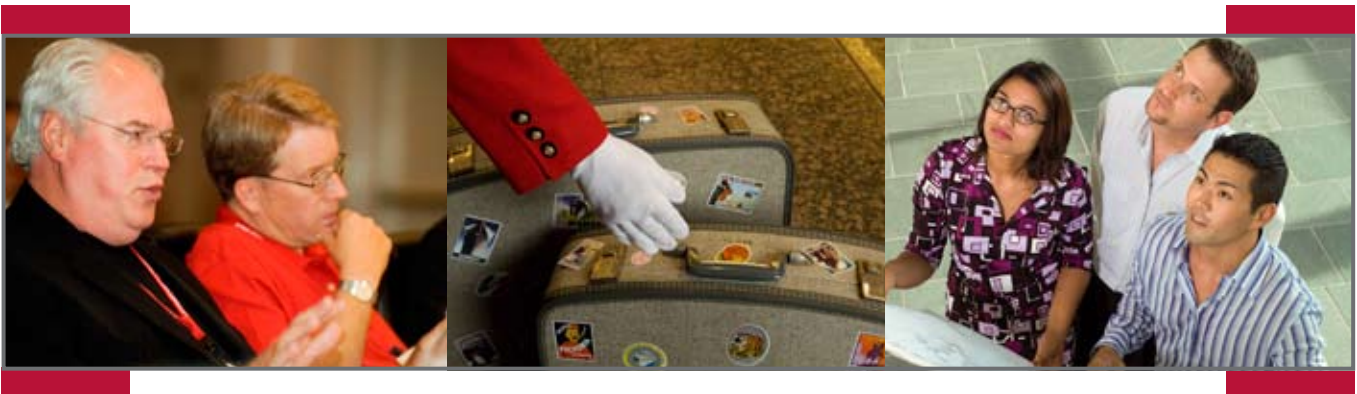


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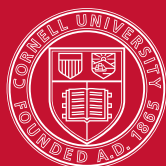


Managing a Wine Cellar Using a Spreadsheet

Cornell Hospitality Report

Vol. 9, No. 9, May 2009

by Gary M. Thompson, Ph.D.



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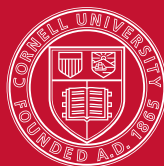
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Managing a Wine Cellar Using a Spreadsheet

by Gary M. Thompson

EXECUTIVE SUMMARY

Using examples from a new Wine Cellar Management Tool, this report describes the many spreadsheet-based analyses in this tool that can assist an individual, restaurant, or bar to manage a wine cellar. If one is disciplined about recording the inflows and outflows to and from the cellar, the spreadsheet tool will provide several cellar analyses. In addition to providing insight into the key questions of what to consume and what to promote, the tool shows such interesting and informative analyses as appellations, vintages, and types of wine. In the tool described in this report, the spreadsheet itself incorporates form-based sets of data entry fields. The Wine Cellar Management Tool, which is available at no charge from The Center for Hospitality Research at Cornell University, does not require actual knowledge of how to construct a spreadsheet. It does require diligent data entry regarding wine purchases and withdrawals.

ABOUT THE AUTHOR



Gary M. Thompson, Ph.D., is professor of operations management at the Cornell University School of Hotel Administration (gmt1@cornell.edu), where he teaches undergraduate and graduate courses in service operations management. His research, which focuses on wine cellars, restaurant operations, scheduling conferences, and on workforce staffing and scheduling, has appeared in a number of outlets. He has consulted for several prominent hospitality companies and is the founder and president of Thoughtimus, Inc., a small software development firm focusing on scheduling products.

Managing a Wine Cellar Using a Spreadsheet

by Gary M. Thompson

This report serves as a companion piece for the “Wine Cellar Management Tool,” which is available for use at no charge on the Center for Hospitality Research web site (www.hotelschool.cornell.edu/research/chr/pubs/tools/). Although the tool is based on a spreadsheet, it requires only data entry in predefined forms within the spreadsheet. The spreadsheet calculations underlie the resulting analyses. In addition to the blank spreadsheet that you can use, I have posted a sample spreadsheet with fields filled in. As you read this report, you may wish to consult that sample spreadsheet.

Having developed the tool, I wrote this report to explain how the tool will allow individuals (or restaurants and bars) to manage their wine inventories. Throughout, I use the term “wine cellar” to mean wine inventory, even though wine inventories are not always held in cellars. I developed the tool because I have been surprised at the number of times I have read about people who claim to “track” their wine cellars in their heads, even those whose cellars run into the thousands of bottles. Even granting that these people may have excellent memories, I think it’s easy to mismanage a cellar using one’s head. The key result of mismanagement is failing to drink wines at their peak. Managing a wine inventory can be complex, since wines exhibit different aging profiles that reflect how the wine evolves over time. Some wines peak early and then decline fairly quickly, while others improve slowly over time, have a long window of peak drinking, and then decline slowly.

This report and tool complement an earlier CHR report, which Professor Steve Mutkoski and I wrote.¹ That report

¹ Gary M. Thompson and Stephen A. Mutkoski, “Optimizing a Personal Wine Cellar,” *Cornell Hospitality Reports* Vol. 8, No. 5 (2008), p. 14; Center for Hospitality Research (www.hotelschool.cornell.edu/research/chr/pubs/reports/abstract-14724.html).

described how one could take an optimization perspective to managing a wine cellar. The limitation of that report is that implementing the method that we described requires a sophisticated optimization model. By contrast, the tool presented here is based on a spreadsheet model that can be used to help manage a wine cellar. The spreadsheet-based tool allows you to input your wine-cellar information, without worrying about the underlying spreadsheet rules and arguments. The simplicity of this approach can broaden its applicability, since users need not actually understand how to operate the spreadsheet. All they need do is input the requisite data, as I explain at the end of this report.

The Wine Cellar Management Tool does not tell you what you must drink (or what to promote). However, once you have input the information regarding your cellar, the tool can help guide your wine selections, so that you have an appropriate selection of wines in different categories and so that you don’t miss drinking wines at their peak. To be effective, the tool requires a disciplined approach—recording purchases and consumption and, occasionally, verifying the accuracy of the inventory counts by taking a physical inventory. I believe this disciplined approach is well worth the time, so that no wine you own ages past its peak drinking

EXHIBIT 1

Cellar composition by country of wine origin

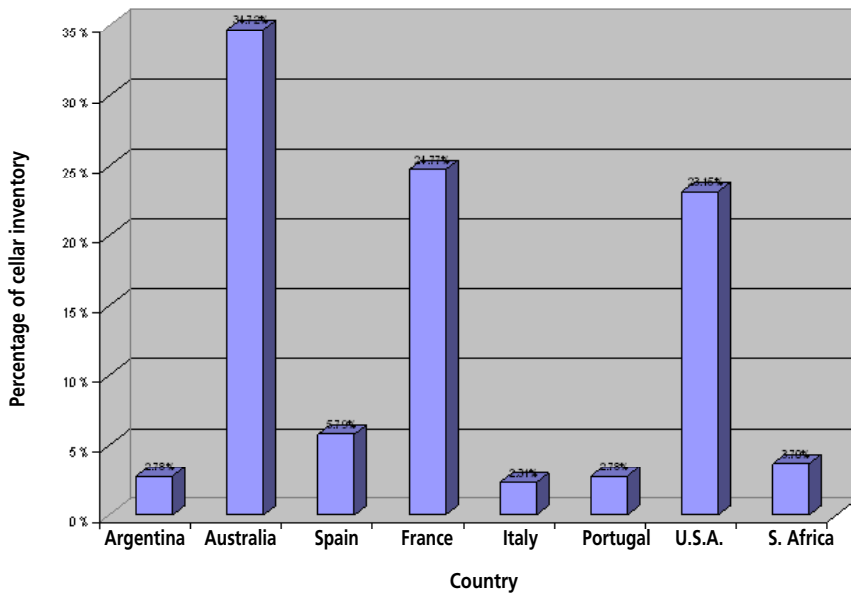
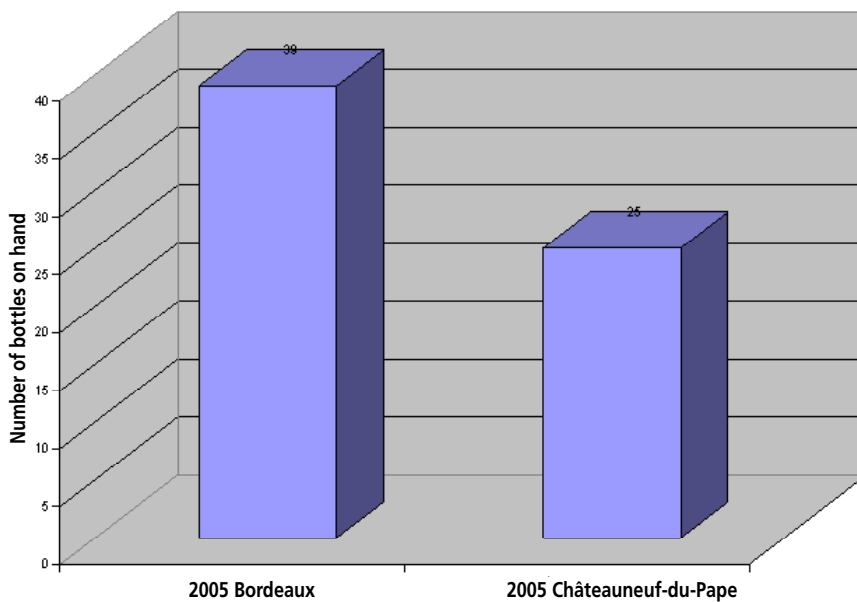


EXHIBIT 2

“Special designation” wines on hand



period. Other benefits are a wide variety of interesting and informative analyses that reflect the wine held in your cellar. From my own use of the tool over a number of months, I can attest to minimal efforts required to keep it updated.

