

## ***Wayfair* Sales Tax Nexus: An Illustrative Case Study of Data Analytics and Data Visualization in an Introductory Tax Course**

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### **Abstract**

Data analytics and data visualization technologies are changing the skills needed for future tax accountants. Higher education accrediting bodies have recognized the need for incorporating data analytics and emerging technologies into the curriculum of business schools and accounting programs to meet these changing needs. This paper presents a case study developed to accommodate the need for accounting faculty to incorporate data analytics and data visualization technology into an undergraduate tax course. The case study focuses on the impact of the sales tax economic nexus standards established by the U.S. Supreme Court in *South Dakota v. Wayfair, Inc.* Students must research the evolution of sales tax nexus as applied to businesses, analyze sales data to assess the impact of the law change on a fictitious manufacturing company, develop visualizations using Tableau, and report their findings to management through written communication.

Keywords: taxation, sales tax, nexus, Wayfair, data visualization, data analytics, Tableau

### **Introduction**

Technology is changing how businesses make decisions, and the tax profession is no exception. Advances in technologies and an increase in business generated data have created opportunities to develop new insights in decision making. Automation will move tax accountants away from process-oriented tasks (e.g., bookkeeping and compliance) and towards value-focused tasks, such as analyzing data for prospective decision making (PwC 2015). Tax accountants will need to continue to possess a firm understanding of tax laws and regulations. However, tax accountants will also be required to develop analytical skills and knowledge of new technologies to establish forward-thinking tax departments (PwC 2015). Data analytics, data visualization, and communication of findings are becoming increasingly essential for tax departments to maintain efficiency and effectiveness (Deloitte 2016). Accordingly, to prepare students for future careers as tax professionals, PwC (2015) recommends accounting curriculums emphasize the following skills:

1. Gather a large amount of data in many forms and use it to help make tax department business decisions.
2. Consider after-tax performance insights in decision-making.
3. Visualize accounting data, like credits, debits, and tax thresholds.
4. Use technology to verify that remedial actions or calculations introduced are within regulations and compliance limits.
5. Help minimize accounting pitfalls using new data software and visualizations.

Higher education has also responded to the need to incorporate analytics and new technologies into the curriculum. Standard 4 of the AACSB (2020) *Guiding Principles and Standards for Business Accreditation* requires business programs to be adaptive and agile, incorporating emerging technologies into the curriculum. Similarly, Standard A5 of the AACSB (2018) *Eligibility Procedures and Accreditation Standards for Accounting Accreditation* requires incorporating emerging technologies into accounting programs' curriculum. This paper presents a case study developed to incorporate the skills needed by future tax professionals and illustrates how accounting faculty can include data analytics and visualization software in an undergraduate tax course.

To verify this paper's contribution to existing literature, a literature review of published articles that demonstrate the application of data analytics and data visualization in the accounting curriculum was conducted. Many recent cases have been published around data analytics and data visualization software as applied to accounting education. Many of the articles reviewed focused on using data analytics and visualization software in the audit function (Cunningham and Stein 2018; Fay and Negangard 2017; Weirich, Tschakert, and Kozlowski 2018). Other articles focused on applying analytics in a decision-making setting by analyzing sales data for accounting information systems or managerial accounting courses (Hoelscher and Mortimer 2018). However, only three published cases were identified which covered data analytics and data visualization suitable for a class on taxation. First, Borthick and Smeal (2020) developed a case study utilizing data analysis to assess a company's worker classification as employees or independent contractors. Second, Cheng and Varadharajan (2020) developed a case study analyzing IRS data to determine migration patterns of U.S. citizens resulting from the Tax Cuts and Jobs Act of 2017. Finally, Cheng, Sapkota, and Yurko (2020) developed a case applying data analytics to effective tax rates.

Based on our review, the case study presented in this paper adds to the literature by expanding the application of data visualization and data analytics in a tax course. As highlighted by Franklin, Morrow, and Novak (2020), accounting faculty should strive to share how analytics and new technologies are incorporated into the curriculum. Accordingly, the case study presented offers further insight into how faculty can respond to the professional demands in educating future tax professionals. This case study provides a unique approach by assessing the impact of the *South Dakota v. Wayfair* (2018) U.S. Supreme Court case which established economic nexus standards for sales tax. The case study requires students to research the law change, create visualizations of new tax jurisdictions, and communicate their findings to management in writing. Critical thinking is emphasized.

