

Costs of Golf Course Maintenance – Past, Present and Future

The cost of maintaining a golf course is highly variable and dependent upon many factors such as the size of the property, location, number of holes, soil conditions, contour of the land, variety of grasses, construction method, practice areas and – perhaps most variably – the expectations for conditions from the membership or playing clientele. . The objective of this report is to identify the key drivers of golf course maintenance costs in the past, present and future.

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1. Historical Perspective of Golf Course Maintenance Budgets

In 1865, the R&A hired Old Tom Morris as custodian of the Old Course for £50 a year, with an additional £20 for expenses (Labban and Witteveen, 2002). The £20 for maintenance expenses is one of the earliest documented references to the existence of a golf course maintenance budget.

Within a maintenance budget, labour has – almost invariably – always been the largest expenditure. However, other costly line items such as fertilizer, seed, soil, equipment and chemicals are also needed to maintain healthy turf and quality playing conditions. Individual maintenance line items were not well documented within early budgets. Instead, the focus was typically placed on overall maintenance expenses. For instance, in the 1922 article, “[Distribution of Maintenance Costs](#),” the author suggests that there are many 18-hole golf courses maintained at a cost between \$1,500 to \$2,500 per year, while others are maintained at \$20,000 to \$25,000 annually. These costs equate to an annual range of \$83 to \$1,389 per hole. This wide variability in golf course maintenance costs is a direct result of the various factors in consideration and mentioned in the opener.

In 1925, the article “[Cost of Maintaining a Golf Course](#),” was published in the Bulletin of the Green Section of the U.S. Golf Association, summarizing maintenance cost data collected from 39 18-hole courses and 23 9-hole courses throughout the country. This survey found that the average cost per hole was \$1,148 for 18-hole courses and \$987 for 9-hole courses. A few specific expenses were included in the survey such as seed and fertilizer cost, number of labourers, and rate paid per day. The average seed and fertilizer cost was \$1,058 for an 18-hole course and \$331 for a 9-hole course. These data suggest that seed and fertilizer made up 5.1 percent and 3.7 percent of the maintenance costs for an 18-hole and 9-hole course, respectively.

Post-WWII, golf course maintenance costs were reported to have doubled compared to the average costs just two decades earlier. An analysis of the golf course maintenance costs for 35 courses located in all sections of the United States indicated that for 1954-55 the average cost per hole amounted to [\\$2,204](#).

Additional data from 1954, aggregated by the accounting firm Horwath & Horwath, analysed golf course maintenance costs in relation to annual dues revenue. This firm found that golf courses with membership dues less than \$150,000 annually had an average cost per hole of \$1,891 while courses with membership dues more than \$150,000 annually had an average cost per hole of [\\$2,486](#). As expected, courses with higher annual revenue allocated more resources toward golf course maintenance.

In a [1962 survey](#) of 16 private courses in Westchester County, New York, the average maintenance budget for an 18-hole course was \$51,466 – i.e., \$2,859 per hole. Labour costs accounted for approximately 71 percent of these operating budgets. This high percentage is attributed to the fact that 15 of the 16 courses participating in the survey had unionized workers paid at a higher rate than non-unionized workers.

Between [1970 and 1995](#), Pannell Kerr Forster surveys reported a steady increase in golf course maintenance costs. In 1970, the average cost per hole in the U.S. for maintenance was \$4,924. In 1995, the average cost per hole in the U.S. for maintenance soared to \$33,500, a 600 percent increase in just 25 years. The data from Pannell Kerr Forster indicates that golf course maintenance costs rose rapidly

from 1980 to 1995 compared to a gradual rise in maintenance costs from 1970 to 1980. Although these surveys are skewed toward private courses, the trend in maintenance costs increases is likely consistent among all golf facilities.

There has always been significant variation in golf course maintenance costs based on a myriad of factors. In 1986, the maintenance budget for an 18-hole course varied from [\\$200,000 to more than \\$1,000,000](#) – i.e., \$11,111 and \$55,555 per hole, respectively. For instance, the median maintenance budget in the metropolitan New York area was \$375,000 – i.e., \$20,833 per hole. Meanwhile, the median maintenance budget for an 18-hole course in Massachusetts was \$300,000 – i.e., \$16,666 per hole. In the Midwest transition zone, the median budget for an 18-hole course was around \$325,000 – i.e., \$18,055 per hole. Moving into southern California and Florida where golf is played year-round, the range of budgets was between \$500,000 and \$600,000 – i.e., \$27,777 and \$33,333 per hole. In the Palm Springs area, the budget range was from \$750,000 and \$1,200,000 – i.e., \$41,666 and \$66,666, largely due to expenditures related to water and overseeding. These large variations in maintenance costs between, and within, climatic regions are as prevalent today as they were in the past.