In the remainder of this report I first present the many analyses related to a wine cellar that one can perform with the spreadsheet underlying the Wine Cellar Management

Tool. After that, I describe the required data. In reality, the data must come before the analyses. However, I present them in reverse order, since it is the usefulness and extent of the analyses that will allow you to determine whether using this tool is worth your while.

Cellar Analyses

The cellar analyses can be broken down into those that are interesting or informative and those on which you will base your cellar-management actions. All of the analyses presented in this report are based on data from a real wine cellar, but the data have been disguised to some extent to “protect the innocent.”

Interesting and informative analyses. The Wine Cellar Management Tool presents its analyses as a series of charts and tables.

For example, Exhibit 1 illustrates the composition of the cellar, by country of wine origin. In this particular cellar, wines from three countries dominate. Australian wines constitute about a third of the cellar, French wines make up about one quarter of the cellar, and wines from the United States constitute a little more than one-fifth of the wines. The remaining wines are from Argentina, Spain, Italy, Portugal, and South Africa.

It can be useful to create “Special Designations” for outstanding wines. These designations might be based on particularly good vintages from certain growing areas, such as 2001 Brunellos (from Italy). Exhibit 2 illustrates the tally of two special designations—2005 Bordeaux,

numbering about three cases in the sample cellar, and 2005 Châteauneuf-du-Pape, of which there are about two cases.

Tracking the cellar composition by vintage can yield information about whether the cellar is being replenished, or whether particularly strong vintages are well represented. Exhibit 3 illustrates the cellar’s composition, depicting a relatively young cellar containing wines only from the 2001

vintage onwards. The 2005 vintage is particularly well represented, with close to 200 bottles on hand.

A related analysis examines the cellar composition by varietal type, as shown in Exhibit 4. One is faced with a decision about the level of detail to use in defining the varietal types. Exhibit 4 uses a moderate level of detail. Thus, reflecting the cellar's large Australian component, Shiraz and Syrah (pure and blends) are the dominant wine, representing about 40 percent of the bottles on hand. You can, however, define the varietal types at a broad level. One could use

"Rhone-Style" to encompass the Grenache, Grenache Blend, Shiraz/Syrah (pure and blend wines), which in this cellar constitute about 58 percent of the bottles on hand.

Tracking the vendors from which one has purchased wine can also be valuable, if you identify a particularly reliable vendor. Exhibit 5 illustrates this analysis for the cellar in question (with vendor names omitted). The exhibit displays both the number of bottles on hand, and the total number of bottles purchased from each ven-

EXHIBIT 3

Cellar composition by vintage

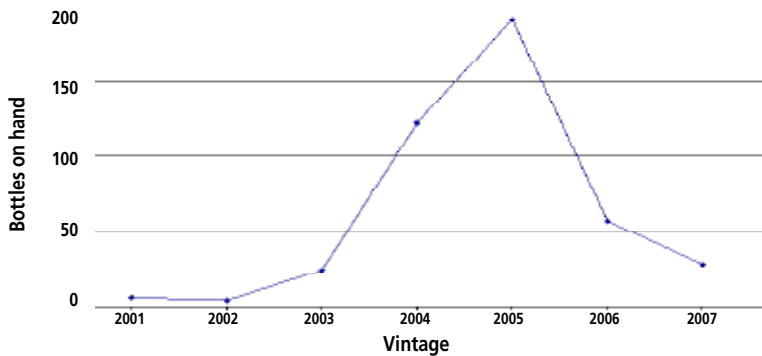


EXHIBIT 4

Cellar composition by varietal

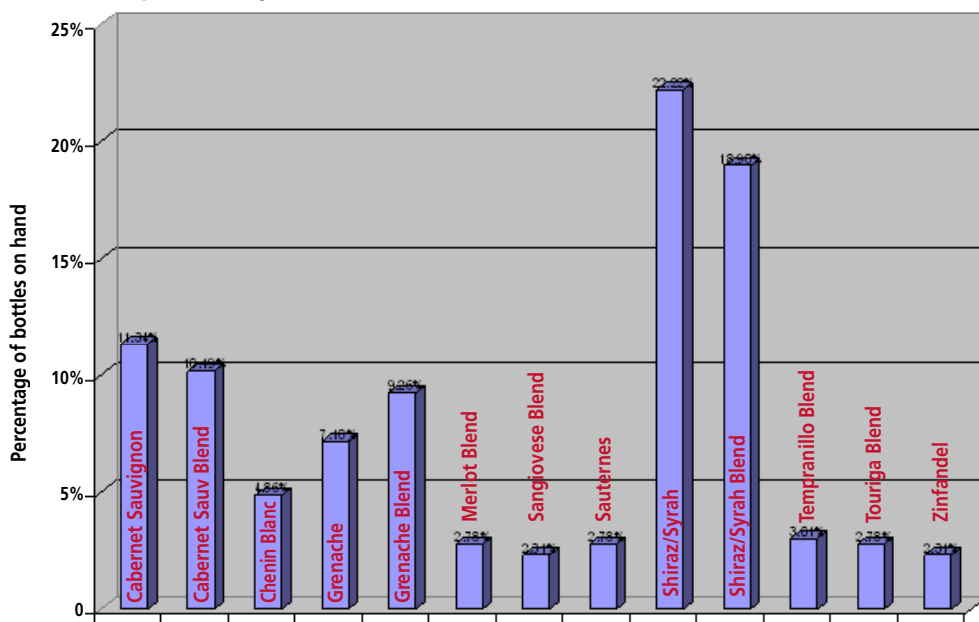


EXHIBIT 5

Wine purchases by vendor

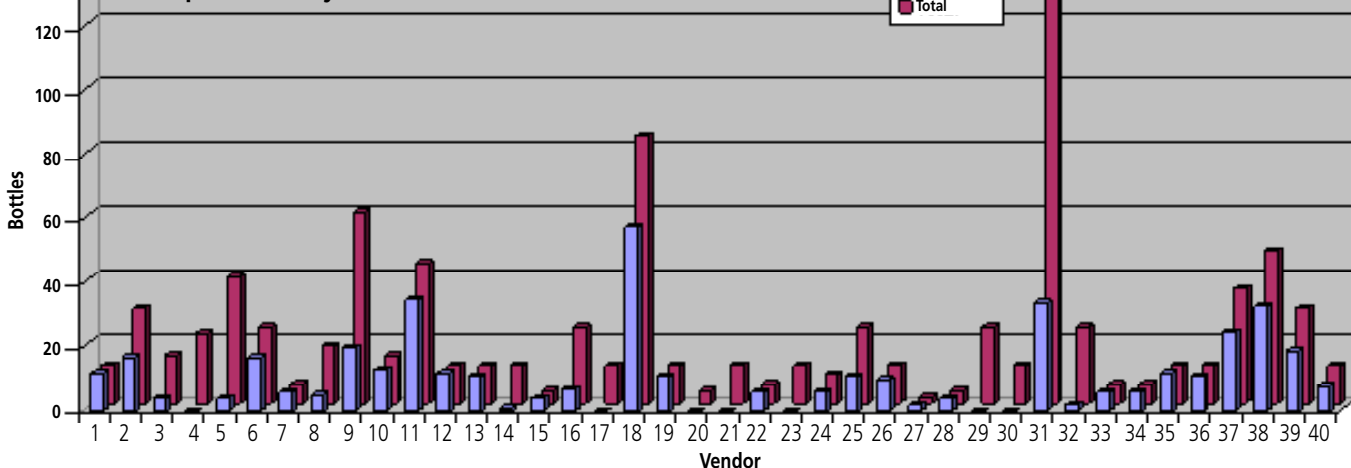
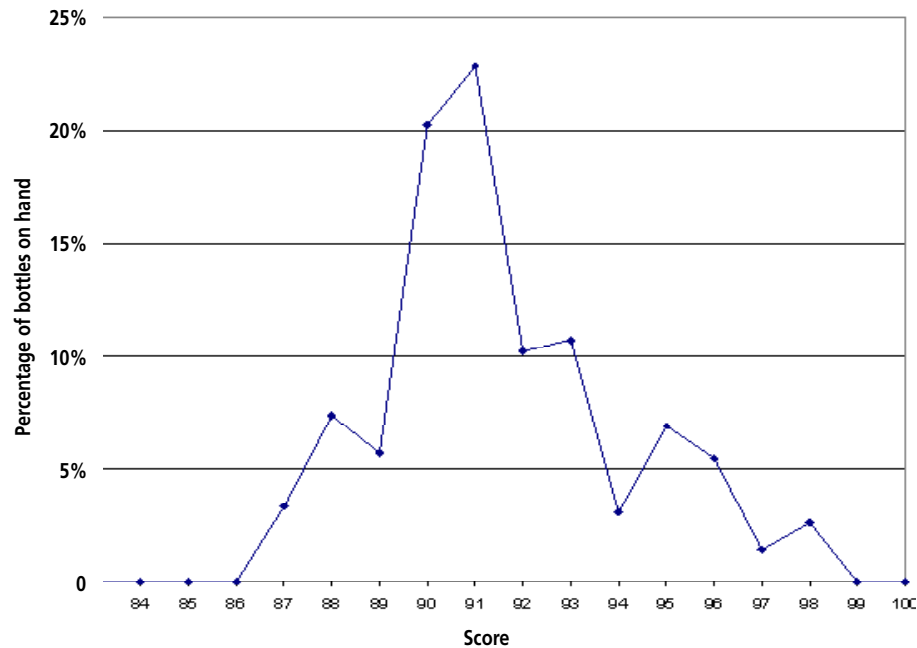
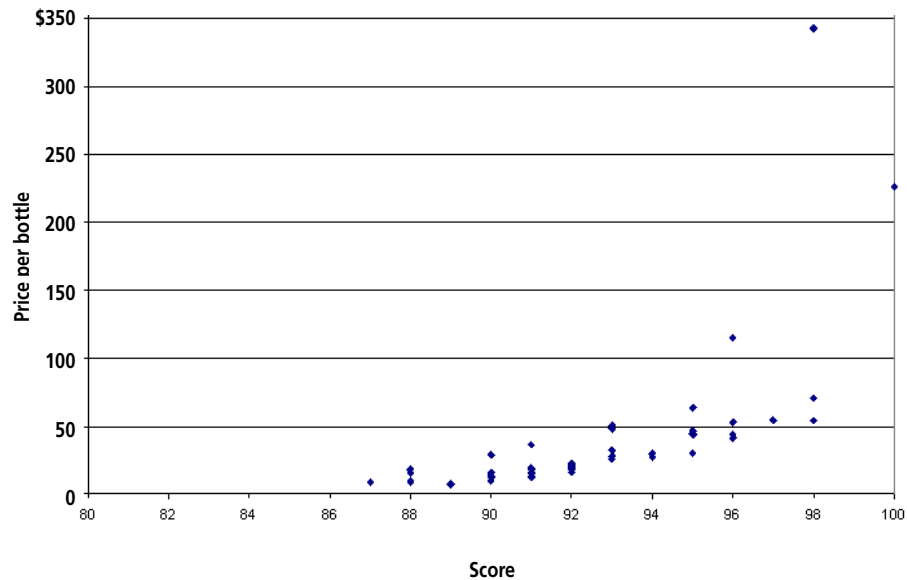


