



# The Economic Contribution of Arizona's Golf Industry

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Prepared for:

**Arizona Alliance for Golf**



**By: Rounds Consulting Group**



# Executive Summary

Golf is integral to life in Arizona. The desert landscape and temperate climate create ideal conditions for players and enthusiasts of all ages and skill levels. Each year, millions of rounds of golf are played by both Arizona residents and out-of-town visitors. However, the importance of the golf industry extends far beyond the sport itself.

The golf industry in Arizona impacts a variety of other sectors across the statewide economy. For example, golf directly supports business operations and creates jobs in the tourism, retail, and manufacturing industries, to name a few.

Additionally, the golf industry has been and will continue to be an effective advocate for promoting sustainability throughout Arizona by developing new systems and technologies that enhance water conservation and help reduce the harmful impacts of the heat island effect that occur in the urban areas of the State.

In 2020, Rounds Consulting Group, in partnership with the Arizona Alliance for Golf, conducted a study of Arizona’s golf industry.

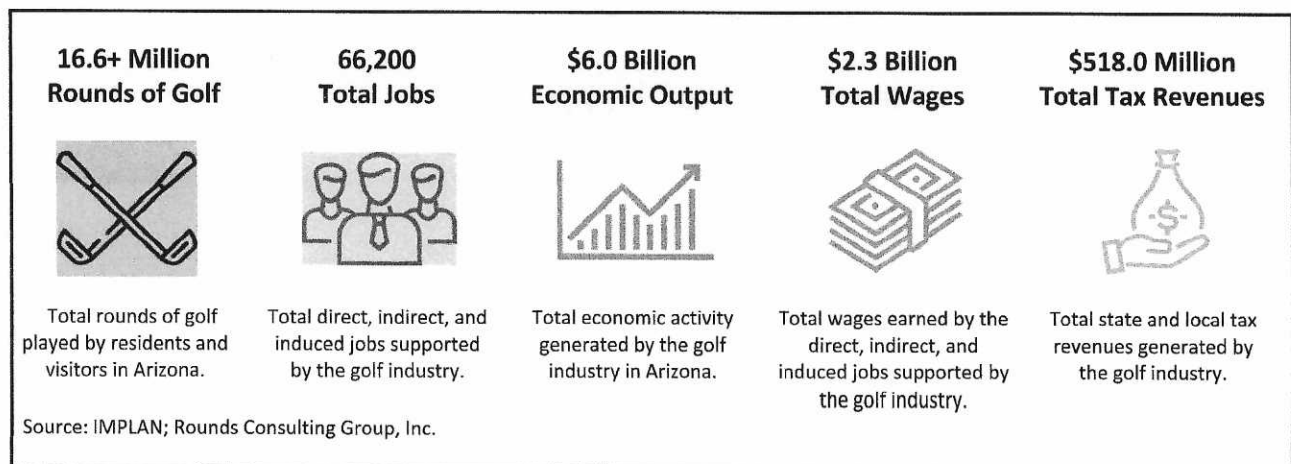
That report captured and quantified all the activity and business operations that are both directly and indirectly influenced by Arizona’s golf industry.

*“The business of golf has far reaching impacts. Each golf round played represents a reverberation of economic activity and an improvement in quality of life.”*

- Mike Loustalot, Co-Founder Sagacity Golf

The following report contains the findings from an analysis of the golf industry and highlights the total economic value of the golf industry in 2021 and how the golf industry’s recent performance compares to its performance in a previous analysis of 2019.

## Annual Impacts - Why Arizona’s Golf Industry Matters





## Key Findings

- Key Economic Driver – Arizona’s golf industry supports 66,200 jobs for Arizona residents. These include those that are employed at golf courses and golf-related businesses in the tourism, retail and manufacturing industries. In total, the golf industry in Arizona generates an estimated \$6.0B in annual economic activity and produces \$518.0M in annual state and local tax revenues.
- Strong Growth - Golf in Arizona continues to experience strong growth, even during the COVID-19 pandemic. The National Golf Foundation reported that in 2021, over 16.6M rounds of golf were played in Arizona. This represented a 4% increase from 2020.
- Popularity - People play more golf in Arizona compared to the national average. Approximately 10% of Arizona’s population above the age of 6 played a round of golf in 2021. This compared to the national average of 8%.
- Properly Planned - The National Golf Foundation ranked Arizona 30<sup>th</sup> in the nation for golf accessibility, meaning the number of golf holes per person in Arizona is appropriately planned, if not slightly conservative. This indicates the industry is not oversaturated in Arizona and should be supported as a major economic contributor.
- Business Cycle Resistant - Arizona’s golf courses and non-course golf facilities (e.g., Topgolf, stand-alone driving ranges, etc.) employed an estimated 19,300 people in 2021 which was an 8.9% increase from 2019 which exceeded the overall statewide employment growth over the same timeframe.
- Tourism Supporter - Golf supports the growth of Arizona’s tourism industry. In 2021, the Arizona Office of Tourism estimated that 9.0% of visitors played golf while visiting Arizona. This compared to 6.0% of visitors in 2019.
- Small Business Supporter - The golf industry also supports dozens of local businesses that operate in a variety of industries, including retail, manufacturing, professional services, and software development, among others. The industry is a true small business advocate.
- Environmental Focus - The golf industry is also enhancing efforts to address environmental issues such as water conservation and the rising temperatures of Arizona’s urban regions (i.e., the heat island effect).
- Partnership Opportunities - Partnerships with academic, research, and other non-profit organizations promote the continued development of high-tech irrigation systems that maximize water efficiency and the cultivation of various climate-resistant breeds of turf.
- Significant Heat Island Value - A heat assessment conducted by The Nature Conservancy found that the rising ambient temperatures due to the heat island effect in Arizona’s urban centers could cost residents an estimated \$1.9B annually in additional utility and health related costs by 2050. Using these values, if golf courses did not exist, approximately \$500.0M would be needed on efforts to reduce the heat island effect. In other words, the presence of golf courses in the State’s urban areas represent a savings of \$500.0M.



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# Introduction

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In 2020, Rounds Consulting Group, Inc. (“RCG”) was contracted by the Arizona Alliance for Golf (“AAG”) to conduct an economic impact analysis of Arizona’s golf industry. The goal of the analysis was to assess all golf related activities that take place in Arizona and quantify the total impact that these activities have on the State’s economy.

***Since the release of the previous report, golf activity has continued to grow and expand throughout the State.***

Golf courses were among the few businesses that remained operational during the Covid-19 pandemic, providing a necessary outlet for exercise, fresh air, and social connection. Additionally, work-from-home mandates and stimulus spending helped people overcome what the National Golf Foundation (“NGF”) identified as key obstacles for increasing recreational golf participation (i.e., not having enough time and high cost). As a result, golf has become more accessible than ever before, both nationwide as well as in Arizona.

The golf industry has also begun to incorporate new technologies and amenities (e.g., driving ranges equipped with Toptracer ball tracking technology, lighted practice areas, expanded food and beverage capacity, etc.) to appeal to a larger player base. These adjustments are likely to support the public’s growing enthusiasm for golf.

In light of this growth, RCG has again collaborated with the AAG to provide an update to the previous economic impact report. This updated report will provide a brief overview of the existing national and statewide golf industry and assess the total economic impact of golf-related operations across the State.

***This report also examines the golf industry’s role in the research and development of sustainable energy and water conservation and provides recommendations on how the industry can utilize its unique position to further address these pressing issues.***