### **Purpose of Case Study**

The primary purpose of this case is four-fold. First, students will develop tax research skills by assessing the impact of the recent changes in sales tax nexus standards established by *Wayfair*. In this case, students take the role of the tax manager at a domestic furniture manufacturing firm. The company has historically followed the *Quill Corp. v. North Dakota* (1992) physical presence nexus standards to collect and remit sales tax from its customers. Students are required to analyze the change in nexus standards by reviewing both primary and secondary authority. Students must read *Quill* and *Wayfair* as the primary authority. However, case law can often be complicated for students in an introductory tax course. Suggested secondary authority is also provided to students to assess the impact of the sales tax nexus law change (Brennan 2019; Jensen, Gorton, Milligan, and Turner 2018; Keane 2018). Students may

conduct additional research to solidify their understanding of the law change. However, the secondary authority provided is typically sufficient for the case study.

Second, the case study presented in this article is designed to expose students to the functionalities of data analytics and data visualization software in a course on taxation. Bauer (2017) highlights that jurisdictional nexus analysis is an ideal accounting topic for visualization software. Accordingly, students must create two visualizations using Tableau to communicate the impact of the nexus law change on a fictitious company. The first visualization is a heat map of the company's new sales tax jurisdiction due to the *Wayfair* economic nexus law change. The second visualization is a bar chart illustrating jurisdictions with potentially significant tax exposure that will result from the failure to comply with *Wayfair*. The primary data set used to create the visualizations is a sales ledger consisting of approximately 10,000 rows of data. Students are required to connect the primary data set to a schedule of sales tax rates by jurisdiction. To create the visualizations, students will need to filter, index, and manipulate the data to present states exceeding the South Dakota economic nexus thresholds of 200 transactions or \$100,000 of total sales.

Third, this case study requires students to think critically. Students are first required to understand the applicable tax law. Next, students need to determine how to visualize the impact of a law change and make the information easily consumable by management. Finally, students are posed a series of questions to assess the law's impact on the company. Through these steps, students gain exposure to the real-world decision making required of tax professionals by assessing law changes and recommending a course of action to implement the necessary remediation.

The final purpose of the case study is to allow students to work on their written communication skills. The case study requires students to incorporate the visualizations created into a memorandum to management. The memo aims to explain the implications of the sales tax law change from a physical presence nexus standard to an economic nexus standard. The case study also requires students to submit written responses to six follow-up questions from management. Management's follow-up questions are designed to assess the students' understanding of the change in nexus standards and identify limitations in the analytics performed. The above requirements allow students to step into a tax professional's shoes and implement emerging tools to make tax and accounting decisions.

### ***Wayfair* Case Study**

#### **Learning Objectives**

The case study distributed to students is presented in Appendix A. The learning objectives of the case study are the following:

1. Develop an understanding of the functionalities of the data visualization software, Tableau.
2. Develop an understanding of how to organize datasets to perform analytics.
3. Understand sales tax nexus as applied to business entities.
4. Apply critical thinking and make an informed decision based on accounting data.
5. Communicate conclusions through professional business writing.

### Context for Use

The case study is designed for use in an undergraduate introductory income tax course, and students are assigned the case as an individual project. However, instructors can easily modify the project for a group exercise or a graduate-level tax course. The project would fit particularly well in a state and local tax course at the graduate level. Alternatively, the case could be modified and utilized in an intermediate accounting course for discussion on the application of ASC 450 - contingent losses. Instructors adopting the case study can choose to include or exclude any individual requirements to meet their curriculum needs. Finally, no prior knowledge of Tableau is required as the case is designed to introduce students to the software.

### Visualization Software Implementation

Tableau was chosen as the software for this case for multiple reasons. First, as of this writing, Tableau offers free academic licenses. Instructors can obtain a license activation key to share with their students at <https://www.tableau.com/academic/teaching>. Students must download Tableau Desktop onto a personal computer and utilize the instructor provided activation key to activate the software. Second, Tableau provides free training resources for students. Students can access training videos at <https://www.tableau.com/learn/training/>. Included with the videos are datasets that students can download to follow along with the videos. Access to these datasets allows students to gain hands-on Tableau experience before tackling the requirements of the project. By leveraging the training videos, instructors can spend less time in class teaching the fundamentals of Tableau and focus on the tax law aspects of the case study. Table 1 provides a list of Tableau training videos recommended to students to complete the assignment.

**Table 1 – Tableau Training Videos Utilized in Case Study**

Video Title	Time	Video Description
Getting Started	25 min.	Overview of the functionalities of Tableau.
The Tableau Interface	4 min.	Overview of the Tableau interface.
Getting Started with Data	6 min.	Demonstrates how to upload datasets and how to begin using a worksheet.
Join Types with Unions	4 min.	Explains how to join two different datasets in Tableau.
Getting Started with Visual Analytics	6 min.	Overview of creating visualizations.
Getting Started with Calculations	3 min.	How to create calculated fields (similar to Excel functions and formulas).
Logic Calculations	3 min.	How to create logic calculations.
Maps in Tableau	4 min.	Provides a tutorial on creating maps in Tableau.