EXHIBIT 6**Cellar composition by rating score****EXHIBIT 7****Wine price as a function of rating score**

dor. For this cellar, Vendor 31 has been the dominant supplier, followed by Vendor 18.

Rating wines is a common practice. The three most popular rating sources use 100-point scales: *International Wine Cellar*, *Wine Advocate*, and *Wine Spectator*.² The tool al-

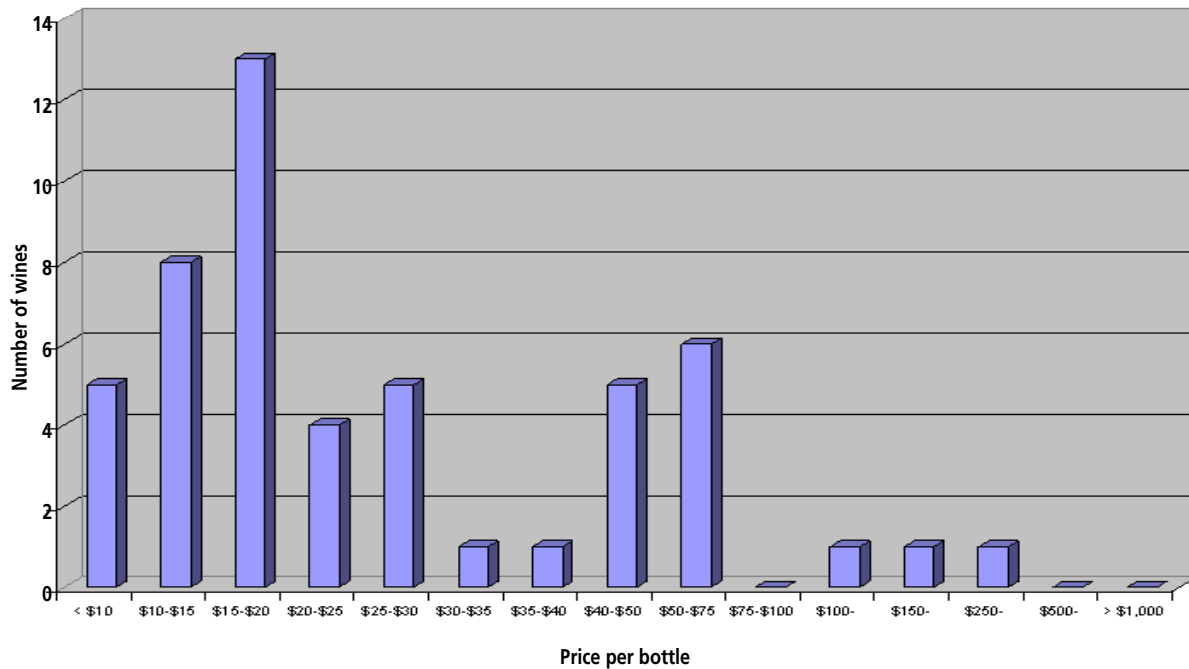
² See: Gary M. Thompson, Stephen A. Mutkoski, Youngran Bae, Lili-ana Ielacqua, and Se Bum Oh, "An Analysis of Bordeaux Wine Ratings,

allows you to apply these ratings or develop your own ratings. Regardless of the source of the ratings, it can be useful to examine the cellar composition with respect to the rating

1970-2005: Implications for the Existing Classification of the Médoc and Graves," *Cornell Hospitality Reports*, Vol. 8, No. 11 (2008), Cornell Center for Hospitality Research (www.hotelschool.cornell.edu/research/chr/pubs/reports/abstract-14865.html).

EXHIBIT 8

Number of different wines in the cellar, by price per bottle



scores of the wines, such as is done in Exhibit 6. In this cellar, 91- and 90-point wines are the most common. The chart is informative, in that it shows the representation in the cellar of higher-rated wines, which are often considered to be more worthy of longer cellaring.

It often seems that there is a weak relationship between the price of wine and its quality.³ A simple way to examine this relationship is to plot the price of the cellar’s wines as a function of their rating score, an analysis shown in Exhibit 7. This chart clearly shows a relationship between price and rating. However, the relationship does not appear to be linear, since price is increasing proportionally faster than rating. These results are consistent with the law of diminishing returns.

The wine purchases can be examined with respect to price, as illustrated in Exhibit 8. Here, the number of different wines in the cellar (not the number of bottles) is plotted for different ranges of price per bottle. For the cellar in question, bottle prices in the \$15 to \$20 range are the most common, followed by wines in the \$10 to \$15 price range. It is important to note that the price-range categories are not equal in this exhibit: the ranges expand with more expensive bottle prices. One’s wine budget will largely determine whether the purchases are skewed to the left, as they are in this exhibit, where budget-priced wines dominate, or skewed to right.

³ *Ibid.*

When purchasing wine, there is always the issue of the number of bottles of a particular wine to purchase. As noted in my earlier CHR report with Professor Mutkoski:

Having multiple bottles of the same wine allows one to taste the wine over time, seeing how it develops and ensuring that at least some bottles are consumed at their peak. Another reason to buy more than a single bottle of each wine, particularly for good wines, is that a person may wait too long for an occasion that’s “special enough” to merit opening that one outstanding bottle. Then when it is opened, it may be past its peak.⁴

Exhibit 9 shows the number of different wines in the cellar, by the number of bottles on hand. In this cellar, the most common numbers of bottles on hand are 6, 10 and 11, while two of the wines have 24 bottles on hand.

As I described in the introduction, wines vary in how they age over time. Each wine can be thought of as having a peak drinking window—the period of time during which the wine is best consumed. That window will vary, based on, among other things, the grape varieties in the wine, the growing conditions of the vintage, and the how the wine was made. Experienced wine drinkers can estimate the peak drinking window. Also, it is common for the rating services mentioned earlier to provide information like “drink now” or “best from 2015 to 2025.” By assuming that each wine will be consumed at a more or less constant rate over its peak

⁴ Thompson and Mutkoski, p. 10.