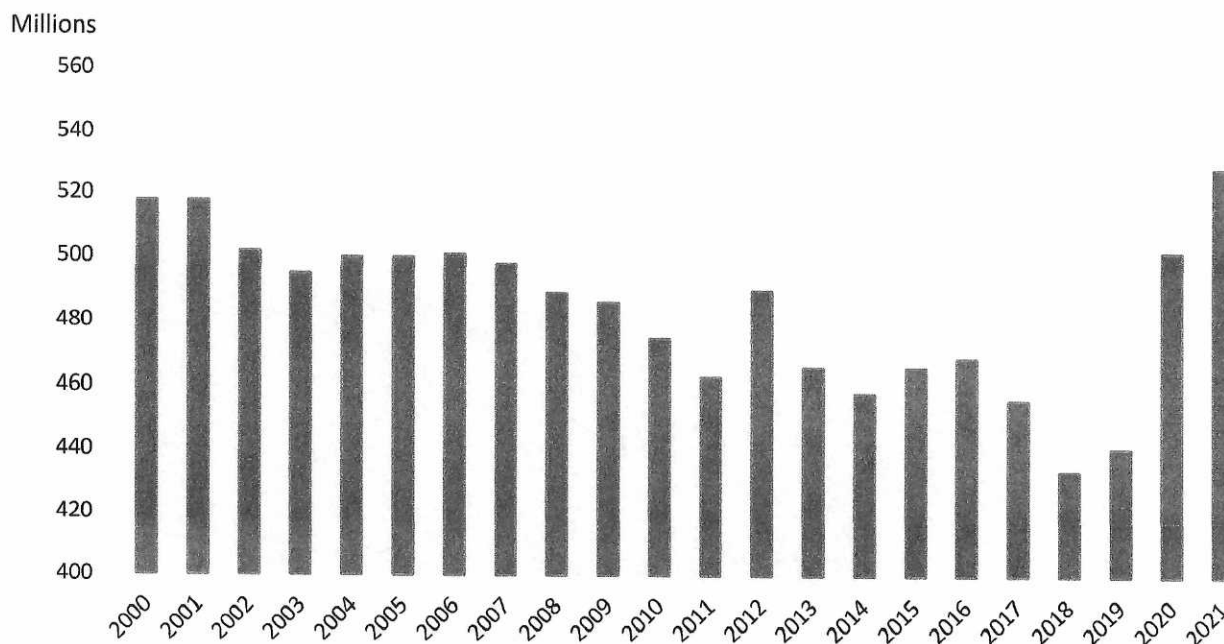


# Golf Industry Overview

The golf industry experienced strong growth in the U.S. during the COVID-19 pandemic in 2020 and this growth continued through 2021. The NGF estimated that more than 502.0M rounds of golf were played across the nation in 2020. This represented a 13.8% increase from 2019. This growth continued in 2021 when over 529.0M rounds of golf were played. This represented a 5.6% increase from 2020 and was the highest total number of rounds played on record (see Figure 1).

In addition to the record setting participation, the number of beginner golfers (e.g., those that played for the first time) increased by 28.0% from 2019 to 2020. Approximately 27.0% of beginner golfers are expected to be converted to committed golfers (e.g., golfers that play at least 8 rounds per year) while 16.0% will play approximately 5 rounds per year. *These rates have increased over the past 5 years, according to the NGF, indicating that golf is becoming increasingly accessible.*

**Figure 1: Total Number of Golf Rounds Played in the U.S. 2000-2021**



Source: National Golf Foundation

Arizona's golf industry followed the national trend and even outpaced the national average in several categories. In 2021, there were 674,200 golfers in Arizona, a 3.8% increase from 2020. The golf participation rate in Arizona (e.g., the share of the population above the age of 6 that played golf on a course a least once) was 9.8% compared to the national average of 8.2%.

A total of 16.6M rounds of golf were played in Arizona in 2021. This was a 3.9% increase from 2020. The average Arizona golfer played 24.6 rounds in 2021. This was higher than the national average of 21.1 rounds.<sup>1</sup>

<sup>1</sup> The National Golf Foundation



*The above-average participation indicates that the Arizona golf industry is an important element to the State's overall economy. An economic model was developed to quantify the value of the industry's activities.*

The model considers two primary components. The first is the operations of the State's golf courses and non-course golf facilities (i.e., Topgolf, stand-alone driving ranges, etc.) while the second is the operations of golf-related businesses whose activity is directly affected by the performance of the golf industry (i.e., golf equipment manufacturers and retailers, golf-related tourism, etc. An overview of each of these components is included below.

## **Arizona's Golf Courses and Non-Course Facilities**

There are over 300 facilities that operate a total of 370 golf courses in Arizona, as of 2021. An estimated 283 (77.0%) of Arizona's courses are open to the public with 244 owned and managed by private companies and 39 owned by local municipalities. There are 87 (24.0%) private golf courses throughout the State. Private golf courses are not open to the public and require a membership to utilize the course and facility amenities.

According to the NGF, there are an average of 314 golf courses per state nationwide. Arizona has 17.7% more golf courses than the national average. This indicates that golf is a central component to life in Arizona.

***Special Note: The State is not over-saturated with golf courses. In fact, Arizona has a slightly below average but well considered balance of golf opportunities when compared to the size of the population and tourism base.***

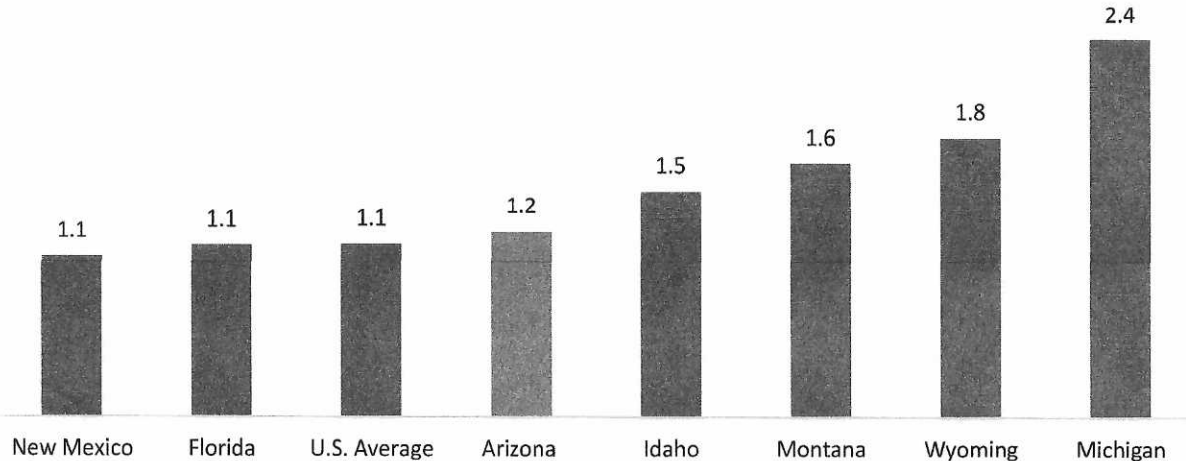
Overall, Arizona is ranked 30<sup>th</sup> in the nation in terms of golf concentration (e.g., the number of total holes of golf per person). Additionally, RCG examined how the number of golf courses compares to the employment base of the overall tourism industry in Arizona relative to various other states and the nation. As of 2021, there were a 1.2 golf courses per 1,000 tourism industry employees in Arizona. This was slightly above the national average of 1.1 courses per 1,000 workers.

***This indicates that golf in Arizona is growing in popularity and is not overweighted in terms of scale. This also lends to the argument that the industry should be embraced as an economic contributor.***

Figure 2 displays the number of golf courses per 1,000 tourism industry workers in Arizona compared to various other states and the nation.



**Figure 2: Number of Golf Courses per 1,000 Tourism Industry Workers by State**



Source: National Golf Foundation

Arizona golf courses and golf facilities employed 19,300 people in 2021. This represented an 8.9% increase from 2019 and exceeded pre-pandemic employment levels. The increase in employment is largely due to an increase in activity at Arizona’s golf facilities. The total number of rounds played at Arizona golf courses increased by 4.4% from 2020-2021.

Non-course golf facilities have become increasingly popular in recent years and are an important element to the future growth of the industry. These facilities are designed to enhance the entertainment value of golf while also providing the opportunity to improve a player’s skill without the time commitment of playing on a traditional course. The NGF estimated that there were 7 non-course facilities in Arizona that employed more than 1,500 people in 2021.

As a result of the success of non-course facilities, many golf courses in Arizona have redesigned and improved their practice facilities to include similar amenities and technology as non-course facilities. This will allow golf courses to reach and retain a larger base of potential golfers and further enhance the industry’s impact.

## **Golf-Related Activity in Tangential Industries**

The value of the overall golf industry in Arizona is not limited to just the operations at golf courses and non-course golf facilities. The growth of these operations and the overall health of the golf industry can impact local business operations in the tourism, manufacturing, and retail industries as well.

