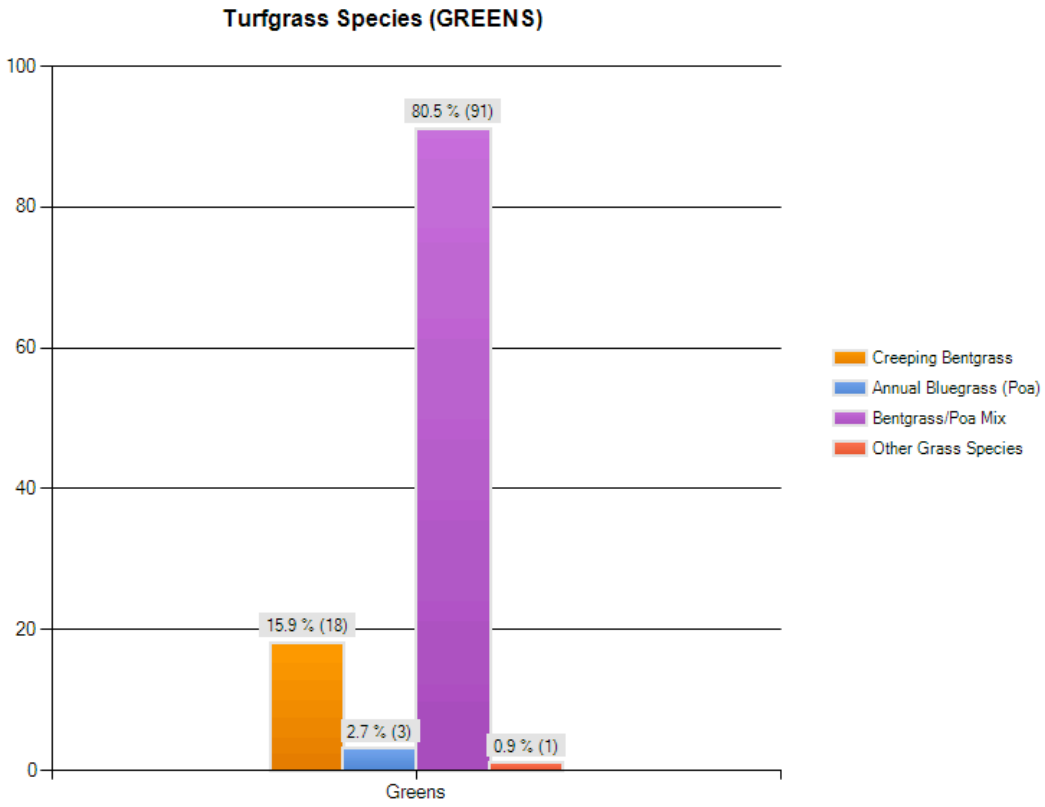
Above: Represented in this bar graph is the sum of the 115 courses total acreage and the breakdown/classification of those acres.