EXHIBIT 9

Number of different wines in the cellar, by number of bottles on hand

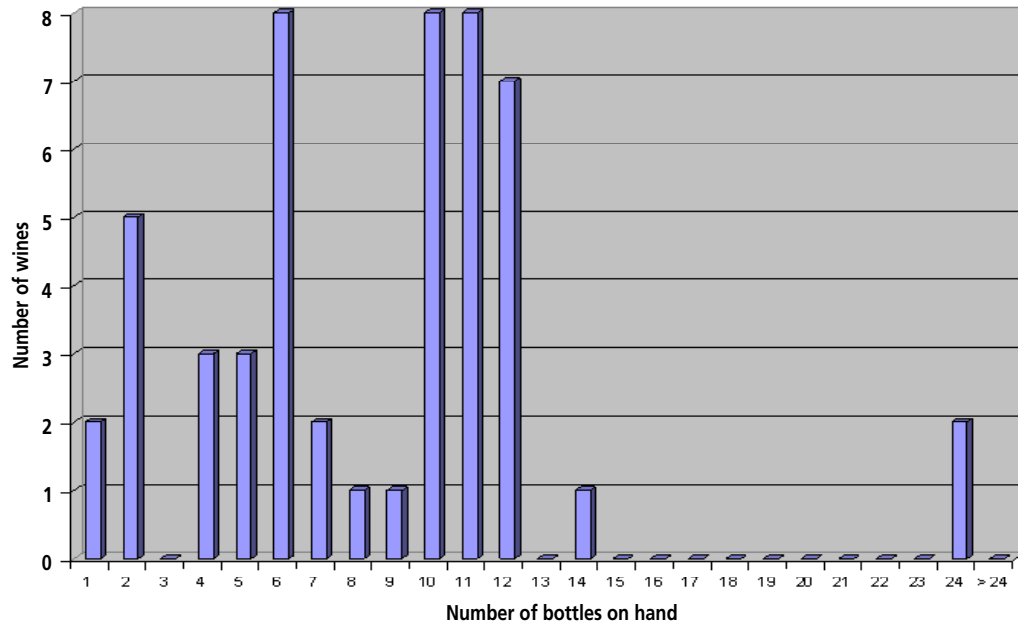
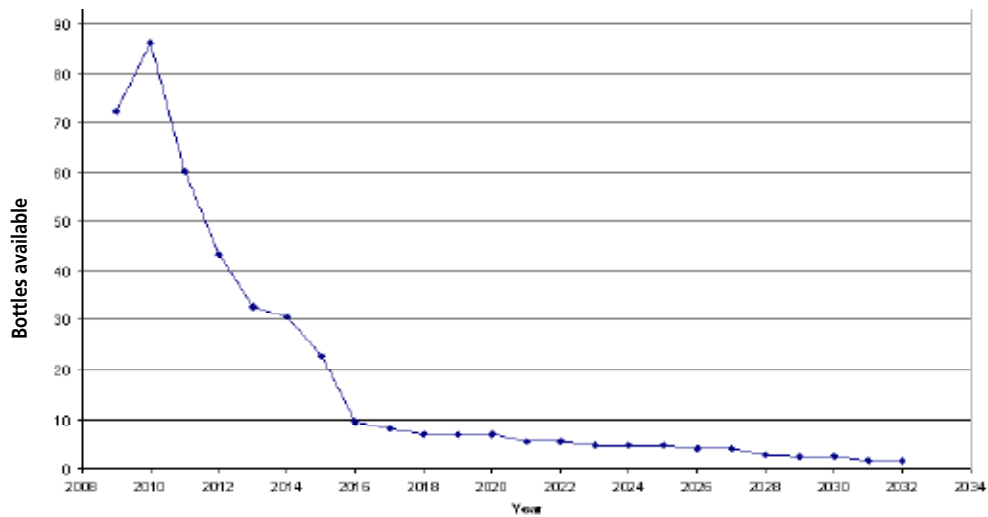


EXHIBIT 10

Estimated number of bottles available for consumption, by year

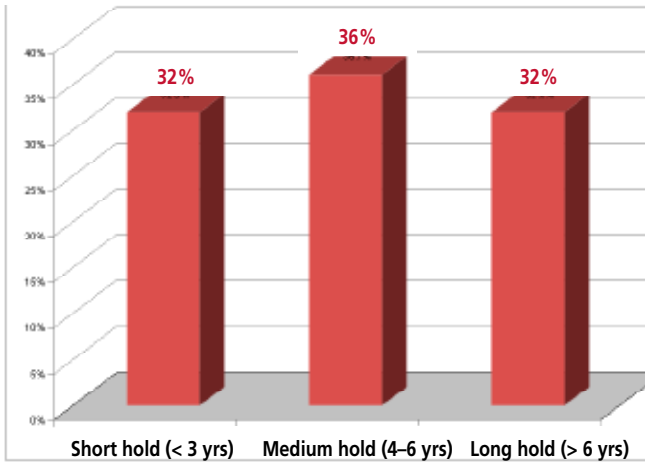


drinking window, you can get an idea of how many bottles will be available for consumption each year by summing the predicted consumption across all wines (see Exhibit 10). For the cellar in question, about 73 bottles would be available in 2009, rising to about 86 in 2010, and then declining until fewer than ten bottles would be available per year beginning in 2016. Obviously, the shape of this curve will vary with the time of the year (the current year will look different early in the calendar year compared to late in the calendar year) and with the nature of the wines in the cellar (long-lived wines

will yield a chart that looks different than that from short-lived wines). Moreover, this chart does not say which wines will be consumed, since that is a personal choice. However, if the number of bottles to available for consumption in a year exceeds the number of bottles that you typically do consume in a year, chances are that many wines are nearing the end of their peak drinking periods. In that case, it may either be time to have some large parties or to sell some of the wine on the auction market.

EXHIBIT 11

Cellar composition by length of time wine should be cellared



Another way to look at this cellar is to assess its peak drinking windows. Based on the end of the peak drinking period, each wine can be categorized as short-lived, medium-lived, or long-lived. Short-lived wines can be defined as having a peak drinking periods that expire within three years from the analysis date. By contrast, the peak drinking windows of long-lived wines expire more than six years in the future. Medium-lived wines fall in the middle of these time frames. The percentages of wine in the cellar that fall in each of these categories can then be examined, as shown in Exhibit 11. The cellar in question is balanced between short-, medium-, and long-lived wines, since each category represents about one third of the bottles in the cellar.

All of the analyses that I have discussed so far are static. They describe the state of the cellar at any time, but they do not track how the cellar's status has changed over time. Exhibit 12 presents an example of two analyses that can be tracked over time (and that are tracked automatically in the Wine Cellar Management Tool)—namely, the number of bottles in the cellar, and the average age of the wines in the

EXHIBIT 12

Cellar size and average bottle age over time

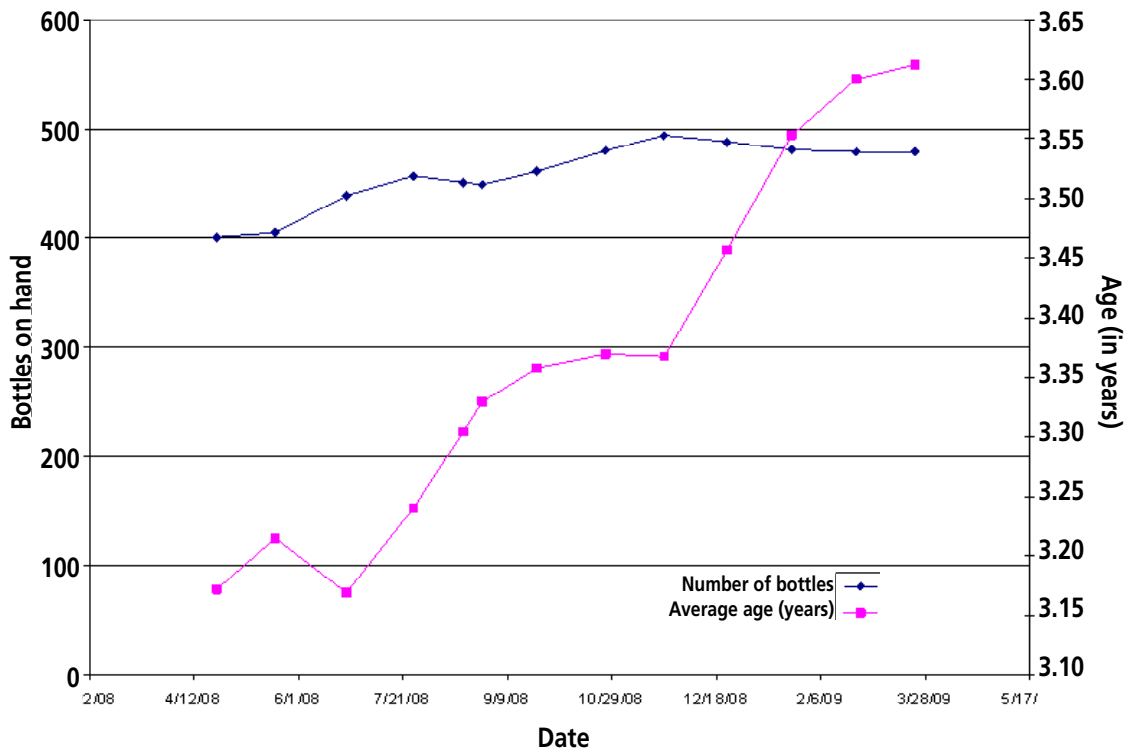


EXHIBIT 13**Summary statistics for cellar.**

Purchased Wines	
Actual Bottles	
Average \$/Bottle	\$ 20.15
Average Rating Score per Bottle	90.69
Number of Bottles	909
Standard Bottle Equivalents	
Average \$/Bottle	\$ 20.10
Average Rating Score per Bottle	90.68
Number of Bottles	914

On-Hand Wines	
Actual Bottles	
Number of Bottles	432
Average \$	\$ 23.32
Average Rating Score	91.56
Average Age (Days)	1,371
Average Age (Years)	3.76
Zero-Inventory Date	3/23/11
Bottles Consumed per Week	4.13
Total \$	\$ 10,074
Standard Bottle Equivalents	
# Bottles	435
Average \$	\$ 23.24
Average Rating Score	91.54
On-Order Wines	
On-Order # Bottles	48

Rating Score	Number of Bottles	Percentage
> 94	165	11.49%
> 93	226	15.74%
> 92	392	27.30%
> 91	591	41.16%
< 90	138	9.61%
< 89	106	7.38%
< 88	16	1.11%

cellar. This exhibit shows that the sample cellar was increasing in size for the first nine months that it was tracked, but that the size has stabilized over the last five months. Over the entire period, the average age of the wine in the cellar has increased. Stability in the number of bottles in the cellar and the age of the wines in it are indicative of a stable cellar.