An alternative to Tableau's training videos is Lynda.com.<sup>1</sup> Cunningham and Stein (2018) identified training materials on Lynda.com as suitable materials for students learning the essentials of Tableau outside of the classroom. Most colleges and universities can access Lynda.com through the campus library. The instructors did not utilize Lynda.com in this case, but video content was reviewed and identified as a strong alternative.

Finally, instructors may utilize alternative software to Tableau to implement the case study. For example, similar visualizations can be created in Excel. Although, as noted by Eaton and Baader (2016), Excel is limited to the amount of data the software can process to create visualizations. The datasets utilized in this case study are not overly robust and are easily processed in Excel. However, larger datasets presented to students can limit Excel's functionality. Accordingly, Tableau was chosen by the instructors as a data visualization purposed software that students may encounter when handling larger datasets (Eaton and Baader 2016). Other visualization technologies are available such as Power BI, QlikView, or Sisense, may be adopted by instructors. However, these other programs were not assessed for efficacy in this case study.

### **Instruction for Case Implementation**

Implementation of the case study requires about two hours of in-class time. First, in the class period prior to introducing the case, students should read the primary and secondary authority presented in Requirement 1 of the case study instructions (see Appendix A). Given most introductory tax courses do not spend a significant amount of time covering sales taxes, the first 30 to 45 minutes of in-class time is spent discussing the implications of *Quill* and *Wayfair* and their impact on business transactions.<sup>2</sup> Generally speaking, the basics of the sales tax nexus standards are easily grasped by students.

After discussing the law around sales taxes, instructors should present to the students the facts around the case. An introduction to the company involved in the case, Scandinavian Furniture Design, Inc. (SFD), should be presented along with a discussion of the case requirements. This introduction to the case takes between 15 to 30 minutes of in-class time.

Next, the instructor should present the datasets used in the case. Two datasets will be utilized to create the necessary visualizations. Excerpts from the datasets are presented in Appendices B and C. The first dataset is a sales subledger containing all of SFD's sales for the tax year 2018. The second dataset is the average combined 2019 state and local sales tax rates for each state. The combined sales tax rates were retrieved from the Tax Foundation (Cammenga 2019).<sup>3</sup> These two datasets are connected in Tableau to create the visualizations.

Once the case study is thoroughly introduced, the remaining 45 to 60 minutes of in-class time is utilized to provide students with an overview of Tableau. Depending on student

<sup>1</sup> Lynda.com is now associated with LinkedIn Learning.

<sup>2</sup> Most textbooks cover indirect taxes and sales taxes in chapter 1. Instructors may want to emphasize a brief discussion of *South Dakota v. Wayfair, Inc. (2018)* while covering the various taxes imposed early in the semester to set the stage for the case study.

<sup>3</sup> A combined state and local tax rate is applied to state sales data to estimate potential sales tax exposure in the various jurisdictions. In practice, each transaction will require analysis of each customer's state and specific local sales tax rates. However, for the case, we are estimating the impact of *Wayfair* on a hypothetical company and a combined rate is used for simplicity. This limitation is discussed in class and the instructor highlights that software utilized to implement sales tax collection will apply the correct rate. Sales tax data by zip code could be used as an alternative.

experience with Tableau, and given that Requirement 2 of the case study provides many resources for training students, instructors can limit or even eliminate the time in class covering the functionalities of Tableau. Since a significant portion of the students who participated in the case study had never used Tableau, the authors provided a brief overview of Tableau's mechanics before directing students to the self-study videos in Requirement 2. The in-class training covered importing data into Tableau, connecting datasets, creating calculated fields, and creating basic visualizations.

After the introduction of the case, students were given four weeks to complete the four requirements. As discussed above, Requirement 1 involves performing the necessary research to develop an understanding of the law on sales tax nexus. Requirement 2 entails watching the Tableau training videos and creating two visualizations. The goal of the visualizations is to help communicate the estimated new sales tax filing requirement for SFD as a result of the law change imposed in *Wayfair*. The visualizations that students are instructed to develop include a heat map of the new sales tax jurisdictions and a bar chart of estimated sales tax collection for the "Top 10" jurisdictions. Suggested solutions to the visualizations will require students to import and connect datasets in Tableau, create calculated fields, filter, sort, and index data. The new sales tax jurisdictions identified in the visualization are based on the South Dakota economic nexus thresholds affirmed in *Wayfair*. That is, 200 in-state sales transactions or aggregate in-state sales of \$100,000. The South Dakota threshold is used with recognition that other jurisdictional thresholds may vary. Appendix D contains the suggested solutions to the visualizations.