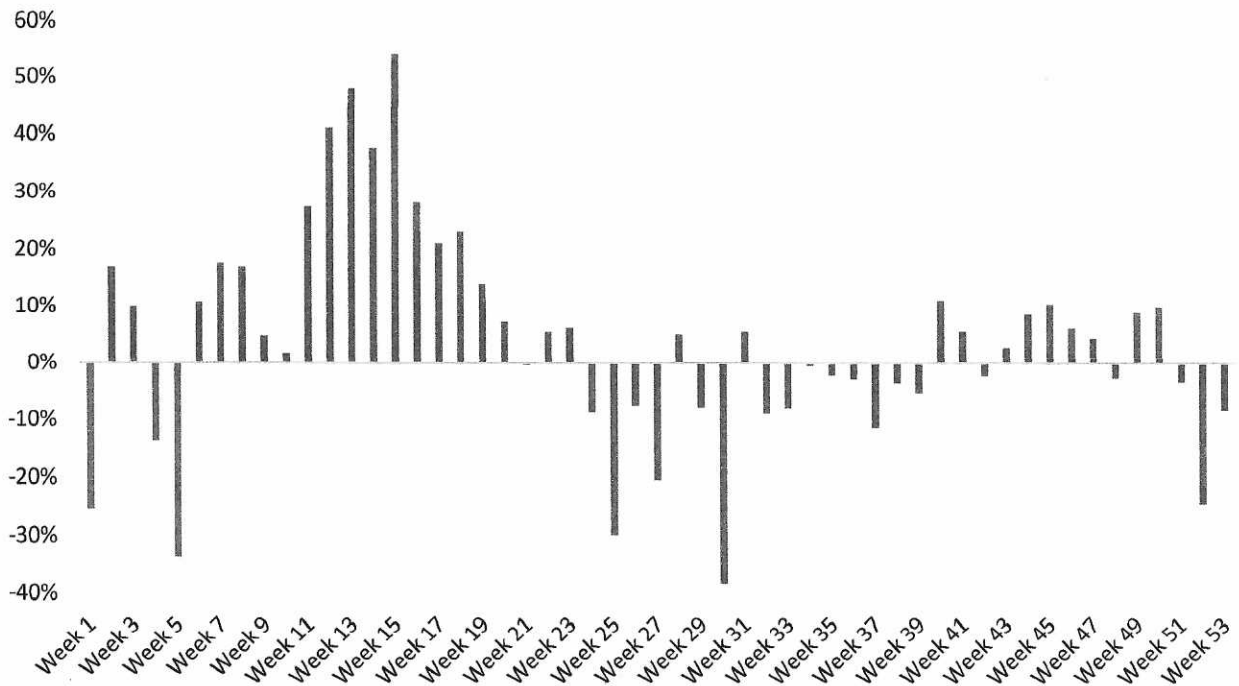
Golf is a key driver of tourism activity in Arizona. Each year, hundreds of thousands of people come to Arizona to either play golf or watch golf. According to the NGF, there were over 60 golf resorts in Arizona in 2021. This represents a relatively high concentration of resort golf courses in Arizona with 0.82 resort courses per 100,000 residents. This compared to the national average 0.35 resort courses per 100,000 residents.





Figure 3 displays the year-over-year change of the weekly number of rounds played in 2021 compared to 2020. The large increase in activity from week 11 through week 19 in 2021 compared to those same weeks in 2020 represents the impact that the travel restrictions and the mandatory closures of hotels and resorts during the Covid-19 pandemic had on the golf industry.

**Figure 3: Annual Change in Arizona Rounds Played – 2020 to 2021**



Source: Sagacity Golf

Additionally, there are a variety of professional and amateur golf events that attract hundreds of thousands of spectators. For example, the WM Phoenix Open, one of the most well-attended events during the Professional Golf Association (“PGA”) season, is played in Arizona each year. While official attendance figures have not yet been released, industry experts estimated that attendance was likely been between 700,000 and 800,000 people over the 5-day event in 2022.<sup>2</sup>

Overall, the Arizona Office of Tourism (“AOT”) estimated that there were 40.9M overnight trips to Arizona in 2021. This was a 2.5% increase from 2020. According to AOT, approximately 9.0% of Arizona’s visitors played golf while on their visit in 2021. This compared to 6.0% of visitors in 2019.

This means that approximately 3.7M people played golf while they were visiting Arizona in 2021. In addition to playing golf, these visitors stayed at local hotels, ate at local food and beverage establishments and spent money on various goods and services. It is estimated that Arizona’s golf visitors spent over \$2.7B on local goods and services in addition to the \$616.2M spent on food and beverages in 2021.

While the entirety of this spending cannot be attributed to Arizona’s golf industry, it is likely that a significant share of these visitors selected Arizona for its golf courses. Furthermore, Arizona served as a host to

<sup>2</sup> <https://www.phoenixmag.com/2022/02/06/2022-waste-management-phoenix-open-field-guide-editors-note/>



numerous events such as corporate retreats, business conferences, private celebrations, etc. because of the State's robust golf industry further increasing visitation.

Golf courses also drive the business operations for retailers of golf equipment, golf apparel, and the providers of golf related services.

These businesses are not directly connected to the operations Arizona's golf courses and non-course facilities but operate in tangential industries. In other words, the health and performance of the businesses in these industries is positively correlated with the health and performance of the golf industry.

Arizona is the headquarters for a variety of companies that maintain operations across the globe. For example, Troon Golf, LLC, an industry leading golf course development and management company that operates in over 45 states and 30 countries is headquartered in Scottsdale, Arizona.



*“Our large groups may not always play golf, but they wouldn't even book their group in a place like Desert Ridge if we didn't have golf as an option for them.”*

- Steve Hart, General Manager & Area General Manager

The Karsten Manufacturing Corporation operates their primary manufacturing facility in Phoenix, Arizona where Ping branded golf clubs are manufactured and distributed internationally.

Parsons Xtreme Golf (“PXG”), who specializes in manufacturing world-renowned custom golf clubs, is also headquartered in Scottsdale, Arizona.

Antigua Apparel is headquartered in Peoria, Arizona. Antigua specializes in the design, manufacture, and distribution of golf apparel that is worn by golfers around the world.

Below is a brief list of additional golf-related businesses that have major operations or are headquartered in Arizona.

- AZ Golf Works
- Communication Links
- Digital Golf Management
- OB Sports Golf Management
- Parsons Extreme Golf
- PGA Tour Superstore
- Sagacity Golf
- Van's Golf Shops

The activity from both golf course and non-course facilities, tourism activity and golf-related business operations all contribute to the total impact of the overall golf industry and are analyzed to identify the extent to which the activity should be considered by the economic and fiscal model developed by RCG. The results of the analysis are detailed in the following section.



# Economic Impact in Arizona

The golf industry creates a significant amount of economic activity throughout Arizona. This includes golf course operations, golf related tourism across the State, retail operations, manufacturing activity, etc. These golf activities were split between three major categories. These categories include golf courses and non-course facility operations, golf-related tourism, and golf-related businesses. Impacts of the categories are outlined below.

## Impact of Golf Course and Non-Course Facility Operations

The NGF estimated that there was a total of 674,200 golfers in Arizona in 2021. This represented a 3.8% increase from 2020 and a 22.6% increase from 2019. In total, Arizona residents and visitors played an estimated 16.6M rounds of golf, a 3.9% increase from 2020. This activity directly supported 19,300 employees at golf courses and non-course golf facilities.

These employees earned an estimated total of \$569.3M in wages in 2021 and produced a total of \$1.4B in economic output. In total, the direct activity generated by golf courses and non-course facilities generated \$128.3M in state and local tax revenues.

The activity at golf courses and non-course facilities supported an additional 8,100 indirect and induced jobs in supplier industries. These secondary employees earned a total of \$370.5M in wages and produced \$1.2B in economic output. In total, the operations of the supplier industries generated \$40.3M in state and local tax revenues in 2021.

Overall, a total of 27,400 direct and secondary jobs were supported by the operations of Arizona’s golf courses and non-course golf facilities. These employees earned a total of \$939.8M in wages and produced a total of \$2.5B in economic output. A total of \$168.6M in state and local tax revenues were generated in 2021 from Arizona’s golf course and non-course facilities.

**Table 1: Economic & Fiscal Impacts – Golf Facility Operations Only**

Economic Output	Jobs	Wages	Tax Revenues
\$1,352,080,700 - Direct	19,287 - Direct	\$569,321,100 - Direct	\$128,329,400 - Direct
\$536,977,800 - Indirect	3,505 - Indirect	\$158,751,100 - Indirect	\$17,380,800 - Indirect
\$655,358,900 - Induced	4,564 - Induced	\$211,712,400 - Induced	\$22,938,300 - Induced
<b>\$2,544,417,500 - Total</b>	<b>27,356 - Total</b>	<b>\$939,784,600 - Total</b>	<b>\$168,648,500 - Total</b>

Note: Tax revenues generated for the State of Arizona and local (county and city) governments. May not sum to total due to rounding.  
Sources: IMPLAN; Rounds Consulting Group, Inc.



## Impacts of Golf Related Businesses

In 2021, the golf-related businesses directly employed approximately 1,400 Arizona residents. These employees earned approximately \$33.1M in wages in 2021, produced \$79.4M in economic output and generated \$14.3M in state and local tax revenues in 2021.

The operations of these businesses and the direct employees supported a total of 470 secondary jobs in supplier industries. These secondary employees were paid \$21.8M in 2021. The increase in activity from the supplier industries and secondary employees produced \$70.1M in economic output and generated \$2.4M in state and local tax revenues.