2. Golf Course Maintenance Budgets – 2010 to Present

The economic downturn in late 2008 had a profound impact on the golf course industry. Ideally, maintenance budget data prior to 2008 would be referenced for comparative purposes. However, the data available since 2010 shows valuable trends post-economic recession. Arguably, the most robust source of data comes from the Golf Course Superintendents Association of America (GCSAA) maintenance budget survey reports published in 2012, 2015 and 2018. Each survey received more than 1,500 responses from golf courses throughout the U.S. Data from these reports include actual golf course maintenance costs from 2010, 2011, 2013, 2014, 2016 and 2017.

Figure 1 illustrates that maintenance budgets have experienced a slight increase from 2010 to 2017. During this time, golf course maintenance costs increased by 6.7 percent. This data comes from a wide range of regions, budgets, and facility types – i.e., 45 percent private, 55 percent non-private.



Figure 1 Average U.S. golf course maintenance expenditures. Source GCSAA.

The data from Figure 1 was converted to an average cost per hole, and the costs were adjusted for inflation to compare relative to 2019 costs (Figure 2).

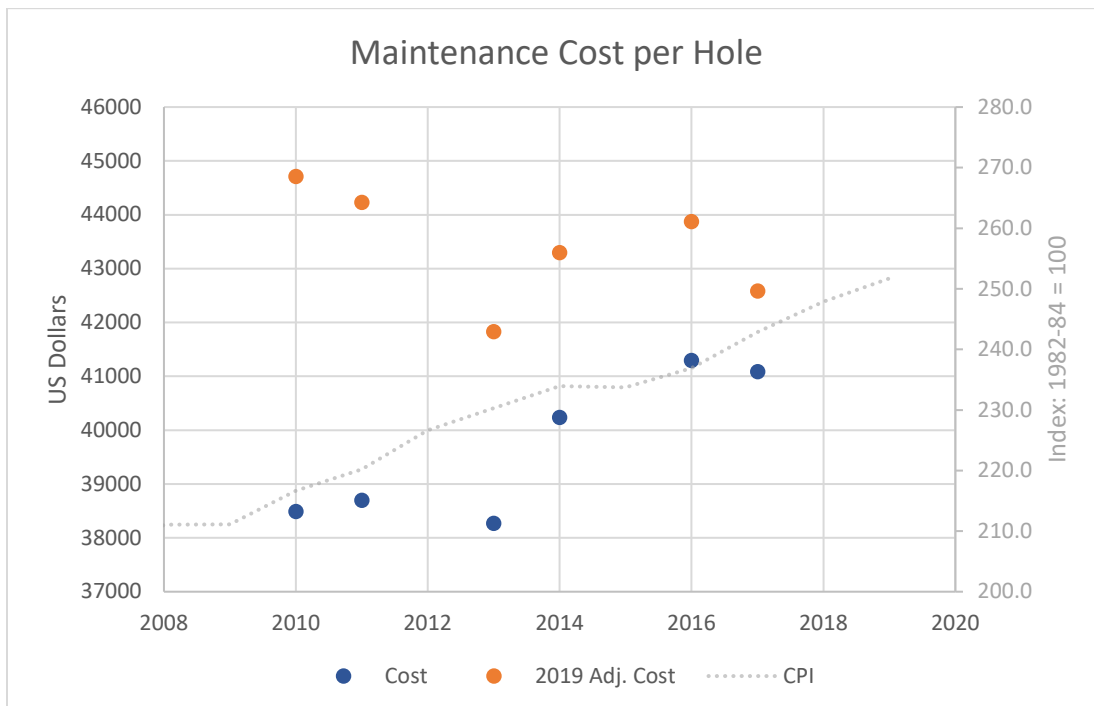


Figure 2 Average maintenance cost per hole adjusted for inflation. Source GCSAA.