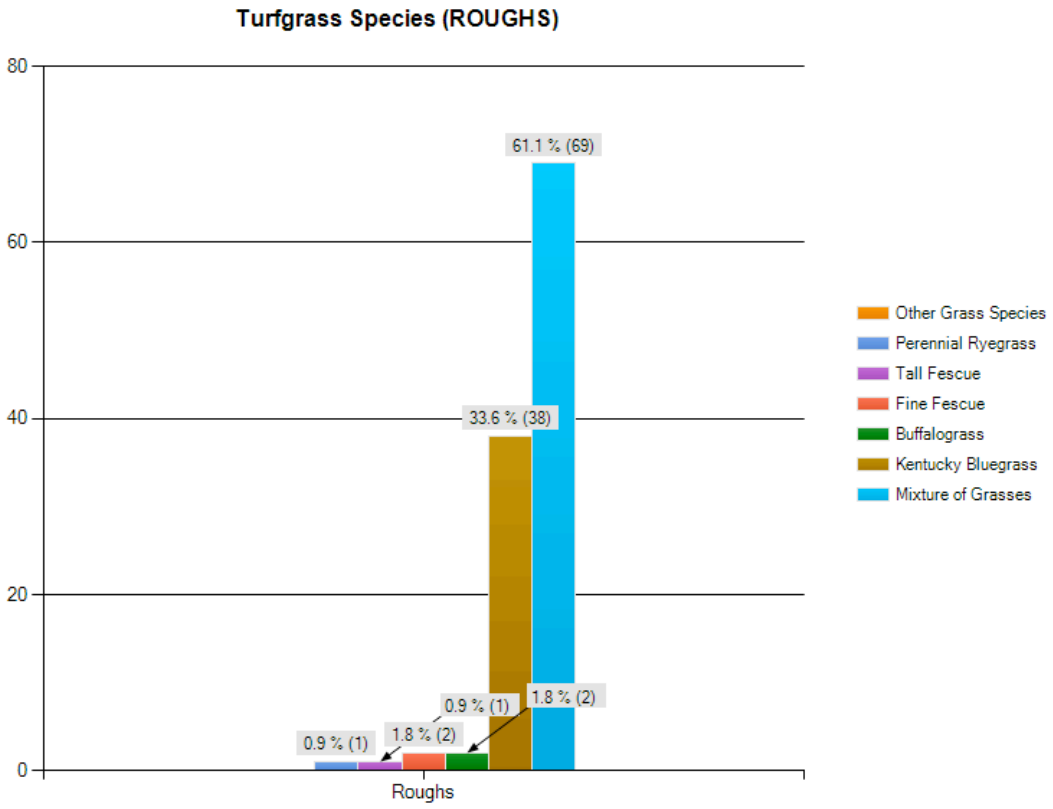
The most common turfgrass species found in the fairways was a mixture of grasses. One might conclude that the mixture could be of the grasses listed in the graph key. Of the reported species, the most predominant single species found in the fairways was Perennial Ryegrass followed by Kentucky Bluegrass.



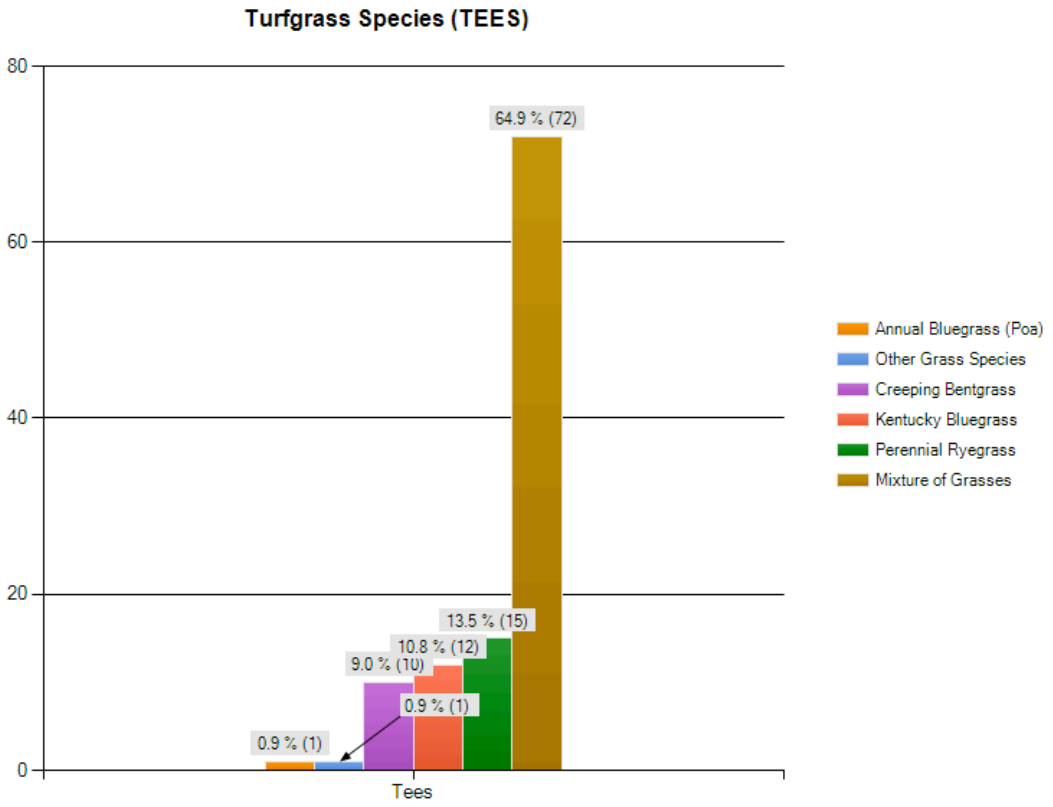
Depicted above are turfgrass managed areas other than the actual holes or “track”. As reported, these areas generally consist of the turfgrass species Kentucky Bluegrass, “Mixture of Grasses”, or Perennial Ryegrass.