In total, golf dependent businesses in tangential industries supported 1,900 direct and secondary jobs who earned a total of \$54.9M in wages in 2021. This activity generated \$145.5M in economic output and accounted for \$16.7M in state and local tax revenues.

**Table 2: Economic & Fiscal Impacts – Golf-Related Businesses Only**

Economic Output	Jobs	Wages	Tax Revenues
\$79,448,600 - Direct	1,408 - Direct	\$33,136,700 - Direct	\$14,281,300 - Direct
\$31,553,000 - Indirect	206 - Indirect	\$9,328,300 - Indirect	\$1,021,400 - Indirect
\$38,509,100 - Induced	268 - Induced	\$12,440,300 - Induced	\$1,347,800 - Induced
<b>\$149,510,700 - Total</b>	<b>1,882 - Total</b>	<b>\$54,905,300 - Total</b>	<b>\$16,650,500 - Total</b>

Note: Tax revenues generated for the State of Arizona and local (county and city) governments. May not sum to total due to rounding.  
Sources: IMPLAN; Rounds Consulting Group, Inc.

## Impacts of Golf Related Tourism

Golf in Arizona is a significant contributor to the State’s overall tourism activity. As mentioned previously, approximately 9.0% of those that visited Arizona in 2021 played golf during their visit. According to AOT, this means that an estimated 3.7M visitors played golf in 2021.

This visitor activity directly supported 26,300 jobs throughout Arizona’s tourism industry. These employees were paid a total of \$801.6M in wages and generated \$1.8B in economic output.

The golf industry’s contribution to Arizona’s tourism industry directly accounted for an estimated \$279.7M in state and local tax revenues in 2021.

The direct golf related tourism activity supported a total of 10,600 secondary jobs in supplier businesses and tangential industries. These workers were paid a total of \$487.0M in wages in 2021.

*“Golf is core to the state’s tourism activity. The sport’s impact goes beyond just golf courses, it also impacts the broader tourism industry including resorts, hotels, restaurants and bars, and general retail activity.”*

- Debbie Johnson, Director  
Arizona Office of Tourism



The economic activity of these indirect and induced employees produced \$1.6B in economic output and generated a total of \$53.0M in state and local tax revenues in 2021.

Overall, Arizona’s golf industry supported 39,900 jobs and \$1.3B in wages. These employees generated a total of \$3.3B in economic activity and accounted for an estimated \$332.7M in tax revenues in 2021.

**Table 3: Economic & Fiscal Impacts – Golf Related Tourism Only**

Economic Output	Jobs	Wages	Tax Revenues
\$1,777,554,900 - Direct	26,334 - Direct	\$801,601,300 - Direct	\$279,715,600 - Direct
\$705,954,600 - Indirect	4,608 - Indirect	\$208,707,000 - Indirect	\$22,850,000 - Indirect
\$861,588,000 - Induced	6,001 - Induced	\$278,334,200 - Induced	\$30,156,500 - Induced
<b>\$3,345,097,400 - Total</b>	<b>36,942 - Total</b>	<b>\$1,288,642,600 - Total</b>	<b>\$332,722,100 - Total</b>

Note: Tax revenues generated for the State of Arizona and local (county and city) governments. May not sum to total due to rounding.  
Sources: IMPLAN; Rounds Consulting Group, Inc.

## Total Impact of Arizona’s Golf Industry

The overall value of the golf industry extends beyond the operations and activities of Arizona’s golf courses. There are numerous businesses located in Arizona that operate in a variety of industries, from manufacturing to retail, whose performance is largely dependent on the strength of the golf industry. As golf continues to grow in Arizona, across the nation, and throughout the world, these businesses will expand their local operations, creating additional jobs for Arizona residents.

While playing or watching golf is one component of Arizona’s well-balanced tourism industry, golf is a primary reason that many visitors who are traveling for other reasons (e.g., business trips, conventions, family reunions, corporate retreats, etc.) select Arizona as the location to host their trips. The golf is integral to supporting ongoing statewide economic development initiatives.

In 2021, Arizona’s golf industry contributed a total of \$6.0B in economic output to Arizona’s overall economy. The industry’s total activity across golf courses, golf facilities, golf-related businesses and golf related tourism supported nearly 66,200 Arizona jobs in 2021. These workers were paid a total of \$2.3B in wages.

Overall, the activity of the golf industry generated a total of \$518.0M in state and local tax revenues in 2021. These tax revenues were generated by retail sales, green fees, utility use, property taxes, income and payroll taxes, lodging taxes, restaurant and bar sales, and by various other taxes and fees.

**Table 4: Economic & Fiscal Impacts – Total Golf Industry All Elements**

Economic Output	Jobs	Wages	Tax Revenues
\$3,209,084,200- Direct	47,029 - Direct	\$1,404,059,100- Direct	\$422,326,300 - Direct
\$1,274,485,400 - Indirect	8,318 - Indirect	\$376,786,400 - Indirect	\$41,252,200 - Indirect
\$1,555,456,000 - Induced	10,833 - Induced	\$502,486,900 - Induced	\$54,442,600 - Induced
<b>\$6,039,027,200 - Total</b>	<b>66,180 - Total</b>	<b>\$2,283,332,500 - Total</b>	<b>\$518,021,100 - Total</b>

Note: Tax revenues generated for the State of Arizona and local (county and city) governments. May not sum to total due to rounding.  
Sources: IMPLAN; Rounds Consulting Group, Inc.



**Table 5: Total Fiscal Impact Detail – Arizona Golf Industry 2021**

	<b>Golf Facility Operations</b>	<b>Golf Tourism</b>	<b>Golf-Related Businesses</b>	<b>Total</b>
<b>Direct Impacts</b>	<b>\$128,329,400</b>	<b>\$279,715,600</b>	<b>\$14,281,300</b>	<b>\$422,326,300</b>
Sales Taxes <sup>1)</sup>	\$59,249,200	\$194,188,200	\$9,960,600	\$263,398,000
Property Taxes <sup>2)</sup>	\$30,697,200	\$12,634,100	\$675,600	\$44,006,900
Income & Payroll Taxes <sup>3)</sup>	\$17,462,400	\$23,843,000	\$1,275,100	\$42,580,500
Other Taxes & Fees <sup>4)</sup>	\$20,920,600	\$49,050,300	\$2,370,000	\$72,340,900
<b>Indirect &amp; Induced Impacts</b>	<b>\$40,319,100</b>	<b>\$53,006,500</b>	<b>\$2,369,200</b>	<b>\$95,694,800</b>
Sales Taxes <sup>5)</sup>	\$17,553,200	\$23,076,900	\$1,031,500	\$41,661,600
Property Taxes <sup>6)</sup>	\$2,959,800	\$3,890,900	\$174,000	\$7,024,700
Income & Payroll Taxes <sup>7)</sup>	\$11,083,500	\$14,571,300	\$651,200	\$26,306,000
State Shared Revenues <sup>8)</sup>	\$8,722,600	\$11,467,400	\$512,500	\$20,702,500
<b>Total Impacts</b>	<b>\$168,648,500</b>	<b>\$332,722,100</b>	<b>\$16,650,500</b>	<b>\$518,021,100</b>

<sup>1)</sup> Sales taxes levied on on- and off-site retail sales, food/beverage sales, utility use, and hotel/resort stays.

<sup>2)</sup> Property tax revenues collected from golf facilities, golf-related businesses, hotel/resorts, and direct employee-owned real estate property.

<sup>3)</sup> State personal income taxes and unemployment insurance taxes.

<sup>4)</sup> Other taxes and fees including gasoline and fuel use taxes, vehicle license taxes, motor vehicle registration fees, and State Shared Revenues that are distributed to cities and counties.

<sup>5)</sup> Sales tax revenues levied on the indirect and induced employee utility use, retail purchases, and food/beverage purchases.

<sup>6)</sup> Property tax revenues collected from indirect and induced employee-owned real estate property.

<sup>7)</sup> State personal income taxes and unemployment insurance taxes.

<sup>8)</sup> Other taxes and fees including gasoline and fuel use taxes, vehicle license taxes, motor vehicle registration fees, and State Shared Revenues that are distributed to cities and counties.

Note: May not sum to total due to rounding.

Sources: Arizona Department of Revenue; IMPLAN; Rounds Consulting Group, Inc.





# Impacts on Property Values

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In addition to the impacts presented thus far, golf courses produce a positive effect on residential real estate values. The following is a review of the findings from the analysis conducted by RCG for the initial golf industry report. This analysis identifies the potential price premium paid for homes in close proximity to a golf course.