Requirement 3 instructs students to draft a memorandum to management summarizing the outcome of *Wayfair* and its implications to SFD. The students who participated in the case study had another tax research project assigned in the course, and the memorandum in Requirement 3 follows a similar format. Students are directed to identify the relevant facts, state the issue, communicate the conclusion upfront, and provide an analysis of the conclusion. The visualizations developed in Requirement 2 are incorporated into the memo.

Finally, in Requirement 4, students are responsible for responding to six questions from management. The questions were developed to further students' understanding of accounting for sales taxes. Students are asked to explain the consequences of not registering for sales taxes in jurisdictions where SFD now has nexus. Additional questions presented to students include, what are the financial statement implications of *Wayfair*, if any? When should SFD register for each jurisdiction? Other questions test the limitations of the analysis performed. For instance, students are asked to analyze the implications if all states adopted the South Dakota threshold of 200 in-state transactions and \$100,000 of aggregate in-state sales. The project uses South Dakota as a base threshold for the analysis. Not all states adopted the threshold established in South Dakota. Accordingly, the above questions are implemented to point out the limitations in the analysis and address future implications to the company as it begins to register for sales taxes in other jurisdictions. Consequently, the management response questions are designed to introduce students to the practice of taxation and communicating with management to develop solutions.

The instructor's role after introducing the case was limited. Most time is spent fielding questions about the tax law and troubleshooting issues in Tableau. Often these questions were discussed with students informally before and after class.

The case study is worth 10% of students' overall grade. The point breakdown per project component is 40% for the Tableau workbook, 40% for the memorandum to management, and 20% for the responses to management questions. Instructors can amend the percentage based on preference and the requirements adopted. Grading the visualizations is based on accuracy. The memorandum is graded on a written communication rubric. The responses to management were graded based on the students' demonstrated understanding of the primary and secondary authority.

### **Suggested Solutions**

Full solutions have not been provided in order to continue the use of this case study. Appendices B and C contain an excerpt of the dataset utilized in the case study. The sales tax rate dataset consists of combined state and local sales tax rates for 2019 obtained from the Tax Foundation (Cammenga 2019). Appendix D provides an image of the solution to the Tableau visualizations created in Requirement 2 of the case study. Suggested steps for completing the visualizations are included in Appendix E. Alternative methods can be implemented to create the same visualization outcomes. For instance, some students organized the data in Excel before importing the dataset into Tableau. The instructors did not restrict the methods used to develop the visualizations.

The datasets, a Tableau solution workbook, memorandum grading rubric, and suggested solutions to management's questions are available upon request by contacting [XXX@XXX.edu](mailto:XXX@XXX.edu). The Tableau solution workbook contains a completed submission file with all calculations identified in Appendix E.

### **Case Effectiveness**

The case was administered to three sections of an undergraduate introductory income tax course. One section occurred in the fall 2019 semester, and two sections occurred in the spring 2020 semester. The case study was assigned as an individual project to each student, and a total of 63 students participated in the three sections. Of the 63 students, 55 voluntarily participated in a pre-post case study survey consisting of five questions. The survey questions were adapted from Cunningham and Stein (2018) and designed to assess the efficacy of the case study. A five-point Likert Scale was implemented to measure the questions. For questions Q1 through Q4, the five-point Likert scale measured students' knowledge of the question topics where 1 is "no knowledge," 3 is "some knowledge," and 5 is "high knowledge." For question Q5, the five-point Likert scale measured students' comfort using Tableau, where 1 is "not comfortable," 3 is "somewhat comfortable," and 5 is "very comfortable." A paired t-test was used to assess whether the differences in pre-and post-responses were significant. Table 2 contains the questions and results of the pre-post case survey.