The Greens were overwhelmingly represented by a Bentgrass/Poa mix. This is understandable due to the sequential order of Bentgrass followed by Annual Bluegrass(Poa) in the chart. The domination of the Bentgrass/Poa mix is relative to the management practices used on greens compared to other golf course areas.



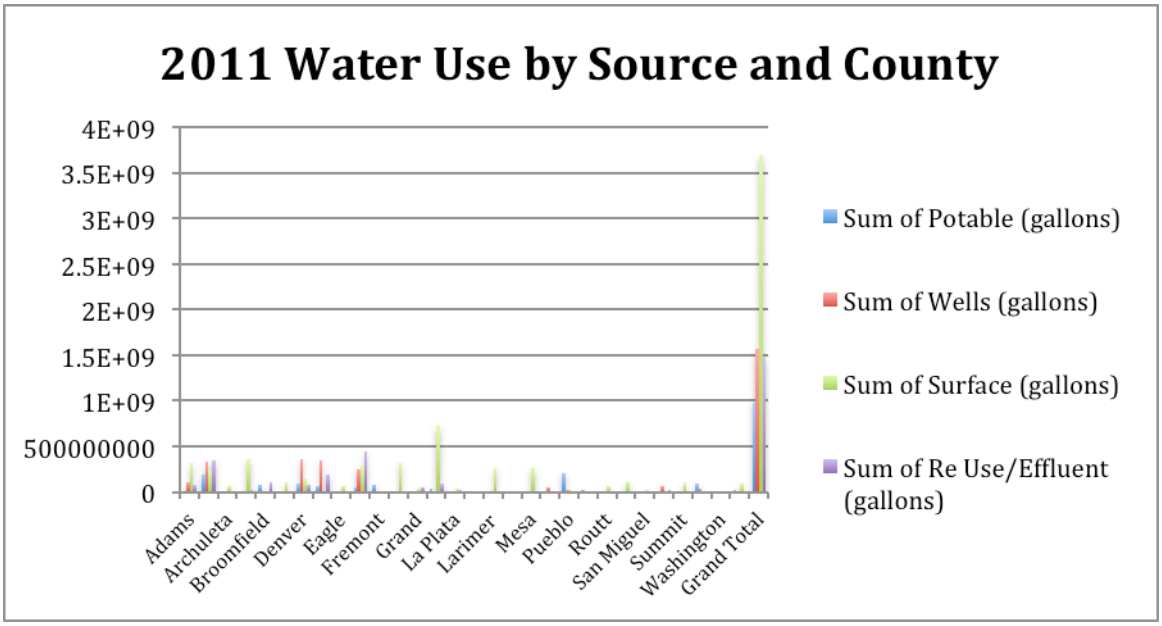
As in the fairways, the rough's most prominent turfgrass species was also represented as "Mixture of Grasses". Kentucky Bluegrass was the second most common species found in the rough.



The tees were also mostly a mixture of turfgrass species as were the roughs and fairways. As reported in the earlier data, the mixture could mainly be derived of Kentucky Blugrass and Perennial Ryegrass because of their consistent second and third place dominance in the collection data.