Limited available data as well as difficulty identifying and measuring all relevant variables makes performing a comprehensive statewide analysis difficult. However, RCG modeled their analysis based on the methodology of previous Arizona-specific analyses completed by SRI International and the University of Arizona to show the total price premium attributed to homes located within select residential golf course communities.

Additionally, RCG conducted an abbreviated analysis and examined home sales data for several individual neighborhoods within the State. This analysis highlights the price premium by square footage for homes within a golf community compared with the overall neighborhood, the premium that exists for homes that have golf course frontage compared to those without golf course frontage, and the price effect for homes with golf course frontage compared to those without. The results of this abbreviated analysis provide additional context as to the impact golf courses have on residential homes prices.

## Golf Industry Literature Review

Scores of empirical studies and publications have attempted to show the price effect of the “intangible” attributes of a home or neighborhood. These include quality of schools, proximity to shopping or open space, level of noise, among others. Any of these attributes, while difficult to quantify or measure, is considered by a prospective homebuyer, and can influence the buying decision.





One of these attributes is proximity to a golf course. Numerous studies have shown that proximity to a golf course has a positive effect on the value and sale price of the home. Table 6 displays a selection of these studies.

The magnitude of the value and price effect varies depending on the location of the property across the U.S. and on the type of golf course near the studied property. For example, Steven Shultz and Nicholas Schmitz (Shultz & Schmitz 2009) showed that homes located in Omaha, Nebraska sell for a 28.0% premium when located on a private course compared to a 15.0% premium for homes located on a public course.

Sarah Nicholls & John Crompton (Nicholls & Crompton 2007) show that properties adjacent to a golf course had a 25.8% premium on the sales price and a 19.2% premium on the assessed valuation of homes in a neighborhood in College Station, Texas.

However, each of these studies analyze home prices in various locations around the country and variations in the residential housing market limit the ability for these conclusions to be applied to the Arizona market without adjustment.

**Table 6: Select Studies of Golf Course Proximity Price Effects**

Study	Price Effect
Grudnitski (2003). Golf course communities: The effect of course type on housing prices. <i>The Appraisal Journal</i> .	12.5% - Private courses 6% - Semi-private courses 5.7% - Public courses
Owusu-Edusei & Espey (2003). Does proximity to a golf course matter? Clemson University Working Paper	Average 21% for golf course-abutting homes
Nicholls & Crompton (2007). The Impact of a Golf Course on Residential Property Values. <i>Journal of Sports Management</i> Vol. 21	25.8% - sales price 19.2% - assessed valuation
Shultz & Schmitz (2009). Augmenting Housing Sales Data to Improve Hedonic Estimates of Golf Course Frontage. <i>Journal of Real Estate Research</i> , Vol. 31	28% - Private non-equity 15% - Public 9% - Municipal 5% - Private equity
Shin, Saginor & Van Zandt (2011). Evaluating Subdivision Characteristics on Single-Family Housing Value Using Hierarchical Linear Modeling. <i>Journal of Real Estate Research</i> , Vol 33	16.25% - golf course frontage
Allen, Fraser (2016). The Effect of Appurtenant Golf Memberships on Residential Real Estate Prices. <i>International Real Estate Review</i> , Vol. 19.	7.96% for homes with golf memberships

## Golf Property Premium in Arizona

Utilizing the national average number of homes located on golf course frontage lots and those located on non-adjacent lots as reported by SRI International,<sup>3</sup> Troy Schmitz (Schmitz 2006)<sup>4</sup> estimated the total statewide price premium (the extra value a homeowner can expect to receive on the sale of the home) paid for homes located in residential golf course communities.

<sup>3</sup> SRI International's Golf Economy Report

<sup>4</sup> Schmitz, T.G. (2006). Economic impacts and environmental aspects of the Arizona golf course industry.



In 2006, the study estimated that Arizonans paid a total of \$1.4B in premiums for golf course frontage property and \$655M for non-adjacent properties within golf course communities, for a total premium of \$2.05B.

The total golf course sales price impact on residential property values in 2014, using the same methodology, was estimated to be \$2.06B.<sup>5</sup> In 2019, the total price premium represented by Arizona residential golf communities was estimated to be \$2.24B. This premium represented \$16.2M in additional property tax revenues to all taxing districts including county, city, and school districts.

Table 7: Price Premium of All Existing Golf Community Homes in Arizona			
	2006	2014	2019
Total Home Value Premium	\$2.05B	\$2.06B	\$2.24B

Source: SRI International; Rounds Consulting Group, Inc.

## Analysis of Residential Golf Communities

A check of the data was performed based on a review of select golf course communities of varying values. The results of the following abbreviated analysis provide additional context to the impact golf courses have on residential homes prices.

Utilizing available home sales data, the sale prices of the homes sold in the selected residential golf communities since 2017 were collected. The homes were then separated based on the home’s property being adjacent to a golf course. In total, over 565 homes sales were analyzed in this review. Approximately 270 were adjacent to a golf course and 295 were not adjacent to a golf course.

The following chart shows the 2019 average sale price for the homes in the residential communities compared to the immediate local area.

Note:

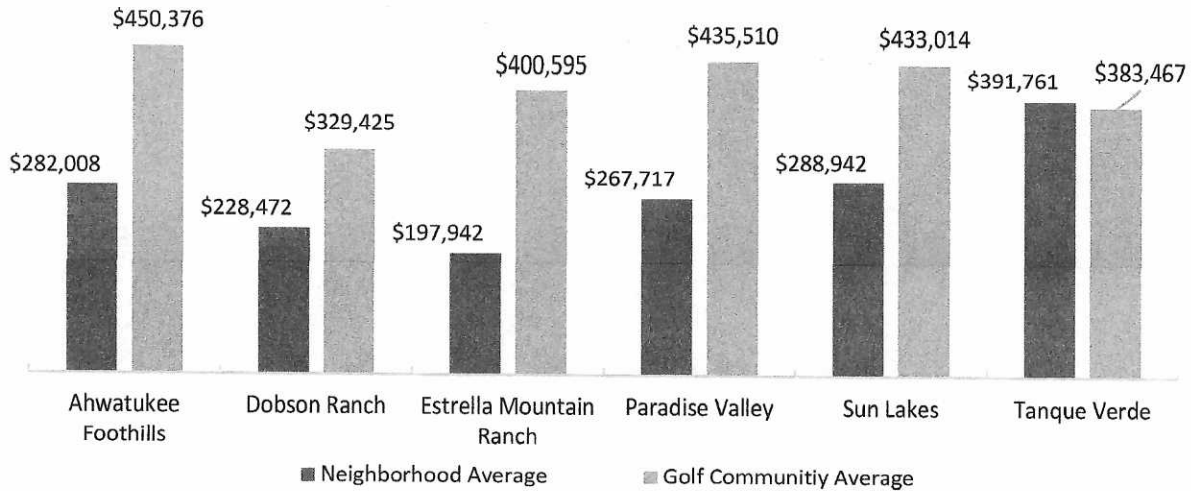
<sup>5</sup> Duval, D (2016). Contribution of the Golf Industry to the Arizona Economy in 2014.



Figure 4 compares property values in golf course neighborhoods to the larger market area. Table 8 displays the property values of homes directly on a golf course versus property values for the larger golf course community.



**Figure 4: Average Home Price in Residential Golf Communities v. Larger Neighborhood Region**



Source: Zillow; Maricopa County Assessor’s Office; Rounds Consulting Group, Inc.

For each of the neighborhoods examined, the homes within the residential golf communities had higher average sale prices in 2019 than the average home price for the broader neighborhood, with the exception of homes sold in Tanque Verde.

The largest difference comes from the homes in Paradise Valley, where homes in the golf communities sold on average for \$435,500 in 2019 compared to the average price of \$267,700 for the local area of Paradise Valley.

Within the larger neighborhood regions, the average sale price for the homes with golf course frontage is compared with the home sale prices of those without golf course frontage. Overall, within this small case study, the golf course premium ranged between 18% and 40% (see Table 8).

Neighborhood	Non-Adjacent Property	Golf Adjacent Property	Price Premium
Paradise Valley	\$388,254	\$512,469	32.0%
Sun Lakes	\$377,736	\$482,991	27.9%
Dobson Ranch	\$325,306	\$336,363	3.4%
Ahwatukee Foothills	\$440,349	\$458,356	4.1%
Estrella	\$370,307	\$439,582	18.7%
Tanque Verde	\$375,772	\$390,546	3.9%
<b>Weighted Average</b>	<b>\$380,499</b>	<b>\$447,830</b>	<b>17.7%</b>

Note: Homes sold between 2017 and 2020  
Source: Zillow; Rounds Consulting Group, Inc.