Data in Figure 2 illustrates that while golf course operating budgets have risen by 6.7 percent since 2010, when adjusted for inflation, the maintenance budgets have actually remained flat or have even been reduced.

Clubs and Town & Country publications, along with PKF accountants and business advisers, have a long history of aggregating golf course maintenance cost data from private facilities. Graph 3 is a summary of the historical cost per hole data earlier in the report combined with data from 2016 and 2017. This data has been adjusted for inflation in Figure 3. Most of this data is from private facilities, so it has been analysed separately from the GCSAA survey data.

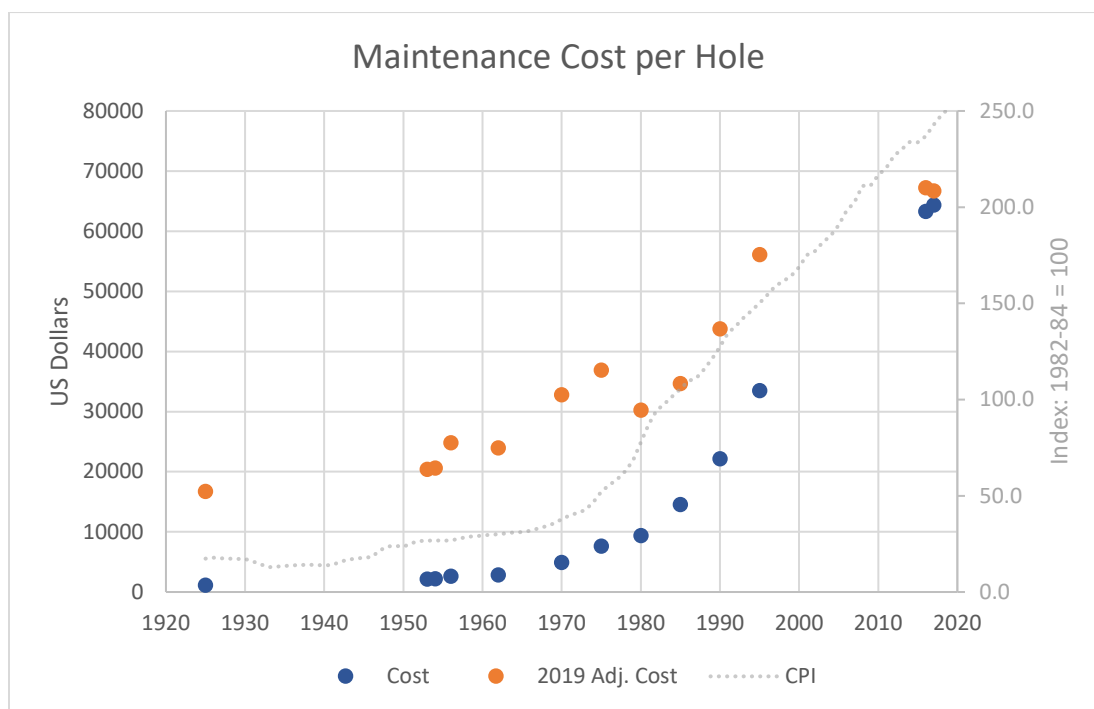


Figure 3 Historic maintenance costs per hole data at private facilities adjusted for inflation.

The data in Figure 3 shows that – historically – golf course maintenance costs have kept pace with inflation and risen steadily over time. Interesting, the gap between actual costs and adjusted costs for inflation for 2016 and 2017 were much lower than any of the previous data points. This is an indication that golf course maintenance costs have risen at private facilities, but appear to have increased at a slower pace over recent years.

3. Individual Golf Course Maintenance Expenditures

Table 1 below outlines the five primary expenditures that account for 80 percent or more of the total budget at golf courses in the U.S. In every year documented, labour accounted for the largest percentage of total golf course maintenance expenditure. Labour expenditures were lowest in 2014 at 54.9 percent, but in all other years, labour was between 56.9 and 58.5 percent. Fertilizer expenditures never exceeded more than 5.2 percent of the operating budget, although there was a slight decline from 2013 to 2017 compared to 2010 and 2011. Chemical expenditures, which includes fungicides,

herbicides, insecticides, plant growth regulators and wetting agents, remained relatively flat at 7.3 to 7.7 percent between 2010 and 2014. However, chemical expenditures increased to more than 9 percent of the budget in 2016 and 2017, respectively.