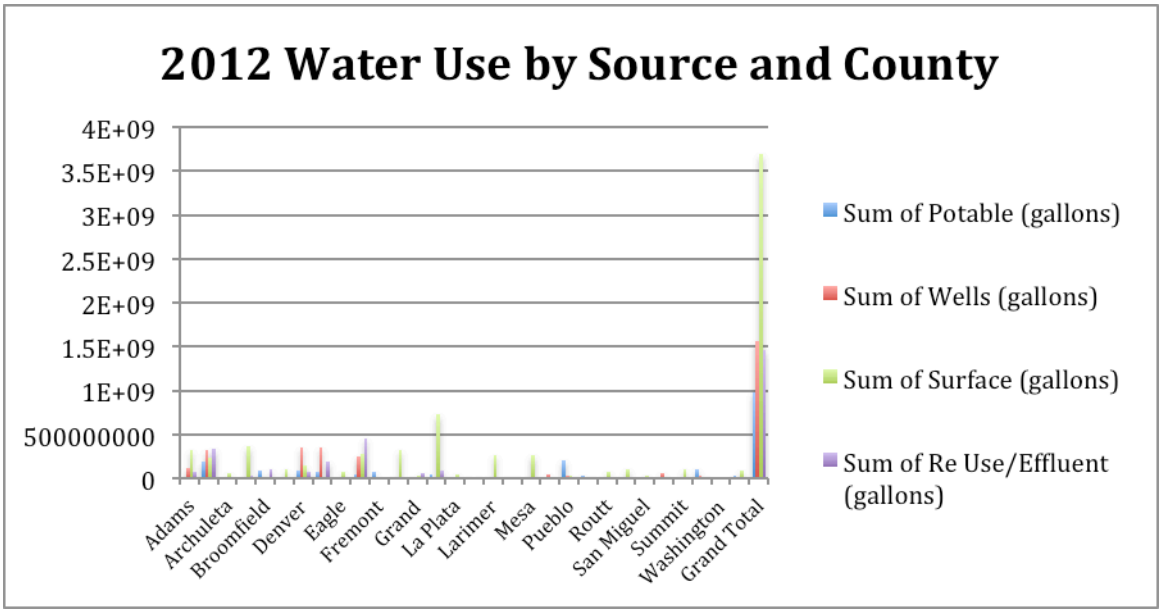
Water Source in 2011 and 2012 by county

2011 Source by County



All counties represented in the survey are in the chart above, but not all county names are visible due to formatting issues.
Multiple sources attribute to the irrigation or water supply of golf courses. The following graphs illustrate individual counties and the water sources used for each county. Some counties have the capability of using multiple water sources while others may be limited in their irrigation practices. The X-axis represents the counties and the Y-axis represents 0 gallons to 4,000,000,000 used respectively. The grand total of the amount of water used should be noted as well as the year-to-year usage between 2011 and 2012.

2012 Source by County



This graph is the same as the previous graph except it represents 2012 water source and usage. Again, all counties represented in the survey are in the chart above, but not all county names are visible due to formatting issues.

2011 Price by county and source

	2011 Price ($ per 1,000 gallons)		
	High (County)	Low (County)	Average
Potable	6.90 (El Paso)	0.59 (Broomfield)	3.14
Wells	3.64 (Douglas)	0.01 (Summit-UT)	1.46
Surface	2.96 (Arapahoe)	0.01 (Arapahoe)	1.33
Reuse	2.69 (Laramie-WY)	0.80 (El Paso)	1.8