As yet another check to the property premium data, values per square foot were similarly reviewed. The analysis at the per square foot level was consistent with the previous two approaches. Square footage is a significant indicator of home price.

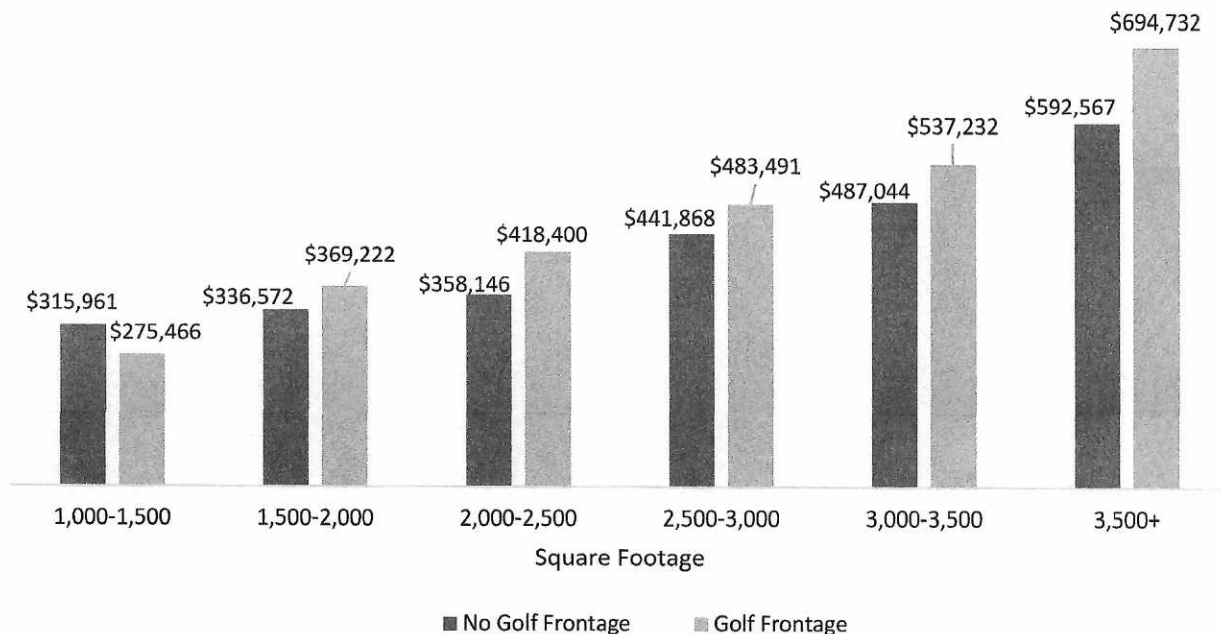


Generally, homes with more livable square footage will have a higher sale price than smaller ones. To account for this, the homes in the sample neighborhoods are grouped by total square footage.

The average sale prices within each grouping for homes adjacent to a golf course and those that are not adjacent is then calculated. For each square footage grouping, with the exception of those homes with less than 1,500 sq. ft., the homes that have golf course frontage had a higher average sale price than those without golf course frontage.

The premium is greatest for homes above 3,500 square feet, with the average house with golf course frontage selling for 17.7% higher than those without golf course frontage.

**Figure 5: Average Sale Price by Square Footage and Golf Frontage**



Source: Zillow; Maricopa County Assessor's Office; Rounds Consulting Group, Inc.  
Note: Sale data collected from 2017 through May 2020

The golf industry is a critical element of residential home development in Arizona. Countless homes are built around and near a golf course. This is particularly true for age-restricted communities that cater to older and the retired population. This is also true for master-planned communities such as Sun City, Robson Communities and Gainey Ranch that are developed with the purpose of being able to offer an amenities package (e.g., community pool, clubhouse, community events, etc.) where golf is the core amenity. It is likely that without golf, the development of residential communities in areas like North Scottsdale and the West Valley would have been hindered in terms of quantity and quality.

Additionally, the impact and popularity of golf will continue to grow as the population of the State ages and golf continues to attract retirees to Arizona. These retirees typically bring above-average levels of wealth to Arizona. The additional spending brought by retired households increase local economic activity as well as increase state and local tax collections.





# Golf Industry and Sustainability

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Beyond the golf industry's significant economic contribution to the State's economy, it has long been committed to promoting sustainability throughout Arizona particularly in regard to water conservation practices. The industry continues to support and participate in the development of innovative technologies that enhance water efficiency. *Optimizing water usage is among the primary objectives for Arizona golf courses as excessive water use increases costs and negatively impacts the playability of the course.*

***Special Note: Conservation efforts continue to be facilitated through strategic partnerships between public, private and non-profit environmental organizations that can help golf courses focus on industry growth, sustainable innovation, and research methods to conserve water.***

The water usage of the State's golf courses relative to other major water uses, and a review of how golf courses can be effective at reducing the heat island effect throughout Maricopa County ("Maricopa" or "County") are detailed below.

*Note: Data related to water usage in Arizona has not been updated since the release of the initial golf industry impact in 2020. Therefore, the analysis and conclusions related to Arizona's golf industry's water usage remains unchanged from the previous report.*

## Golf Course Water Usage

The United States Geological Survey ("USGS") is a federal agency that distributes a comprehensive survey to collect water usage data from across the nation. This survey is updated every five years and due to the significant volume of data collected, it takes up to three years to acquire, process, analyze and then publish the findings from each survey update. For example, the most recent version of the survey was released in 2018 and is a reflection of the water usage data from 2015. The latest version of the survey will likely be released sometime in 2023.

Therefore, the following highlights the water use findings from the previous impact study released by AAG which reflects the most recently available data.

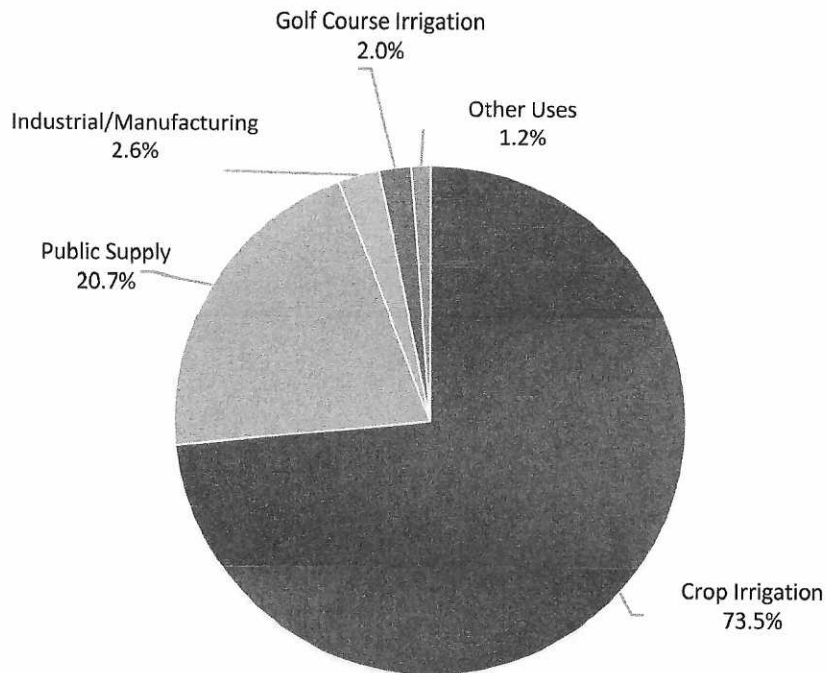
The USGS separates water usage into the following primary categories: public supply, irrigation, industrial/manufacturing and other. These primary categories are then separated into additional categories. For example, the irrigation category is broken down into *crop irrigation*, water used for growing crops and irrigating pastures, and *golf course irrigation* for water used for golf courses.

According to the 2015 USGS (the latest available data), crop irrigation was the largest water use category with 73.5% of Arizona's total daily withdrawals. Public supply, which includes domestic and commercial water usage, accounted for 20.7% of the State's daily water use.



Industrial/manufacturing, which includes water use for mining and thermoelectric power generation, used 2.6% of daily water use. Golf course irrigation accounted for 2.0% of daily water use, while the other use category, which includes livestock and aquaculture water uses accounted for 1.2% of Arizona’s daily water use (see the following chart).

**Figure 6: Total Daily Water Use in Arizona by Category**



Source: United States Geological Survey (2015)

The following table displays the daily water use by category. Of the total water used in Arizona, only 2.0% is used to irrigate golf courses.