Table 1 United States golf course maintenance expenditures by key line items. Source GCSAA.

	2010	2011	2013	2014	2016	2017
Percentage of the Maintenance Budget						
Labour	58.5	58.5	56.9	54.9	57.5	57.2
Fertilizer	5.2	5.1	4.3	4.9	4.8	4.8
Chemicals	7.5	7.6	7.7	7.3	9.3	9.2
Equipment	9	9	8.7	8.7	8.9	8.9
Fuel and lubricants	3.6	4.1	4.2	3.9	2.9	3
Other	16.2	15.7	18.24	20.33	16.59	16.94

The fertilizer and chemical expenditures in relation to the overall budget have changed slightly over time. A [1925 article](#) documented that fertilizer and seed costs accounted for roughly 5 percent of the total expenditures for the 62 golf courses surveyed throughout the United States.

A [survey from 1962](#) reported that fertilizer accounted for 7 percent and chemicals accounted for 4.1 percent of the total operating budget. The greater expenditures on fertilizers compared to chemicals in this survey is likely because most courses in the 1960s were using chemicals primarily on putting greens and teeing grounds; a relatively small area compared to fairways (David Oatis, USGA, personal communication).

In [1986](#), golf courses in Massachusetts (U.S.) reported that fertilizer costs made up roughly 3 to 5 percent of the total operating budget. In the same survey, chemical costs were reported as 8 to 11 percent of the total operating budget. The increase in chemical expenditures between 1962 and 1986 is likely the result of golf courses applying materials to more acres of turf – e.g., fairways – along with rising product costs (David Oatis, USGA, personal communication).

Golf course maintenance equipment costs have steadily increased over time. However, equipment expenditures, which includes repair, maintenance costs and lease expenses, have remained steady since 2010 at 8.7 to 9 percent of the operating budget according to the GCSAA maintenance expenses survey. Fuel and lubricant expenditures have varied since 2010, but the overall range was between 2.9 and 4.2 percent.

Maintenance expenditures from the GCSAA maintenance budget surveys were adjusted for inflation and plotted in Figure 4. Chemical costs notwithstanding, fertilizer, equipment and other expenses have not changed significantly since 2010.