In addition to the analyses that can be presented in chart format, the tool presents certain numerical statistics, as shown in Exhibit 13. The average price per bottle and average rating score can be calculated both for total purchases and for the wines on hand. Comparing these numbers for the cellar in question shows that the on-hand wines are both more expensive and higher-rated than the total purchases, which indicates that the less-expensive and lower-rated wines are being consumed at a higher rate than the more-expensive and high-rated wines. That outcome is consistent with the goal of keeping the “better” wines in the cellar a longer time (and for saving certain wines for special occasions, as I discuss below). Many of the analyses shown in Exhibit 13 are performed on the actual number of bottles and also for the “standard bottle equivalents,” which adjusts the calculations based on the sizes of the bottles in the cellar, and converts the values to the equivalents of standard (i.e., 0.75 liter) bottles.

The “zero-inventory date” shown in Exhibit 13 is the date at which the cellar would be empty if no additional bottles were purchased and consumption continued at its current rate. The summary statistics can also track the percentage of wines in the cellar that have rating scores higher or lower than specified values. For the cellar in question, 11.5 percent of the bottles have rating scores of 95 or higher, for instance, while 9.6 percent of the wines have rating scores of 89 or lower.

Actionable Analyses

I describe the above analyses as interesting and informative, because they don’t guide you in deciding when and which wine to drink. The analyses I present next can provide the necessary insight, such as providing information helpful in guiding consumption and promotion choices or decisions to reorder certain wines. Perhaps the most important actionable analysis is a watch-list of wines, which is based on each wine’s peak drinking window. For each wine, the tool divides the number of days that remain in the peak drinking window by the number of bottles on hand, and presents the wines in order, starting with those having the least time left per bottle, meaning those that are closing in on the end of their peak drinking window. This calculation presents the average number of days between consumption of each bottle, if the wine is to be fully consumed within the peak drinking window. As shown in Exhibit 14 the wine highest

A "watch list" of wines to ensure consumption during their peak drinking windows

The screenshot shows a software window titled "Wine Analyses" with a sub-header "Wines Meeting the Criteria". The main area contains a list of wine entries, each with a score in brackets followed by wine details. The right-hand side features an "Analysis Options" panel with several radio buttons and input fields. Below the options is a "Notes" section with explanatory text.

Score	Days	Wine Name	Vintage	Region	Volume
[24.6]	[24/24]	Bodegas Ateca	2007	Grenache Garnacha de Fuego Old Vines	0.75 L
[49.3]	[12/24]	Fairview	2005	Shiraz Coastal Region	0.75 L
[73.9]	[08/24]	Columbia Crest	2005	Syrah, Sangiovese, Cab Sauvignon, Grenache,...	Two Vines 10 Red 0.75 L
[79.7]	[12/24]	Hogue	2006	Cabernet Sauvignon Columbia Valley	0.75 L
[95.6]	[10/21]	Four Vines	2004	Zinfandel Amador County	0.75 L
[95.6]	[10/12]	Yalumba	2004	Shiraz-Viognier Barossa Valley	0.75 L

Analysis Options

- "Watch" List (drink-now wines)
 - Consider...
 - All Wines
 - On-Hand Only
- High Consumption Rate
- Predicted Expiry Date
- Everyday Wines
 - Maximum Score: 92
- 'Reward Day' Wines
- Special Occasion Wines
 - Minimum Score: 95

Sort By

- Drink-Now Score [+Winery]
- Rating Score [+Winery]
- Winery [+Rating Score]

Notes

The 'Watch List' option lists wines in declining order of days-between-bottle consumption, to ensure that the wine will be consumed within its peak drinking window. For example, a number like '[7.0]' would indicate that you would need to consume a bottle of this wine every week to ensure that you consume the wine by the end of the 'Drink-Through' period.

The numbers in the second set of brackets are the number of bottles remaining of the number of bottles purchased.

Close

on the watch list for this cellar has a consumption metric of 24.6 days. This wine has to be consumed at the rate of about one bottle a month so that it is consumed completely within the peak drinking window. Since drinking about a bottle per month is not a challenge, it is doubtful that there would be a problem consuming this wine within its peak drinking window. However, if many wines in the cellar were nearing the end of their peak drinking window, the watch list would grow, and the number of days between consumption would become much smaller. At that point, the wines would be candidates either for being consumed at a party you host or for being sold on the auction market.

A related analysis is the consumption rate of each wine. As I just explained, wines that are nearing the end of their peak drinking window should have high consumption rates,

as would those that are particular favorites of the cellar owner or the restaurant's customers or those that have been strongly promoted. Exhibit 15 shows this analysis from the Wine Cellar Management Tool for the sample cellar, which sorts the wines from highest to lowest consumption rates. The top five wines are all being consumed at the rate of at least a bottle per month, so these wines could be candidates for additional purchases.

Using the number of bottles on hand and the consumption rate of a wine, one can predict the date at which all of that wine will be consumed, assuming the consumption rate stays constant. I'll call this date the "expiry" date. The wines can then be sorted from near to far expiry dates. Exhibit 16 shows this analysis from the Wine Cellar Management Tool, which is predicting that ten wines will be fully consumed

Wines that have had the highest consumption rates, in bottles per month

The screenshot shows a software window titled "Wine Analyses" with a close button in the top right corner. The window is divided into two main sections. The left section, titled "Wines Meeting the Criteria", contains a list of wine entries. Each entry consists of a score in brackets, a date in brackets, the wine name, vintage, and grape varieties, followed by the winery name and bottle size. The right section, titled "Analysis Options", contains several radio buttons for selecting analysis criteria: "Watch" List (drink-now wines), "High Consumption Rate" (selected), "Predicted Expiry Date", "Everyday Wines", "Reward Day" Wines, and "Special Occasion Wines". Below these are two score input fields: "Maximum Score" (set to 92) and "Minimum Score" (set to 95). A "Sort By" section offers three options: "Drink-Now Score [+Winery]" (selected), "Rating Score [+Winery]", and "Winery [+Rating Score]". A "Notes" section at the bottom right explains that the "High Consumption" option lists wines in declining order of rate of consumption (measured in bottles per month) and that the numbers in the second set of brackets represent the number of bottles remaining of the number of bottles purchased. A "Close" button is located at the bottom right of the window.

Wines Meeting the Criteria

[1.31] [02/12] Boekenhoutskloof | 2007 | Syrah, Mouvedre, Viognier | Wolftrap Western Cape | 0.75 L
 [1.23] [08/24] Columbia Crest | 2005 | Syrah, Sangiovese, Cab Sauvignon, Grenache, .. | Two Vines 10 Red | 0.75 L
 [1.12] [07/36] Nepenthe Vineyards | 2004 | Cabernet Sauvignon, Tempranillo and Zinfandel | Tyrst Red Adelaide Hills | 0.75 L
 [1.04] [04/12] Capcanes Montsant | 2005 | Grenache (85%) & Syrah (15%) | Mas Donis Barrica | 0.75 L
 [1.04] [12/24] Hogue | 2006 | Cabernet Sauvignon | Columbia Valley | 0.75 L
 [0.77] [12/24] Fairview | 2005 | Shiraz | Coastal Region | 0.75 L
 [0.75] [01/12] St.-Cosme | 2006 | Cotes du Rhone | Cotes du Rhone Rouge | 0.75 L
 [0.53] [02/12] Bodegas Lan | 2004 | Rioja | Rioja Edicion Limitada | 0.75 L
 [0.43] [10/21] Four Vines | 2004 | Zinfandel | Amador County | 0.75 L
 [0.38] [10/12] Bodegas Lan | 2004 | Rioja | Culmen Rioja Reserva | 0.75 L
 [0.37] [09/12] Fetish | 2006 | Shiraz, Mataro, Grenache | Playmates | 0.75 L
 [0.36] [11/12] Landmark | 2006 | Syrah | Syrah Sonoma Valley Steel Plow | 0.75 L
 [0.31] [07/12] Jim Barry | 2005 | Shiraz | The Lodge Hill | 0.75 L
 [0.30] [08/12] Westerly | 2004 | Syrah | Santa Ynez Valley | 0.75 L
 [0.26] [10/12] Bodegas Borsao | 2005 | Grenache (50), Tempranillo (25), Cab S (25) | Crianza Seleccion Campo de Borja | 0.75 L
 [0.25] [05/12] Yalumba | 2003 | Shiraz-Viognier | Barossa Valley | 0.75 L
 [0.20] [11/12] Columbia Crest | 2005 | Cabernet Sauvignon | Columbia Valley Reserve | 0.75 L
 [0.18] [07/12] Greg Norman Estates | 2004 | Cabernet-Merlot | Limestone Coast | 0.75 L
 [0.18] [09/12] Thorn Clarke | 2004 | Shiraz, Petit Verdot, Cabernet Sauvignon and Cabernet Franc | Terra Barossa Cuvee | 0.75 L
 [0.12] [10/12] Falesco | 2006 | Sangiovese | Sangiovese Umbria | 0.75 L
 [0.12] [05/06] Jacob's Creek | 2003 | Shiraz | Centenary Hill | 0.75 L
 [0.09] [10/12] Domaine des Baumard | 2005 | Chenin Blanc | Coteaux du Layon Clos Ste. Catherine | 0.5 L
 [0.09] [10/12] Langmeil | 2005 | Shiraz | Barossa Valley Valley Floor | 0.75 L
 [0.09] [01/02] Domaine les Pallieres | 2005 | Gigondas | Gigondas | 0.75 L
 [0.08] [10/12] Glen Eldon | 2003 | Shiraz | Dry Bore Barossa | 0.75 L
 [0.08] [10/12] Yalumba | 2004 | Shiraz-Viognier | Barossa Valley | 0.75 L
 [0.08] [10/12] Peter Lehmann | 2004 | Shiraz, Cabernet Sauvignon, Merlot | Clancy's Red Barossa | 0.75 L
 [0.07] [11/12] Lucien Barrot | 2005 | Chateaneuf Du Pape | Chateaneuf Du Pape | 0.75 L
 [0.05] [05/06] Domaine des Baumard | 2005 | Chenin Blanc | Quarts de Chaume | 0.75 L
 [0.04] [11/12] Langmeil | 2004 | Shiraz/Grenache/Mourvedre | Three Gardens | 0.75 L
 [0.03] [02/03] Langmeil | 2004 | Shiraz | Barossa Valley Valley Floor | 0.75 L