Category	Usage in Gallons
Crop Irrigation	4,406,000,000
Public Supply	1,240,000,000
Industrial/Manufacturing	158,000,000
Golf Course Irrigation	122,000,000
Other	73,000,000
<b>Total</b>	<b>5,999,000,000</b>

Source: United States Geological Survey (2015)



***Special Note: In addition to golf course irrigation accounting for a relatively small portion of the State's total daily use, golf courses have been aggressively implementing increasingly efficient and sustainable irrigation systems and technologies, as well as promoting water conservation practices.***

These efforts include finding ways to utilize reclaimed wastewater by filtering it to meet quality standards (non-potable) and then recycling this water for irrigation. The table below displays the amount of reclaimed water used for golf course irrigation for each county in Arizona. Maricopa, Pima, Pinal and Coconino Counties recycled the largest amount of reclaimed water for golf course use, with Maricopa County using 25 million gallons of reclaimed water for golf course irrigation in 2015.

County	Usage in Gallons
Apache	-
Cochise	740,000
Coconino	2,540,000
Gila	440,000
Graham	-
Greenlee	-
La Paz	90,000
Maricopa	25,010,000
Mohave	3,020,000
Navajo	70,000
Pima	10,200,000
Pinal	2,710,000
Santa Cruz	60,000
Yavapai	760,000
Yuma	1,350,000
<b>Total</b>	<b>46,990,000</b>

Source: United States Geological Survey (2015)

According to data from the Arizona Department of Water Resources (“ADWR”), golf related water usage in the State remains low when compared to residential, agriculture, commercial and other uses. However, the expected growth in Arizona’s population and the economy will strain the State’s water supply. As a result, water dependent industries such as golf will be required to continue to innovate and invest in technologies and systems that enhance the efficient use of water.

For example, golf courses have partnered with irrigation systems manufactures to develop and install on-site soil sensors and turf probes. These sensors and probes are being used to determine exact daily irrigation replacement needs based on turf type, soil temperature, degree of runoff, among other factors.

Additionally, various golf courses have partnered with a research organization and commercial seed companies to support the development of various types of hybrid species of turf (i.e., saltgrass, fairway crested wheatgrass, zoysiagrass, etc.) with the goal of providing new grass varieties that reduce water use and maintenance costs while enhancing playability.<sup>6</sup>

<sup>6</sup> United States Golf Association, Water Conservation on Golf Courses (<https://www.usga.org/course-care/water-conservation-on-golf-courses-fbe1f5ee.html>)



## Reducing the Heat Island Effect

In addition to being an excellent resource to promote the research and development of water conservation technologies, golf courses also provide relief to local communities by reducing the heat island effect. The According to the U.S. Environmental Protection Agency (“EPA”), the heat island effect occurs in areas with a high concentration of heat absorbent surfaces (e.g., asphalt, concrete, steel, etc.).

These surfaces absorb heat during the day and this heat continues to radiate at night. As a result, urban areas typically experience higher than average temperatures, higher levels of air pollution, and an increased demand for water and electricity which stresses the existing infrastructure.<sup>7</sup>

Heat islands can be particularly severe in areas where extreme heat occurs naturally (i.e., desert climates) and exacerbate the impacts of naturally occurring heat waves. The high temperatures and increased pollution contribute to increases in heat-related deaths, heat-related illnesses, respiratory infections, heat cramps, and heat exhaustion, among others.

If not properly addressed, high temperatures and extreme heat can have significant economic consequences. A study conducted by The Nature Conservancy (“TNC”) and AECOM analyzed the total cost of not addressing the heat island effect in Maricopa County over the next several decades.

According to the analysis, the average annual temperature in Maricopa County will be an estimated 2.5 degrees higher from 2020-2039 compared to the average temperature from 1986-2005 and 3.7 degrees higher from 2040-2059 compared to the average temperature in the Maricopa from 1986-2005.

The increasing temperatures are expected to contribute to higher mortality and morbidity rates, a decline in labor productivity, an increase in infrastructure costs, and higher energy consumption. TNC estimates that without taking any measures to mitigate the heat island effect, the rising temperatures and increasing pollution will cost an estimated \$1.9B annually by 2050.<sup>8</sup>

While there are several methods for managing and reducing the heat island effect including reflective pavement, permeable pavement, reflective paint on roofs and buildings, among others, enhancing the canopy coverage from trees and other vegetation in the region is considered to be among the most effective strategies in reducing the heat island effect.

For example, TNC estimated that daytime temperatures could be reduced by 3.14 degrees if 25.0% of Maricopa was covered under a tree canopy.<sup>9</sup> TNC estimated that total cost of reaching 25.0% canopy coverage by 2050 would be approximately \$4.0B.

Understanding the benefits of reducing the heat island effect, various cities in Maricopa County have begun implementing plans to increase the level of tree canopy coverage within city limits. The City of Phoenix (“Phoenix”) has recently partnered with American Forests, a non-profit organization, in an effort to reach “tree equity” by the year 2030.

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<sup>7</sup> <https://www.epa.gov/heatislands>

<sup>8</sup> [https://www.nature.org/content/dam/tnc/nature/en/documents/TNC\\_AZ\\_Eco\\_Heat\\_Assessment\\_MidRes.pdf](https://www.nature.org/content/dam/tnc/nature/en/documents/TNC_AZ_Eco_Heat_Assessment_MidRes.pdf)

<sup>9</sup> [https://www.nature.org/content/dam/tnc/nature/en/documents/TNC\\_AZ\\_Eco\\_Heat\\_Assessment\\_MidRes.pdf](https://www.nature.org/content/dam/tnc/nature/en/documents/TNC_AZ_Eco_Heat_Assessment_MidRes.pdf)



Tree equity refers to the ensuring that the benefits of tree canopy coverage is available to everyone in the city.<sup>10</sup> The City of Tempe has also committed to plant over 94,000 trees in order to achieve 25.0% canopy coverage within Tempe by the year 2030.<sup>11</sup>

Urban forestry programs are designed to mitigate the heat island effect and lower the overall average temperature experienced within the cities. The Urban Climate Research Center estimates that even a 1-degree reduction in the average annual temperature would save Phoenix residents an estimated \$15.0M annually due to reduced demand on the electrical grid.

Golf courses are extremely effective at mitigating the heat island effect due to the large amount of green space and the number of trees that cover a typical golf course. For additional context on how the golf industry contributes to the effort of reducing the heat island effect, consider the following.

*RCG estimated that in order to achieve 25.0% canopy coverage throughout the urban areas of Maricopa, a total of approximately 133,300 acres will need to be covered. The cost of installing and maintaining these trees will likely come from a combination of public funding and private sector contributions.*

It is estimated that if the land currently occupied by the area's existing golf courses were replaced with urban development, there would be an additional approximately 16,600 acres that would need to be covered with tree canopy. *The existing golf courses effectively save future publicly funded tree canopy programs an estimated \$500.0M in installation and maintenance costs.*

Additionally, according to the National Weather Service ("NWS"), the average temperature in the City of Scottsdale, which has the highest concentration of golf courses, was 74.3° Fahrenheit ("F") in 2021. This compared to the average temperature Maricopa County which was 76.3° F in 2021. This according to the Urban Climate Research Center, the presence of the golf courses in Scottsdale help save residents approximately \$30.0M in utility costs annually.

## Additional Socioeconomic Impacts

In addition to the impact on the economy, the Arizona golf industry also enhances the quality of life of residents. For one, golf raises hundreds of millions for local charities such as Hospice of the Valley, Boys and Girls Clubs, and the Special Olympics, to name a few.

The Waste Management Open golf tournament located in Scottsdale, Arizona. It is one of the most widely attended tournaments of PGA season and in 2022 raised \$10.5M for local charities. The tournament is hosted by The Thunderbirds, a non-profit organization based in Arizona. Since 2010, The Thunderbirds have raised more than \$110.0M for hundreds of Arizona charities.<sup>12</sup>

Through youth programs and tournaments, golf provides an opportunity for players and spectators to maintain their physical and mental health benefiting residents of all ages.