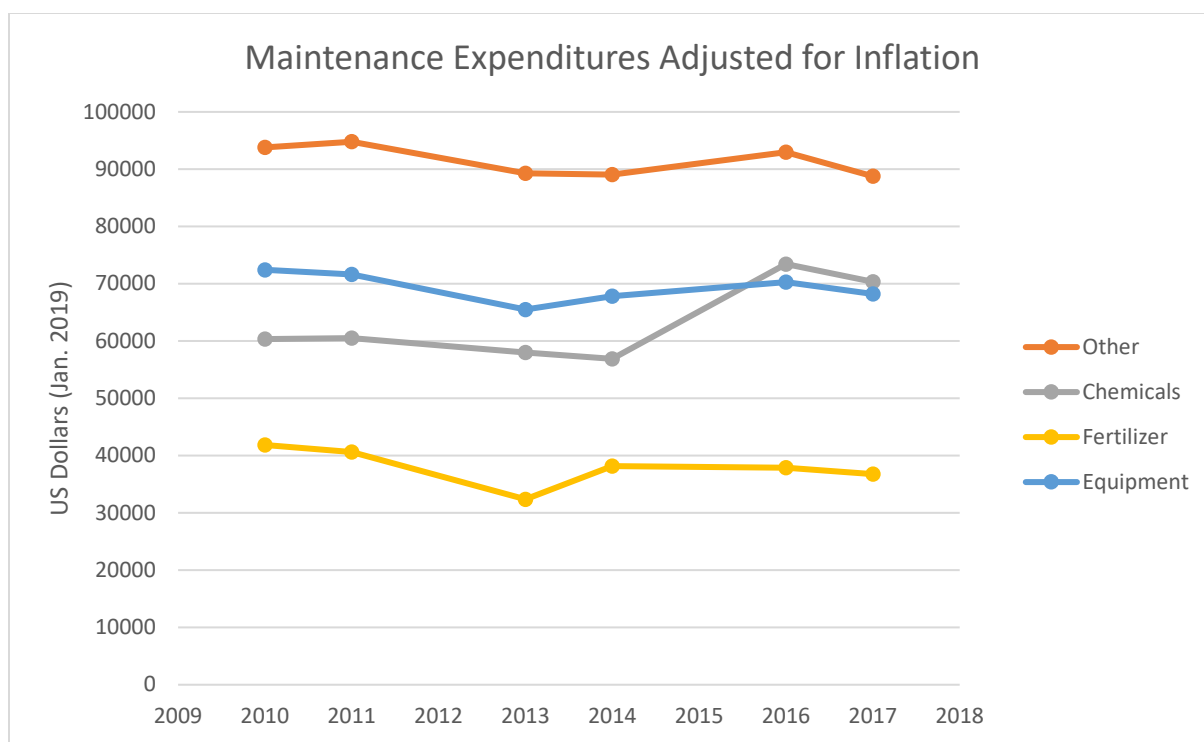


Figure 4 Maintenance expenditures by key line items adjusted for inflation. Labour is not included in this graph. Source GCSAA.

4. U.S. Costs Per Unit Area of Putting Greens, Tee, Fairway, Bunker and Rough

Using data sourced from the USGA Facility Tool (i.e., software application), the average cost per acre of putting greens, tees, fairways, bunkers and rough can be estimated. The cost data used to populate the USGA Facility Tool were aggregated from a survey of 37 golf courses of varying budget levels, facility types, sizes, location, etc. Given the relatively small sample size, these values are estimates.

Table 2 Average cost per acre of 37 golf courses in the U.S.

Putting Greens	Tees	Fairways	Bunkers	Rough
Average Cost per Acre				
\$68,469	\$7,902	\$8,604	\$40,507	\$1,762

The values in Table 2 are based on only 37 golf courses, but provide a realistic view of how many courses allocate funds for each part of the golf course. Not surprisingly, putting greens are the most expensive part of the course to maintain followed by bunkers. Spending more money on bunkers per unit area compared to tees and fairways has been confirmed through numerous conversations with golf course superintendents throughout the U.S. Many U.S. golf courses rake bunkers by hand four to six times per week which can drive labour costs up significantly. A detailed survey of 51 golf courses in Western Pennsylvania reported that in 2018, 39 of the golf courses raked bunkers at least four times per week

during the playing season (2018 Green Operations Survey). Thirteen of the courses primary raked bunkers by hand compared to 26 courses that primarily raked bunkers with a machine. This amount of resources directed toward bunker maintenance in the U.S. may be much different from other parts of the world.

5. Summary and Future Implications

5.1 Labour

Labour has always been the largest maintenance expense for a golf course, usually accounting for 50 to 60 percent of an operating budget. [Finding and retaining labour](#) is a major concern for many golf course superintendents, especially when average hourly wages for maintenance employees is well below wages reported in industries typically competing for the same workforce.