The results of the student survey indicate students' knowledge of sales tax law and the implications of *Wayfair* on business activity increased significantly after completing the case study (Q1 pre-case mean 2.49, post-case mean 3.55; Q2 pre-case mean 1.64; post-case mean 3.85). Students also indicated a significant increase in knowledge in applying data analytics to tax decision making (Q3 pre-case mean 1.62, post-case mean 3.22). Finally, the survey responses indicate students had little knowledge and comfort using Tableau prior to participating in the case study. However, students indicated a significant increase in their knowledge and comfort with performing data analytics and creating visualizations in Tableau after completing the case (Q4 pre-case mean 1.18, post-case mean 3.40; Q5 pre-case mean 1.87, post-case mean 3.40). In

addition to the pre/post case survey, participants also responded to additional post-survey questions to gather feedback on the case study. Responses to the feedback questions were measured on a five-point Likert scale where 1 is “strongly disagree,” 3 is “neutral,” and 5 is “strongly agree.” A one-sample t-test was utilized to measure the mean value of the responses from the mid-point value of 3. Table 3 contains the questions and results of the post-case feedback questions.

The results in Table 3 indicate that students agreed the case study’s instructions were clear (Q1 total mean 4.27), and the case study was interesting (Q2 total mean 4.22). Students also indicated the case study was the appropriate level of difficulty for an undergraduate income tax course (Q4 total mean 4.34). Most importantly, students agreed that the case improved their understanding of the impact of *Wayfair* on businesses (Q3 total mean 4.25), illustrated data analytics in tax decision making (Q5 total mean 4.44), required the use of critical thinking (Q6 total mean 4.51), and improved their skills and understanding of creating visualizations in Tableau (Q7 total mean 4.33). As indicated in Table 3, the mean value for each question is significantly different ( $p\text{-value} < 0.001$ ) from the mid-point of 3.

Qualitative responses were also solicited from students that suggest the learning outcomes of the case study were achieved. Students appreciated the introduction to new software since many had never used Tableau. Others commented on how the case simulated a “real-world” problem required of a tax professional. Overall, many positive comments were received, as illustrated in Table 4.

**Table 2. Pre- and Post-Case Survey Questions**

	<b>Pre-Case Mean (Std. Dev.) n = 55</b>	<b>Post-Case Mean (Std. Dev.) n = 55</b>	<b>Mean Difference</b>
Q1: Rate your general knowledge of sales and use tax laws applied to U.S. businesses. <sup>1</sup>	2.49 (0.88)	3.55 (0.79)	1.05***
Q2: Rate your knowledge of the impact of the <i>Wayfair</i> U.S. Supreme Court Case on U.S. businesses. <sup>1</sup>	1.64 (0.91)	3.85 (0.85)	2.22***
Q3: Rate your knowledge of performing data analytics in tax decision making. <sup>1</sup>	1.62 (0.87)	3.22 (0.83)	1.60***
Q4: Rate your knowledge of performing data visualizations in Tableau. <sup>1</sup>	1.18 (0.58)	3.40 (0.78)	2.22***
Q5: How comfortable are you with using Tableau to create data visualizations? <sup>2</sup>	1.87 (1.12)	3.40 (0.87)	1.53***

<sup>1</sup> Five-point Likert scale: 1 = “no knowledge”, 3 = “some knowledge”, and 5 = “high knowledge”  
<sup>2</sup> Five-point Likert scale: 1 = “not comfortable”, 3 = “somewhat comfortable”, and 5 = “very comfortable”  
\*\*\* Significant mean difference at  $p < 0.001$



**Table 3. Post-Case Feedback Questions**

	Mean (Std. Dev.) n = 55
Q1: The instructions and case background were clear. <sup>1</sup>	4.27*** (0.65)
Q2: The case was interesting. <sup>1</sup>	4.22*** (0.83)
Q3: After the case, I can describe how the Wayfair economic nexus standards impact U.S. businesses. <sup>1</sup>	4.25*** (0.73)
Q4: The case was an appropriate level of difficulty for the course. <sup>1</sup>	4.35*** (0.64)
Q5: The case illustrates how data analytics is applied to tax decision making. <sup>1</sup>	4.44*** (0.63)
Q6: The case and related questions required me to use critical thinking. <sup>1</sup>	4.51*** (0.57)
Q7: The case improved my understanding of creating data visualizations in Tableau. <sup>1</sup>	4.33*** (0.70)

<sup>1</sup> Five-point scale: 1 = “strongly disagree”, 3 = “neutral”, and 5 = “strongly agree”

\*\*\* Significantly greater than the scale midpoint value of 3 at  $p < 0.001$

**Table 4. Sample of Student Qualitative Comments**

- “The case did a great job of getting a basic understanding of the Tableau software. Additionally, I found the real-world example of how a change in the application of tax law can affect a business was easy to digest through the Tableau visualizations.”
- “I really liked working with Tableau. It is a pretty slick system. I would like to learn more about it and all that it can do. I work in the construction field, and I think this is something we could use at my job.”
- “This was a really good case to work on. Now I know why I had to add new tax states into my system at work...”
- “...I was intimidated at first because I’ve never used [sic] or heard of Tableau software before. However, after using it to complete the tasks for this project, I thought the software was [sic] neat and helpful in creating data visualizations.”
- “...I enjoyed using Tableau and learning how to manipulate data. I think this would be a good addition to the course and would even want to know how to do more with the software.”
- “Overall, the case was great to introduce Tableau to someone with a ‘real-life’ simulation that ties into this class with tax law.”
- “...I had never used Tableau before this class...The suggested videos were helpful, and the instructions were very clear.”