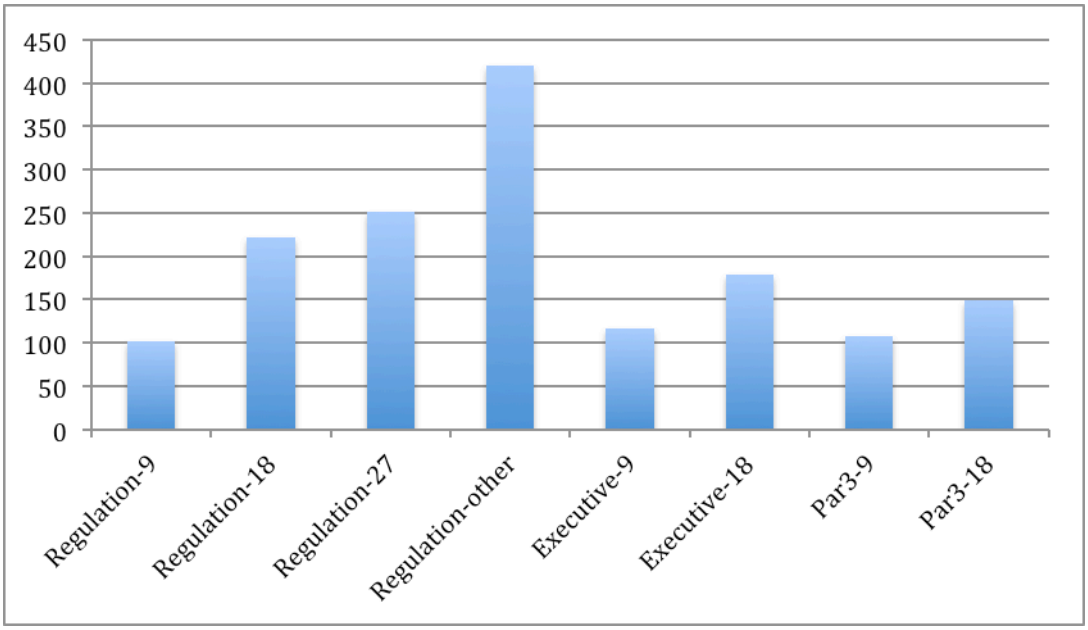
Water prices can vary by source, region, county, year and additional factors. The above and below tables represent the price per 1000 gallons of water in dollar amounts and the comparison of those amounts between 2011 and 2012.

2012 Price by county and source

	2012 Price ($ per 1,000 gallons)		
	High (County)	Low (County)	Average
Potable	9.61 (Arapahoe)	0.62 (Broomfield)	3.6
Wells	3.64 (Douglas)	0.14 (Adams)	1.3
Surface	13.97 (Denver)	0.01 (Arapahoe)	1.82
Reuse	2.69 (Laramie-WY)	0.80 (El Paso)	1.83

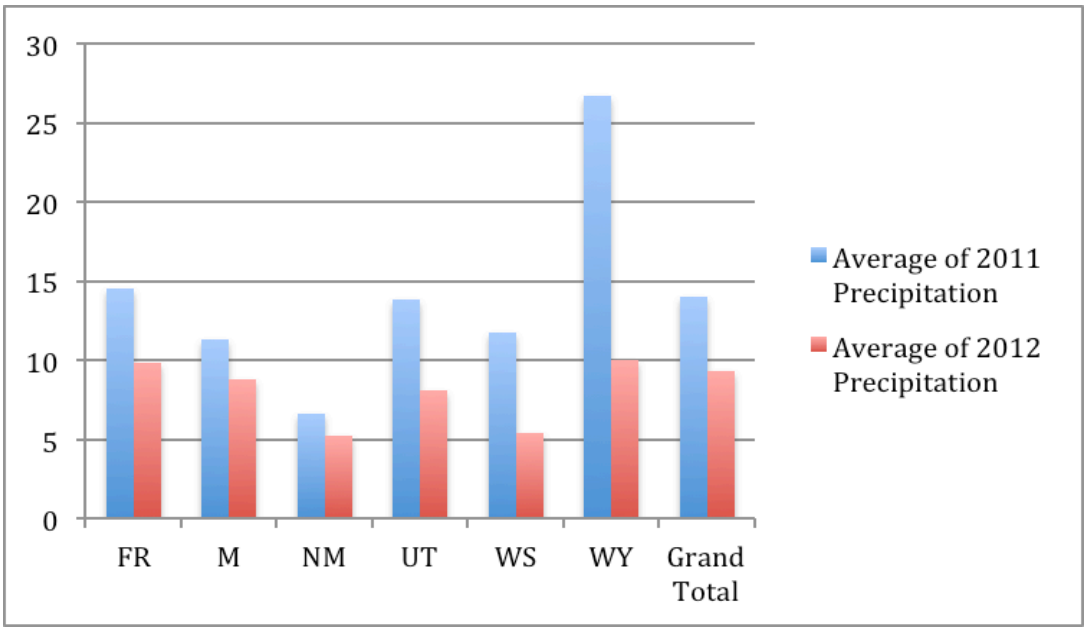
This table is the same as the previous table, except it represents 2012 source and cost.