Analysis Options

"Watch" List (drink-now wines)
 High Consumption Rate
 Predicted Expiry Date
 Everyday Wines
 'Reward Day' Wines
 Special Occasion Wines

Consider...
 All Wines
 On-Hand Only

Maximum Score
 92

Minimum Score
 95

Sort By
 Drink-Now Score [+Winery]
 Rating Score [+Winery]
 Winery [+Rating Score]

Notes

The 'High Consumption' option lists wines in declining order of rate of consumption (measured in bottles per month).

The numbers in the second set of brackets are the number of bottles remaining of the number of bottles purchased.

Close

by the end of 2009. Again, wines that have predicted expiry dates near at hand may be candidates for additional purchases.

The wines in one's cellar can be separated into the following three categories. Everyday wines, or wines for everyday consumption, would typically be the lowest rated and (most likely) the least expensive wines in the cellar. "Reward day" wines would be wines consumed on a special day of the week, such as a Friday evening. These wines would be rated higher and typically be more expensive than the

everyday wines. Finally, there are the special occasion wines which are generally the most expensive wines in the cellar. The tool allows cellar owners to determine how they would classify their wines into these categories. An exceptional cellar might have everyday wines rated 98 or lower, while the special occasion wines might be those with perfect scores (i.e., scores of 100). Other cellar owners might apply lower score cutoffs for what makes a reward day or special occasion wine. Exhibits 17, 18, and 19 show lists of the cellar's everyday, reward day, and special occasion wines. In this

Wines listed in ascending date of the predicted consumption of the last bottle on hand

Wine Analyses

Wines Meeting the Criteria

[06/28/09] [01/12] St.-Cosme | 2006 | Cotes du Rhone | Cotes du Rhone Rouge | 0.75 L
 [07/04/09] [02/12] Boekenhoutsloof | 2007 | Syrah, Mourvedre, Viognier | Wolftrap Western Cape | 0.75 L
 [09/09/09] [02/12] Bodegas Lan | 2004 | Rioja | Rioja Edicion Limitada | 0.75 L
 [09/12/09] [04/12] Capcanes Montsant | 2005 | Grenache (85%) & Syrah (15%) | Mas Donis Barrica | 0.75 L
 [11/23/09] [07/36] Nepenthe Vineyards | 2004 | Cabernet Sauvignon, Tempranillo and Zinfandel | Tyrst Red Adelaide Hills |
 [12/01/09] [08/24] Columbia Crest | 2005 | Syrah, Sangiovese, Cab Sauvignon, Grenache,... | Two Wines 10 Red | 0.75 L
 [05/01/10] [12/24] Hogue | 2006 | Cabernet Sauvignon | Columbia Valley | 0.75 L
 [05/06/10] [01/02] Domaine les Pallieres | 2005 | Gigondas | Gigondas | 0.75 L
 [08/29/10] [12/24] Fairview | 2005 | Shiraz | Coastal Region | 0.75 L
 [01/08/11] [05/12] Yalumba | 2003 | Shiraz-Viognier | Barossa Valley | 0.75 L
 [04/03/11] [07/12] Jim Barry | 2005 | Shiraz | The Lodge Hill | 0.75 L
 [04/14/11] [10/21] Four Vines | 2004 | Zinfandel | Amador County | 0.75 L
 [05/22/11] [09/12] Fetish | 2006 | Shiraz, Mataro, Grenache | Playmates | 0.75 L
 [07/20/11] [10/12] Bodegas Lan | 2004 | Rioja | Culmen Rioja Reserva | 0.75 L
 [08/04/11] [08/12] Westerly | 2004 | Syrah | Santa Ynez Valley | 0.75 L
 [12/04/11] [11/12] Landmark | 2006 | Syrah | Syrah Sonoma Valley Steel Plow | 0.75 L
 [07/15/12] [07/12] Greg Norman Estates | 2004 | Cabernet-Merlot | Limestone Coast | 0.75 L
 [08/03/12] [10/12] Bodegas Borsao | 2005 | Grenache (50), Tempranillo (25), Cab S (25) | Crianza Seleccion Campo de Borja
 [11/26/12] [05/06] Jacob's Creek | 2003 | Shiraz | Centenary Hill | 0.75 L
 [07/28/13] [09/12] Thorn Clarke | 2004 | Shiraz, Petit Verdot, Cabernet Sauvignon and Cabernet Franc | Terra Barossa Cuv
 [10/16/13] [11/12] Columbia Crest | 2005 | Cabernet Sauvignon | Columbia Valley Reserve | 0.75 L
 [02/21/14] [02/03] Langmeil | 2004 | Shiraz | Barossa Valley Valley Floor | 0.75 L
 [03/25/16] [10/12] Falesco | 2006 | Sangiovese | Sangiovese Umbria | 0.75 L
 [03/20/17] [05/06] Domaine des Baumard | 2005 | Chenin Blanc | Quarts de Chaume | 0.75 L
 [07/28/18] [10/12] Domaine des Baumard | 2005 | Chenin Blanc | Coteaux du Layon Clos Ste. Catherine | 0.5 L
 [11/10/18] [10/12] Langmeil | 2005 | Shiraz | Barossa Valley Valley Floor | 0.75 L
 [09/26/19] [10/12] Glen Eldon | 2003 | Shiraz | Dry Bore Barossa | 0.75 L
 [02/28/20] [10/12] Yalumba | 2004 | Shiraz-Viognier | Barossa Valley | 0.75 L
 [03/04/20] [10/12] Peter Lehmann | 2004 | Shiraz, Cabernet Sauvignon, Merlot | Clancy's Red Barossa | 0.75 L
 [04/03/22] [11/12] Lucien Barrot | 2005 | Chateauneuf Du Pape | Chateauneuf Du Pape | 0.75 L
 [10/17/32] [11/12] Langmeil | 2004 | Shiraz/Grenache/Mourvedre | Three Gardens | 0.75 L

Analysis Options

"Watch" List (drink-now wines)
 Consider...
 High Consumption Rate
 Predicted Expiry Date
 On-Hand Only

Maximum Score

Everyday Wines
 'Reward Day' Wines
 Special Occasion Wines

Minimum Score

Sort By
 Drink-Now Score [+Winery]
 Rating Score [+Winery]
 Winery [+Rating Score]

Notes

The 'Predicted Expiry' options lists wines by increasing date at which it is predicted the last bottle will be consumed. The dates are based on the number of bottles you currently have on-hand and the consumption rate of the wine since it was cellared.

The numbers in the second set of brackets are the number of bottles remaining of the number of bottles purchased.

Close

cellar, the everyday wines have scores up to and including 92, the special-occasion wines have scores of at least 95, and the reward-day wines fall between 92 and 95. The Wine Cellar Management Tool also offers various frameworks for rank ordering the wines in each category. The options are by “drink-now” score, by rating score, and by winery, also compared in Exhibits 17, 18, and 19. By way of clarification, the “drink-now” score is a calculation that assigns a higher number to wines that are lower-rated, less expensive, single-vintage, and that are nearing the expiration of their

peak drinking window. Wines that receive lower drink-now scores are those with higher rating scores, that are more costly, that are represented in the cellar by multiple vintages, and that have peak drinking windows extending further into the future.