- “I like how practical this assignment was. I was introduced to new software. It was nice to be exposed to this kind of software to know what is out there and how to navigate it. Tableau has opened my mind to how we can use data analysis in making accounting decisions.”
  - “I liked the relevance of the topic. That helped me get more out of learning the software because I was invested in the material.”
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### Conclusion

The accounting profession and accrediting bodies are requiring accounting faculty to develop new ways to teach our students. One requirement is the incorporation of technology into the accounting curriculum. This paper provides a unique example of how data analytics and data visualization can be incorporated into an undergraduate course on taxation. Through research and analysis of the landmark sales tax nexus law change in *Wayfair*, students participating in the case are exposed to a problem that tax professionals around the country were required to assess. The case study requires students to demonstrate research skills, critical thinking, and written communication, all while introducing students to the functionalities of Tableau, a data visualization software. Students’ feedback on the case was positive, commenting on its “real-world” simulation of a tax problem and the development of skills in new technology. Accordingly, the case study presented in this paper effectively demonstrates a new pedagogical exercise to meet the changing demands of accounting education.

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## Appendix A – The Case Study as Presented to Students

### Case Background

Scandinavian Furniture Design, Inc. (“SFD”) is a Minnesota based furniture manufacturing company specializing in high-end modern furniture and décor accessories. SFD was formed by Britta Andersen and Llewyn Davis on January 1, 2003. Llewyn is a skilled carpenter specializing in building custom furniture, cabinetry, and various other residential finish carpentry. Britta is a renowned architect and interior designer specializing in designing and furnishing client’s homes. Britta had often engaged Llewyn to manufacture custom pieces of furniture to meet her design needs. After years of working together, Britta and Llewyn decided to form SFD. Britta is the CEO and Chief Design Officer. Llewyn is the COO and head of all SFD manufacturing activities. 100% of their working activities are devoted to SFD.

Over the years, SFD has rapidly grown, expanding its product lines of high-end furniture. SFD has remained headquartered in Minneapolis, Minnesota. However, SFD relocated its manufacturing operations to High Point, North Carolina, and Eau Claire, Wisconsin, in 2010. In 2015, SFD also opened sales offices in Reno, Nevada, to serve the west coast market, and Newark, New Jersey, to serve the east coast market. Sales representatives from Minneapolis serve clients in the northern and southern markets. Sales representatives manage relationships over the phone and rarely travel. Sales representative travel only consists of attending an annual trade show in Las Vegas, NV.

SFD sells its furniture to retailers or by online orders through its website. Retailers purchase inventory directly from SFD and do not sell SFD products on consignment. Online orders are initiated through SFD’s website, which is managed in Minneapolis, MN. SFD uses third-party carriers (e.g., UPS, FedEx, USPS) to deliver all its products to retailers and online customers.

### Case Issue

You are the tax manager at SFD. You are responsible for managing SFD’s global tax responsibilities. This includes federal, state, and local income taxes along with sales and use taxes. As of December 31, 2017, SFD collects and remits sales tax in states where it maintains a physical presence. Therefore, SFD only collects and remits sales tax in the following state jurisdictions: Minnesota, New Jersey, Nevada, North Carolina, and Wisconsin.

SFD’s sales tax filing positions are based on the U.S. Supreme Court decision *Quill v. North Dakota* (1992). In 2018, the U.S. Supreme Court heard a landmark case, *South Dakota v. Wayfair, Inc* (2018). In this case, the court reversed its physical presence nexus standards in *Quill* to an economic nexus standard established in *Wayfair*. Management has asked you to research the impact of the decision on SFD’s sales tax responsibilities. You need to perform the following tasks to inform SFD’s management of the law change.