Various golf programs throughout the State are designed to enable youth of all ages and from all backgrounds to come together and build the strength of character through the game of golf. The First Tee program, for example, focuses on developing life skills that improve self-confidence and self-image,

<sup>10</sup> <https://www.planetizen.com/news/2021/09/114773-how-phoenix-tree-canopy-affects-urban-temperatures>

<sup>11</sup> <https://www.tempe.gov/government/community-services/parks/urban-forest/urban-forest-master-plan>

<sup>12</sup> <https://wmphoenixopen.com/2022-wm-phoenix-open-and-the-thunderbirds-raise-more-than-10-million-for-arizona-charities/>





encourage problem solving, decision-making skill, and reinforces the importance of integrity, perseverance, and sportsmanship. These skills are taught to participants through golf-related exercises and will empower program graduates to overcome the challenges they face off the course.<sup>13</sup>

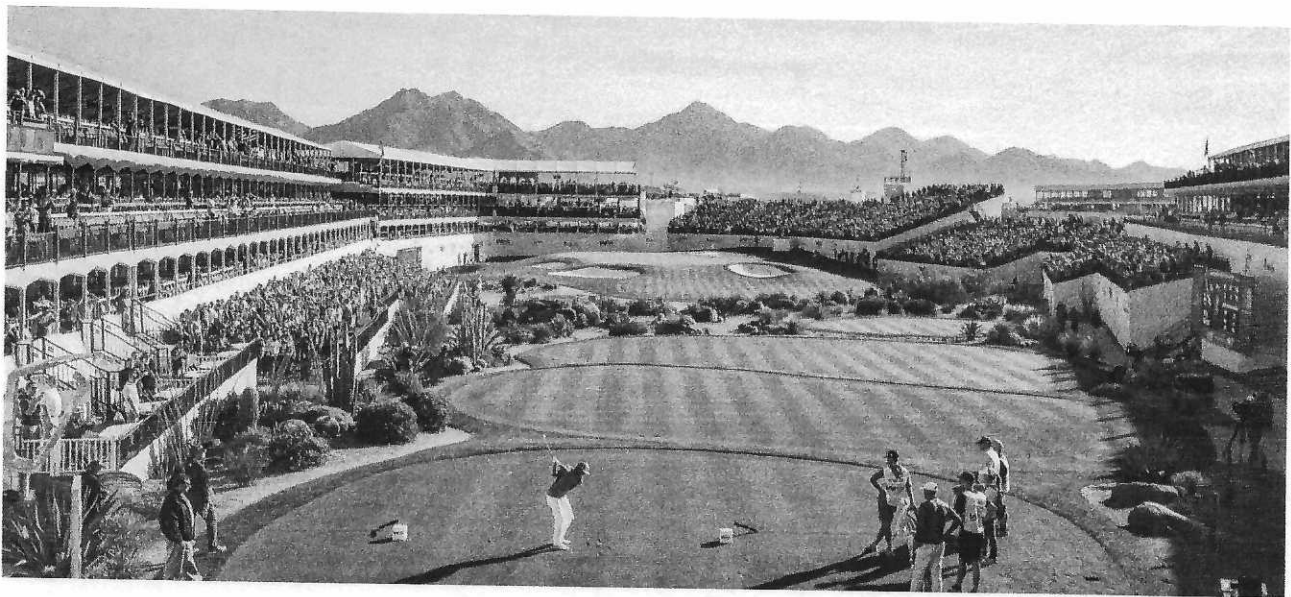
Golf is time consuming sport. The average 18-hole round takes approximately 4 hours to complete and with warm-up can be even longer. Golf also requires a significant amount of walking, even when using a golf cart, as well as bending, twisting, and stretching. This level of physical activity can have a variety of health benefits including reducing the risk of heart related illnesses, and strokes, just to name a few.

Physical activity, such as golf, also provides various benefits for mental health issues without the side-effects commonly associated with medication. These include reducing anxiety, improving self-confidence as well as a treatment for mild to moderate depression.

Additionally, according to the results of a 2,800-person study, the top responses to the survey question “How did you get into golf?” included “joining friends and work colleagues”, “participating with family members”, and the social aspect of sport.<sup>14</sup> The social aspect of golf invariably contributes to improved mental health as interacting in a social setting can generate a dopamine response in our brains, according to a 2018 study.<sup>15</sup>

*“In 2022, \$10.5M was raised from proceeds of the Waste Management Phoenix Open at TPC Scottsdale. Over the life of the tournament, more than \$175M has been distributed to local organizations and individuals in need through Thunderbirds Charities. Golf is not only part of the fabric of this community, golf works to strengthen the community.”*

- Chance Cozby, Executive Director  
The Thunderbirds



<sup>13</sup> <https://firstteephoenix.org/programs/>

<sup>14</sup> <https://azallianceforgolf.org/social-benefits/>

<sup>15</sup> What are the health benefits of being social? ([https://www.medicalnewstoday.com/articles/321019#\\_noHeaderPrefixedContent](https://www.medicalnewstoday.com/articles/321019#_noHeaderPrefixedContent))





# Appendix: Modeling the Impacts

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Economic and fiscal impact models are an effective way to demonstrate regional implications of a particular project, policy, business, development, or other activity in a given area. The study area can range from a single neighborhood or city to an entire state or country. Typically, the effects resulting from the activity are estimated in terms of output, earnings, employment, and tax revenues.

RCG developed various economic and fiscal impact models to analyze the golf industry's impact on Arizona's economy. The RCG proprietary models employ an input-output model methodology commonly used by economists to determine impacts.

This method was used to estimate the multiplier or ripple effects caused by the activities being analyzed. The activity was then converted into tax revenues in each of the relevant categories.

Assumptions were based on previous golf and tourism studies, a survey of golf facilities and golf-related businesses, extensive outreach with golf businesses, and information compiled from a variety of sources that are subject to some uncertainty and variation. Therefore, actual impacts may vary.

## Economic Impact Modeling Methodology

An economic impact model provides a quantifiable method to estimate the economic activity of a particular activity in a given area. Impacts can be used to measure existing activity and to measure potential expansions/contractions of an area's economy resulting from changes in economic activity.

Typically, the level of economic effects resulting from the activity are estimated in terms of *output*, *earnings*, and *employment*. These are defined as:

- ***Output*** captures the broader level of economic activity, or the total value of goods and services produced in the region, similar to how statistics like gross domestic product (GDP) capture economic volume in individual states and across the country.
- ***Earnings***, a component of output, represents income to employees. The earnings component is used to measure the total change in income throughout the economy due to economic or business activity.
- ***Employment*** is the total number of full-time equivalent (FTE) jobs created in the economy on an annualized basis.

The economic effects occurring as a direct consequence of the initial activity create additional activity in the regional economy. *This relationship is known as the multiplier or ripple effect.*

The basis for multiplier effects is the interdependencies between industries, how one industry impacts other sectors, and the cycle of spending and re-spending within the regional economy.



An input-output model is used to generate these multipliers. These multipliers quantify relationships among industries and estimate the extent that the area being analyzed can capture sales, earnings, and job impacts within the region.

Input-output models measure impacts based on their source. *Direct* effects are the result of the initial activity being analyzed. The multiplier effects, or secondary effects, are measured as either *indirect* or *induced*. These are defined as:

*Direct effects, or impacts*, measure business activity at an individual site or the initial change in the economy attributed to the development under consideration. For example, this includes the direct golf course and golf-related employees that run the daily operations of golf businesses.

*Indirect impacts* capture additional output, earnings, and employment changes generated as a result of increased demand in the industries which supply services or products to the direct business or development under consideration.

For example, this includes the workers that are employed by businesses that supply food, retail, maintenance suppliers, etc. to the direct golf businesses.

*Induced impacts* capture additional output, earnings, and employment changes generated as a result of increased spending in the local economy made by the households of both the direct and indirect employees. For example, this includes the grocery store workers that are supported by the spending of the direct and indirect employees.

A common input-output model used to generate economic multipliers is an IMPLAN model (short for impact analysis for planning). Originally developed by the U.S. Forest Service in the 1970s, the responsibility for developing IMPLAN data sets shifted to the University of Minnesota as demand grew for regional models.

Currently, IMPLAN runs as a private organization and is the leading provider of nationwide economic impact data and analytical software. The RCG custom economic impact model employs a modified version of this input-output model methodology and uses Arizona-specific multipliers.

## **Fiscal Impact Modeling Methodology**

Fiscal impact models provide estimates for the government revenues that are generated by a particular project, policy, business, development, or activity in a given area. Typically, fiscal impacts examine revenues that are likely to result from a project or activity and are determined by the study area's tax structure.

In general, the types of government taxes analyzed include sales taxes, excise taxes, lease taxes, income taxes, and property taxes. The type of activities subject to these taxes include payrolls, retail sales, utility use, leases, and construction, to name a few.

Fiscal impacts are categorized similar to economic impact studies and are broken down at the direct, indirect, and induced levels in which they are created. These revenues are expressed as either primary or secondary based on their source.



In general, primary revenues can be estimated by definable sources such as sales taxes calculated by on-site retail sales or utility use; whereas secondary revenues are generated by the wages, residency, and spending of those direct, indirect, and induced employees who are supported by the business or economic activity.

The RCG fiscal impact model employs this methodology. The model was designed to produce revenue information for the State of Arizona and local counties and municipalities.