In addition to the form-based lists that the Wine Cellar Management Tool includes (shown in Exhibits 14-19), the tool also includes two worksheets that provide actionable information and that contain the main data repositories of the tool. The first is the “Purchases” worksheet, which lists all of

A list of wines for everyday consumption

The screenshot shows a software window titled "Wine Analyses" with a close button in the top right corner. The window is divided into two main sections. The left section, titled "Wines Meeting the Criteria", contains a list of wine entries, each with a bracketed ID and a list of wine details including name, vintage, grape varieties, and region. The right section, titled "Analysis Options", contains several radio buttons for filtering wines: "Watch" List (drink-now wines), High Consumption Rate, Predicted Expiry Date, "Everyday Wines" (which is selected), "Reward Day" Wines, and Special Occasion Wines. Below these are two spinners for "Maximum Score" (set to 92) and "Minimum Score" (set to 95). There is also a "Sort By" section with three radio buttons: "Drink-Now Score [+Winery]" (selected), "Rating Score [+Winery]", and "Winery [+Rating Score]". A "Notes" section at the bottom right provides explanatory text about the "Everyday Wines" list and the "Drink-Now" scores. A "Close" button is located at the bottom right of the window.

Wines Meeting the Criteria

[88] [02/12] Boekenhoutskloof | 2007 | Syrah, Mourvedre, Viognier | Wolftrap Western Cape | 0.75 L
 [89] [24/24] Bodegas Ateca | 2007 | Grenache | Garnacha de Fuego Old Vines | 0.75 L
 [88] [08/24] Columbia Crest | 2005 | Syrah, Sangiovese, Cab Sauvignon, Grenache,... | Two Wines 10 Red | 0.75 L
 [87] [12/24] Hogue | 2006 | Cabernet Sauvignon | Columbia Valley | 0.75 L
 [90] [12/24] Fairview | 2005 | Shiraz | Coastal Region | 0.75 L
 [90] [09/12] Thorn Clarke | 2004 | Shiraz, Petit Verdot, Cabernet Sauvignon and Cabernet Franc | Terra Barossa Cuvee | 1.
 [91] [04/12] Capcanes Montsant | 2005 | Grenache (85%) & Syrah (15%) | Mas Donis Barrica | 0.75 L
 [90] [07/36] Nepenthe Vineyards | 2004 | Cabernet Sauvignon, Tempranillo and Zinfandel | Tyrst Red Adelaide Hills | 0.75 L
 [90] [10/12] Peter Lehmann | 2004 | Shiraz, Cabernet Sauvignon, Merlot | Clancy's Red Barossa | 0.75 L
 [90] [10/12] Yalumba | 2004 | Shiraz-Viognier | Barossa Valley | 0.75 L
 [90] [10/12] Falesco | 2006 | Sangiovese | Sangiovese Umbria | 0.75 L
 [88] [07/12] Greg Norman Estates | 2004 | Cabernet-Merlot | Limestone Coast | 0.75 L
 [90] [01/12] St.-Cosme | 2006 | Cotes du Rhone | Cotes du Rhone Rouge | 0.75 L
 [92] [10/21] Four Vines | 2004 | Zinfandel | Amador County | 0.75 L
 [92] [08/12] Westerly | 2004 | Syrah | Santa Ynez Valley | 0.75 L
 [91] [12/12] Rolf Binder | 2004 | Shiraz, Grenache, Mourvedre | Heinrich Barossa | 0.75 L
 [90] [07/12] Jim Barry | 2005 | Shiraz | The Lodge Hill | 0.75 L
 [91] [12/12] Vina Santa Rita | 2005 | Cab S | Medalla Real Cabernet Sauvignon Maipo Valley Single Estate Special Reserve |
 [92] [10/12] Bodegas Borsao | 2005 | Grenache (50), Tempranillo (25), Cab S (25) | Crianza Seleccion Campo de Borja | 0.7
 [91] [24/24] Peter Lehmann | 2005 | Shiraz | Shiraz Barossa | 0.75 L
 [90] [12/12] Columbia Crest | 2005 | Cab S | Cabernet Sauvignon Horse Heaven Hills H3 | 0.75 L
 [91] [11/12] Langmeil | 2004 | Shiraz/Grenache/Mourvedre | Three Gardens | 0.75 L
 [92] [12/12] Château Puygueraud | 2005 | Merlot, Cab S, Malbec | Côtes de Francs | 0.75 L
 [90] [01/02] Domaine les Pallieres | 2005 | Gigondas | Gigondas | 0.75 L
 [91] [05/12] Yalumba | 2003 | Shiraz-Viognier | Barossa Valley | 0.75 L
 [91] [09/12] Fetish | 2006 | Shiraz, Mataro, Grenache | Playmates | 0.75 L
 [92] [06/06] Quinta do Vale Meao | 2004 | Touriga Nacional, Touriga Franca, Toriga Roriz, Tinta Barroca | Douro Meandro |
 [91] [06/06] Fox Gordon | 2004 | Shiraz | Eight Uncles Barossa Valley | 0.75 L
 [88] [10/12] Langmeil | 2005 | Shiraz | Barossa Valley Valley Floor | 0.75 L
 [91] [11/11] Chateau Monbrison | 2005 | Bordeaux blend | Grand Vin de Margaux | 0.75 L

Analysis Options

"Watch" List (drink-now wines)
 High Consumption Rate
 Predicted Expiry Date
 "Everyday Wines"
 "Reward Day" Wines
 Special Occasion Wines

Consider...
 All Wines
 On-Hand Only

Maximum Score: 92
 Minimum Score: 95

Sort By:
 Drink-Now Score [+Winery]
 Rating Score [+Winery]
 Winery [+Rating Score]

Notes
 The 'Everyday Wines' are the lower scoring (and presumably less-expensive) wines that you would consume on a regular basis. The list includes all the wines scoring up to and including the designated maximum.
 'Drink-Now' scores are based on the rationale of drinking lower rated, less expensive, shorter-lived, single-vintage wines before higher rated, more expensive, longer lived, and multiple-vintage wines.
 The numbers in the second set of brackets are the number of bottles remaining of the number of bottles purchased.

Close

the wine purchases that have inventory on hand or that have yet to be delivered. The second is the "Inventory" worksheet, which serves to aggregate multiple purchases of the same wine and to perform calculations related to each wine's peak drinking window. Neither of these worksheets can be edited directly. To ensure the integrity of the spreadsheets, data can only be added to or removed from these sheets using the tool's interface forms. Both worksheets contain formatting and sorting capabilities that provide additional information. Exhibit 20 shows the sorting options for the "Purchases" worksheet in the Wine Cellar Management Tool. For example, sorting the "Purchases" worksheet by "Rating Score"

reorders the wines by declining rating score and ascending price, which allows the cellar owner easily to see what he or she has paid for wines of a particular rating score. This sheet also color codes the "Cellared Date" field for wines that have been purchased, but not yet received (such as those purchased as futures) and color codes fields for wines that were categorized into a special designation (e.g., as shown in Exhibit 2).

Sorting and printing options for the "Inventory" worksheet of the Wine Cellar Management Tool are illustrated in Exhibit 21. This worksheet also color codes three fields: the on-hand quantities, where wines with fewer than four bot-

A list of “reward day” wines

The screenshot shows a software window titled "Wine Analyses" with a close button in the top right corner. The main area is titled "Wines Meeting the Criteria" and contains a list of wine entries. Each entry includes a year in brackets, a vintage in brackets, the wine name, vintage, grape variety, region, and volume. The list includes:

- [93] [05/06] Jacob's Creek | 2003 | Shiraz | Centenary Hill | 0.75 L
- [94] [11/12] Landmark | 2006 | Syrah | Syrah Sonoma Valley Steel Plow | 0.75 L
- [93] [10/12] Glen Eldon | 2003 | Shiraz | Dry Bore Barossa | 0.75 L
- [94] [02/03] Langmeil | 2004 | Shiraz | Barossa Valley Valley Floor | 0.75 L
- [93] [11/12] Lucien Barrot | 2005 | Chateauneuf Du Pape | Chateauneuf Du Pape | 0.75 L
- [93] [06/06] Domaine de la Janasse | 2006 | Chateauneuf Du Pape | Chaupin | 0.75 L
- [93] [12/12] Chateau Duhart Milon Rothschild | 2005 | Bordeaux blend | Pauillac | 0.75 L

On the right side, there are "Analysis Options" and "Notes".

Analysis Options:

- "Watch" List (drink-now wines)
 - Consider...
 - All Wines
 - On-Hand Only
- High Consumption Rate
- Predicted Expiry Date
- Everyday Wines
 - Maximum Score: 92
- 'Reward Day' Wines
 - Minimum Score: 95
- Special Occasion Wines

Sort By:

- Drink-Now Score [+Winery]
- Rating Score [+Winery]
- Winery [+Rating Score]

Notes:

The 'Reward-Day Wines' are the middle scoring (and presumably moderately expensive) wines that you would consume on your 'reward' day of the week (e.g., Friday). The list includes all the wines scoring higher than the maximum for Everyday wines and below the minimum for Special Occasion wines.

'Drink-Now' scores are based on the rationale of drinking lower rated, less expensive, shorter-lived, single-vintage wines before higher rated, more expensive, longer lived, and multiple-vintage wines.

The numbers in the second set of brackets are the number of bottles remaining of the number of bottles purchased.

A "Close" button is located at the bottom right of the window.

tles on hand are flagged; the rating score field, where both high-rated and low-rated wines are flagged; and the “drink-through” year (i.e., the end of the peak drinking window), which are color coded for the current year and the next thirteen years. At the start of each calendar year, the tool automatically updates the color coding of the drink-through years. As an example, selecting “Sort by Drink-Through Year” will show the wines organized by drink-through year and the color-coding applied to each year. By selecting the different sorting options, the inventory sheet can be used much like the lists in Exhibits 14 through 19 for guiding one’s

selection of wines to consume or promote and for decisions about purchasing additional wine.