### Requirement 1: Perform Tax Research

Before performing any analysis, you should complete the required tax law research to understand historical and new tax laws pertaining to sales tax nexus. The following are helpful primary and secondary authorities to start your research:

- Primary Authority:

- *Quill Corp. v. North Dakota*, 504 U.S. 298 (1992).  
<https://www.supremecourt.gov/opinions/boundvolumes/504bv.pdf>
- *South Dakota v. Wayfair, Inc.*, 585 U.S. \_\_\_\_ (2018).  
[https://www.supremecourt.gov/opinions/17pdf/17-494\\_j4el.pdf](https://www.supremecourt.gov/opinions/17pdf/17-494_j4el.pdf)
- Secondary Authority:
  - Brennan, D. L. (2019). Sales tax compliance post-Wayfair. *Journal of Accountancy*, 228(2), 16–20. Available at:  
<https://www.journalofaccountancy.com/issues/2019/aug/sales-tax-collection-requirements.html>.
  - Jensen, J, Gorton, T. G., Milligan, J. D. & Turner, B. (2018). Supreme Court abolishes physical presence requirement for sales tax collection. *The Tax Adviser*, 49(9), 606–610. Available at:  
<https://www.thetaxadviser.com/issues/2018/sep/supreme-court-abolishes-physical-presence-requirement.html>
  - Keane, A. 2018. From Bellas Hess to Wayfair: An Analysis of Supreme Court Jurisprudence on the Physical Presence Rule. *The North American Accounting Studies* 1 (1): 17-36. Available at:  
<https://neiudc.neiu.edu/cgi/viewcontent.cgi?article=1013&context=naas>.

Additional readings may be required to fully comprehend the law change from the physical presence nexus standards established in *Quill Corp. v. North Dakota* (1992) to the economic nexus standards established in *South Dakota v. Wayfair, Inc.* (2018). Professional journals, news articles, and tax service providers, such as RIA Checkpoint, may be useful in your research to further understand the implications of the change in nexus law.

## Requirement 2: Prepare Visualizations

You have decided to create a couple of data visualizations to help communicate the impacts of *Wayfair* to management. SFD has licenses to Tableau Desktop to perform data analytics and develop visualizations. Use the separate instructions to download Tableau Desktop on your personal computer. Tableau provides many training videos on how to use the software at <https://www.tableau.com/learn/training/20203>. Specifically, the following videos will be helpful in creating the required visualization (note, you may be prompted to provide your information to watch the videos. Simply fill in the required information to proceed.):

- Getting Started (25 min.) – Overview of the functionalities of Tableau.
- The Tableau Interface (4 min.)– Provides an overview of the Tableau interface.
- Getting Started with Data (6 min.) – Explains how to upload datasets and how to begin using a worksheet.
- Join Types and Unions (4 min.) - Explains how to join two different datasets in Tableau.
- Getting Started with Visual Analytics (6 min.) - Overview of creating visualizations.
- Getting Started with Calculations (3 min.) – Explains how to create calculated fields (similar to Excel functions and formulas).
- Logic Calculations (3 min.) – Explains how to create logic calculations.
- Maps in Tableau (4 min.) – Provides a tutorial on creating maps in Tableau.

## Wayfair Sales Tax Nexus: An Illustrative Case Study

The above videos are suggested to complete the visualizations required in this case study and are a minimum recommendation. Additional videos may be helpful in completing your visualizations.

### Datasets

Download the Excel files posted to D2L titled *SalesSubledger\_2018\_SFD.xlsx* and *2019 Avg. Sales Tax Rates by State.xlsx*. Save the files locally on your personal computer. The above files contain the base data for conducting your visualizations in Tableau.

### Visualization #1 - Create Heat Map

The first visualization you will create is a heat map showing new jurisdictions in which SFD will be required to collect sales tax. To complete this map, you will need to (1) create a calculation in Tableau to compute estimated sales tax, (2) filter out states where SFD already collects sales tax, (3) filter out states that do not have a sales tax, and (4) filter out states that have sales and transactions under the *Wayfair* thresholds. The goal is to create a heat map that shows only the new jurisdictions in which SFD is required to collect and remit sales tax based on the economic nexus thresholds established in *Wayfair*.

### Visualization #2: Create “Top 10 New Sales Tax Jurisdictions” Bar Chart

In order to highlight the most significant jurisdictions to management, you will also need to create a bar chart showing the sales tax liability for the “top 10” states with the highest sales tax exposure. Create the bar chart on a new worksheet in Tableau. To complete this chart, you will need to (1) create a calculation in Tableau to compute estimated sales tax (if not already done in visualization #1), (2) filter out states where SFD already collects sales tax, (3) filter out states that do not have sales tax, (4) filter out states that have sales and transactions under the *Wayfair* thresholds, and (5) limit the states shown to the top 10 jurisdictions.

### Create a Tableau Dashboard

To succinctly present your data, create a dashboard with your visualizations.