Average annual output in Acre Feet by #holes; 9, 18, 27



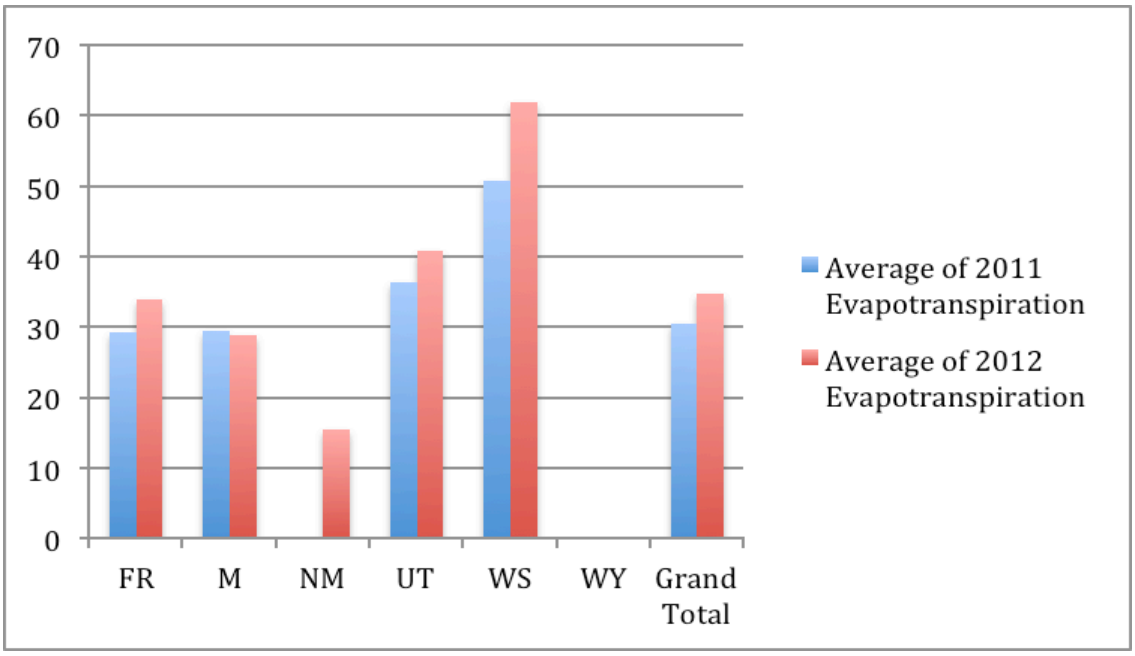
The Y-axis represents acre-feet. One acre-foot of water (the amount of water covering one acre to a depth of one foot) equals 326,000 gallons or 34,560 cubic feet of water, and weighs 2.7 million pounds. Course classification is based on number of holes and Regulation, Executive or Par 3.

2011 and 2012 annual precipitation amounts by region, Front Range, Mountains, New Mexico, Utah, Western Slope and Wyoming.