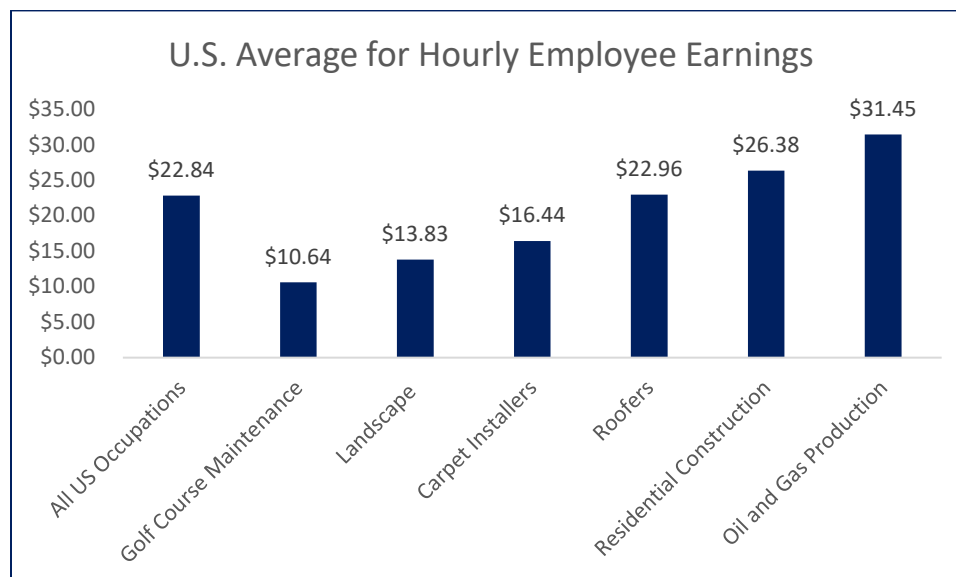


Figure 5 U.S. averages for hourly employee earnings for similar industries in 2016. Sources GCSAA and Bureau of Labour Statistics.

Labour challenges are likely to remain in the future. Not only is it becoming increasingly difficult to find skilled labour, the cost of labour is likely to rise. A golf consulting firm predicted that labour costs would increase [6 to 7 percent](#) in 2018. Technological advancements, such as robotic and autonomous mowers, may allow facilities to reduce their labour budget without sacrificing playing conditions. However, the cost of this type of equipment is substantial and only a small percentage of facilities have invested in this new technology. Most of this technology has been focused on putting green mowing, which accounts for a relatively small portion of the total labour resources devoted to mowing. The most significant potential for savings will arrive when robotic and autonomous mowers capable of mowing fairways and rough are developed given that these areas account for a much larger percentage of a given golf course property.

Labour expenditures will likely always make up the largest portion of a maintenance budget. History has proven that if labour costs are reduced beyond a certain point, playing conditions will decline and

demand/revenue will be impacted. As a result, golf courses are constantly looking for new techniques and technologies to help improve efficiency within their operation before actively pursuing reduced labour expenditure.

5.2 Fertilizers and Chemicals

Fertilizers and chemical expenditures within the overall golf course maintenance budget have fluctuated over time. However, recent trends from manufacturers and distributors indicate that the cost per unit of fungicides has steadily increased in recent years. A former field technical manager from a large agriculture company has suggested that chemical costs are likely to continue to increase at a rate of 2.5 to 5 percent annually (Steve Kammerer, USGA, personal communication). However, golf courses can offset the rising costs of various chemicals by utilizing lower-cost, post-patent products, which usually are priced around 15% lower than patent-protected products.

Ultimately, the most sustainable approach to lowering chemical expenditures is establishing improved grasses that better resist pests. Golf courses in the cool-humid region of the U.S. could conceivably to reduce fungicide expenses by [50 percent](#) or more if fairways were converted to a creeping bentgrass cultivar highly resistant to dollar spot, a common and costly disease.

5.3 Equipment

In recent years, prices for new golf course maintenance equipment has risen faster than inflation (Dana Lonn, Consultant to the Toro Company, personal communication). However, increased equipment costs are the result of advancements designed to improve fuel and energy efficiency, reduce emissions, increase safety for operators, enhance equipment reliability and diagnostics, and produce a better playing surface. For instance, hybridization and electrification of various types of maintenance equipment have improved energy efficiency and reduced environmental impact. Hybrid and electric-powered equipment often have a higher initial cost, but there are many long-term benefits. Golf course maintenance equipment costs are not likely to decrease in the immediate future, but the improved efficiency and reduced environmental impact warrant these increases in cost.

6. Closing Remarks

Golf course maintenance expenditures have increased significantly over the last 100 years. The key drivers of maintenance costs are labour, fertilizer, chemicals, equipment, and fuel and lubricants. As these costs increase, maintenance costs can be expected to also increase.. The overall size of a golf course does impact annual maintenance expenditures. However, the specific trends associated with golf course size and composition are covered in a separate report.

Available data suggests that a gradual increase in maintenance expenses occurred between the 1920s and 1980s. The data also suggests that a more rapid increase in maintenance expenses occurred since 1980. The median operating budget for U.S. courses between 2010 and 2017 increased by 6.7 percent, and yet when costs are adjusted for inflation, it becomes apparent that many operating budgets remained flat and many other golf courses experienced significant budget reductions (Graph 2 and 3). While maintenance costs are expected to continue to rise in the future, the trends between 2010 and 2017 indicate that the rise may not be at the pace observed between the 1980s and mid-2000s.

7. References

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Western Pennsylvania Golf Association. 2018 Green Operations Survey

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