Data Requirements

The basic requirement for managing a wine cellar using a spreadsheet is straightforward: being disciplined with respect to recording wine inflows (purchases and gifts received) and outflow (consumption, sales, and gifts given). As I mentioned above, it can also be beneficial to occasionally perform a physical inventory count, to reconcile the electronic tally with the actual counts of wine on hand. With a tool like the Wine Cellar Management Tool, the

EXHIBIT 19

A list of special occasion wines

The screenshot shows a software window titled "Wine Analyses" with a close button in the top right corner. The main area is titled "Wines Meeting the Criteria" and contains a list of wine entries. Each entry includes a score in brackets, followed by the wine name, vintage, region, and volume. The list includes:

- [96] [02/12] Bodegas Lan | 2004 | Rioja | Rioja Edicion Limitada | 0.75 L
- [95] [11/12] Columbia Crest | 2005 | Cabernet Sauvignon | Columbia Valley Reserve | 0.75 L
- [97] [06/06] Quinta do Vale Meao | 2004 | Touriga Nacional, Touriga Franca, Toriga Roriz, Tinta Barroca | Douro | 0.75 L
- [96] [10/12] Domaine des Baumard | 2005 | Chenin Blanc | Coteaux du Layon Clos Ste. Catherine | 0.5 L
- [95] [12/12] Domaine Saint Prefert | 2005 | Chateaneuf Du Pape | Reserve Auguste Favier | 0.75 L
- [95] [02/02] Domaine du Vieux Télégraphe | 2005 | Chateaneuf Du Pape | La Crau | 0.75 L
- [96] [10/12] Bodegas Lan | 2004 | Rioja | Culmen Rioja Reserva | 0.75 L
- [98] [06/06] Philippe Delesvaux | 2005 | Chenin Blanc | Coteaux du Layon Selection de Grains Nobles | 0.5 L
- [95] [06/06] Roger Sabon | 2003 | Chateaneuf Du Pape | Cuvee Prestige | 1.5 L
- [98] [05/06] Domaine des Baumard | 2005 | Chenin Blanc | Quarts de Chaume | 0.75 L
- [95] [04/04] Chateau Clerc Milon | 2005 | Bordeaux blend | Pauillac | 0.75 L
- [96] [04/04] Chateau d'Yquem | 2002 | Sauternes | Sauternes | 0.375 L
- [98] [02/02] Chateau d'Yquem | 2003 | Sauternes | Sauternes | 0.75 L
- [100] [06/06] Chateau d'Yquem | 2001 | Sauternes | Sauternes | 0.375 L

On the right side, there are "Analysis Options" with several radio buttons and controls:

- "Watch" List (drink-now wines) with a "Consider..." button.
- High Consumption Rate with a dropdown menu set to "All Wines".
- Predicted Expiry Date with a dropdown menu set to "On-Hand Only".
- Everyday Wines with a "Maximum Score" spinner set to 92.
- 'Reward Day' Wines with a "Minimum Score" spinner set to 95.
- Special Occasion Wines.

Below the options is a "Sort By" section with three radio buttons:

- Drink-Now Score [+Winery]
- Rating Score [+Winery]
- Winery [+Rating Score]

At the bottom right, there is a "Notes" section with explanatory text and a "Close" button.

EXHIBIT 20

Sorting options for wines with on-hand inventory (found in "Purchases" worksheet)

A horizontal row of five buttons with the following text: "Sort by Rating Score", "Sort by \$", "Sort by Cellar Date ^", "Sort by Cellar Date v", and "Sort by Name".

EXHIBIT 21

Sorting and printing options for the inventory (found in "Inventory" worksheet)

Sort By Drink-Through Year	Sort By Rating Score
Sort by Drink-Now Score	Sort by Inventory
Sort by Drink-Days	Sort by Winery
Print One Page	Print All Pages

ongoing data recording efforts are minimal. Data recording will be relatively easy when you are starting a cellar from scratch, but I acknowledge that inputting the data for a well-established cellar will take time (or someone's assistance), depending on the size of the cellar. The sooner the status of the spreadsheet matches the cellar status, the sooner that you can start using the analyses to guide consumption and other decisions.

In addition to the basic data requirements, the Wine Cellar Management Tool also allows you to record tasting

EXHIBIT 22

Worksheet for access to interface forms

Wine Management Actions	
Add New Wine Purchase	
Update Wine Information	
View Wine Analyses	

Data Maintenance Actions	
Maintain Other Data	
Export Data	

notes for each wine purchased. In addition, you may decide to change the drink-from or drink-through dates (i.e., the peak drinking window for a wine) based on your sensory analysis of how the wine is drinking, in which the tool automatically recalculates all the affected analyses.

As noted earlier, to ensure the integrity of the Wine Cellar Management Tool spreadsheet, you cannot enter or edit data directly into any of the worksheets—all changes are made via the forms accessible from the “Switchboard” worksheet. I’ll explain each of the functions illustrated in Exhibit 22.

Exhibits 23 through 25 display the interfaces in the Wine Cellar Management Tool for entering and modifying data. Exhibit 23 illustrates the form for recording a new wine purchase. Since the drop-down lists “remember” data that have already been entered, you won’t have to repeat certain information for each wine purchase. Wines can be

EXHIBIT 23

Form for entering a wine purchase

Add a Wine

Producer/Winery Country Hemisphere Wine Name Vintage

Detailed Varietal Info Varietal Category Btl Size (L) Score Rating Source

Purchase Price Number of Bottles Date Purchased Date Cellared Purchased From

Price is...
 per Bottle Include Price
 for Entire Purchase Include Score

Drink: From Through Special Designation

Notes
Please enter the data for the new wine purchase. Click the 'Add Wine Purchase' button to record the purchase.

Add Wine Purchase Close

EXHIBIT 24

Form for modifying information regarding a wine

The screenshot displays the 'Wine Maintenance' application window. On the left, a list of wines is shown, with 'Columbia Crest | Cab 5 | Columbia Valley Reserve | 2005 | 0.75 L | -- | Vendor 26 | 11 of 12' selected. The main area on the right contains a detailed form for this wine. The form includes fields for 'Winery / Producer' (Columbia Crest), 'Country' (US), 'Wine' (Columbia Valley Reserve), 'Vintage' (2005), and 'Bottle Size (L)' (0.75). It also shows 'Detailed Varietal Info' (Cabernet Sauvignon), 'Varietal Category' (Cab 5), 'Price per Bottle' (\$29.77), and a 'Score' of 95. The 'Purchased From' field is set to 'Vendor 26'. The 'Date' field is filled with '12/24/2008', and the 'On-Hand' quantity is 11. The 'Drink Years' are set from 2010 to 2015. At the bottom, there are buttons for 'Show Tasting Notes', '< Edit Tasting Note', '< Delete Tasting Note', and '< Delete Wine', along with a 'Search' field and 'Save Changes' and 'Close' buttons.

purchased without a “cellared date” being recorded, as would be the case for a wine purchased as a future. The cellared date can be entered when the wine is received, via the form shown in Exhibit 24. Whether the cellar date is filled in automatically when the form is opened depends on whether you specify, on the main switchboard screen of the spreadsheet, whether most of your wine purchases are made in-person or are orders. If the purchases are in person, the cellared date is automatically completed as the current date, whereas if the purchases are by orders, then the cellared date is left blank.

Any other changes to a wine purchase are also recorded via the form shown in Exhibit 24. Once a wine has been

selected, you can view, add to, or modify the tasting notes by clicking the “Show Tasting Notes” button. When the on-hand quantity of wine of a purchased wine falls to zero, the wine is removed from the tool’s “Purchases” worksheet and archived in the “Fully Consumed” worksheet.

The final interface form in the Wine Cellar Management Tool is for modifying other data items, such as the lists of producers, wineries, or vendors. Exhibit 25 displays this form for the sample cellar. By double-clicking on a particular data item, the tool displays all the wines that match that item. If you choose to delete a particular data item, the data field is reset as blank for all the selected wines (but the wines themselves are not deleted).

Form for modifying other data items

The final action accessible from the “Switchboard” worksheet of the Wine Cellar Management Tool is the ability to export data (see Exhibit 21). Selecting this action will export the spreadsheet data to a file named “WineCellarData.txt,” which will appear on your computer’s desktop. The purpose of this export is to facilitate migrating the data to any future version of the Wine Cellar Management Tool.

Summary

This report explains how you can use the spreadsheet-based tool described here to help manage your wine cellar. The tool is designed to be as useful and straightforward as possible.

If you are methodical about recording the inflows and outflows of wine to and from the cellar, you may find the large number of possible analyses useful in guiding your decisions about the cellar. Managing a wine cellar using a spreadsheet is an ongoing process, which changes as the composition of the cellar changes. I’ve tried to make the spreadsheet tool useful in the sense that it will not tell you what to drink or what to promote, but to provide guidance regarding these matters, so that no wine passes its peak drinking window. I believe that the Wine Cellar Management Tool fulfills these objectives. ■

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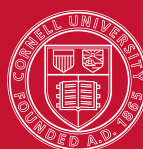
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