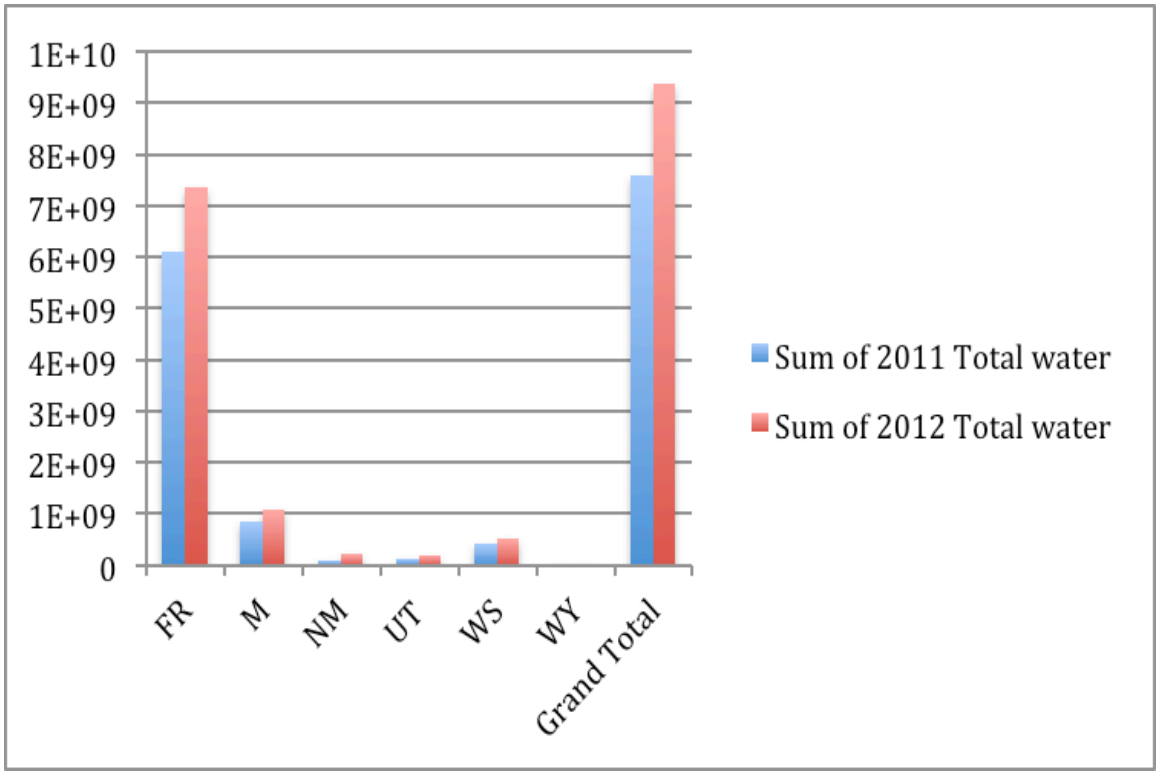
The numbers on the Y-axis represent annual precipitation amounts in inches. This graph is a regional representation/comparison of precipitation between 2011 and 2012. One could conclude that 2012 was a much drier year than 2011.

2011 and 2012 annual Evapotranspration (ET) rates by region, Front Range, Mountains, New Mexico, Utah, Western Slope and Wyoming.



Evapotranspiration (ET) is the sum of evaporation and plant transpiration from the Earth's land surface to the atmosphere. Evaporation accounts for the movement of water to the air from sources such as the soil, canopy interception, and water bodies. Transpiration accounts for the movement of water within a plant and the subsequent loss of water as vapor through the stomata and its leaves.

Amount of water used per irrigated acres by region in gallons.



The Y-axis represents 0 gallons to 1,000,000,000,000 gallons of irrigated water. The X-axis represents the region the water was used. (Note- Wyoming reported but total was too minimal to graph.)

Please note: the graphs and charts representing the data collected in this statistical analysis of water usage was derived from surveys reported by each of the 115 golf courses represented. In certain cases/instances data had to be omitted due to discrepancies or non-graphical responses. Example: if a survey question asked for a number and the respondent answered with “not sure” the value was not 0, but just simply omitted in the graph or chart.