### Save Tableau Workbook:

To submit the file with the referenced data, you will want to save the workbook as a *Packaged Workbook*. To accomplish this, complete the following tasks.

Step 1: Click on File and select Save As

Step 2: In the Save As window, select Tableau Packaged Workbook from the “Save as type” menu.

Step 3: Save the packaged workbook as Tableau Case Study\_Your Name.

### Requirement 3: Communicate Results

Draft a memorandum to management communicating the impacts of *Wayfair* to SFD. The memorandum should include your data visualizations developed in Requirement 2, which can be

embedded in the text or included as an appendix. The memorandum should take the following form:

**Facts:** Discuss the facts relevant to SFD. Relevant facts should include an explanation of the law change from a physical presence nexus standard developed in *Quill* to an economic nexus standard developed in *Wayfair*. Additional discussion should be provided on SFD's current sales tax filing position.

**Issue:** State the issue as it pertains to SFD and its sales tax collection and remittance processes. The issue should be in the form of a question.

**Conclusion:** The Conclusion section of your memo should be an executive summary of your findings in the Analysis section of the memo.

**Analysis:** This section should describe the impact of *Wayfair* on SFD. You should clearly state a recommended course of action for management. You should support your conclusion using the visualizations developed in Requirement 2.

#### **Requirement 4: Respond to Managements Questions**

In a separate Word document, respond to the follow-up questions from management listed below. Additional research may be required to respond to these questions.

- 1) What are the consequences of not following *Wayfair* and not collecting and remitting sales tax in the identified jurisdictions? Are all sales transactions subject to sales tax?
- 2) What financial accounting implications should SFD consider as it assesses its sales tax filing responsibilities?
- 3) Should SFD start collecting and remitting sales tax in all 50 states?
- 4) Are all states using the *Wayfair* thresholds (i.e., South Dakota's thresholds) to assess economic nexus? Or, have states implemented different thresholds?
- 5) When does SFD need to implement *Wayfair*? That is, when are states expecting companies to register for the sales tax after *Wayfair*?
- 6) Which jurisdictions are the highest priority to SFD, and will SFD use the combined state rate for all sales in those states?

## Wayfair Sales Tax Nexus: An Illustrative Case Study

### Appendix B – Sales Data Excerpt

Invoice Number	Transaction Type	Customer ID	P.O. Date	Shipment Date	Sale Type	City	State	ZIP	Sales Region	Product ID	Product Category	Total Sales
2018000001	Sales Invoice	ONL6628	12/31/2017	1/2/2018	Online	Louisville	KY	40214	SOUTH	LCH-261	Chairs	993.3
2018000002	Sales Invoice	ONL3285	12/31/2017	1/2/2018	Online	Vancouver	WA	98661	WEST	TBL-701	Tables	1386.63
2018000003	Sales Invoice	RTL9495	12/31/2017	1/2/2018	Retailer	New York City	NY	10024	EAST	SOF-1927	Sofas	62360.55
2018000004	Sales Invoice	RTL9495	12/31/2017	1/2/2018	Retailer	New York City	NY	10024	EAST	LCH-9	Chairs	32723.46
2018000005	Sales Invoice	ONL8154	12/31/2017	1/2/2018	Online	New York City	NY	10022	EAST	TBL-2506	Tables	408.24
2018000006	Sales Invoice	ONL2587	12/31/2017	1/2/2018	Online	Murrieta	CA	92563	WEST	TBL-1745	Tables	10177.65
2018000007	Sales Invoice	ONL5773	12/31/2017	1/2/2018	Online	Jacksonville	NC	28540	SOUTH	TBL-3858	Tables	3362.8
2018000008	Sales Invoice	ONL9829	12/31/2017	1/2/2018	Online	Scottsdale	AZ	85254	WEST	DEC-2836	Décor	206.5
2018000009	Sales Invoice	ONL9042	12/31/2017	1/2/2018	Online	Scottsdale	AZ	85254	WEST	TBL-599	Tables	342.3
2018000010	Sales Invoice	ONL4138	1/1/2018	1/5/2018	Online	Burlington	IA	52601	NORTH	TBL-2001	Tables	1253
2018000011	Sales Invoice	ONL5337	1/1/2018	1/5/2018	Online	Chicago	IL	60653	NORTH	SOF-1750	Sofas	2099.65
2018000012	Sales Invoice	ONL5255	1/1/2018	1/5/2018	Online	San Diego	CA	92037	WEST	LCH-3637	Chairs	4779.18
2018000013	Sales Invoice	ONL1305	1/1/2018	1/5/2018	Online	Olympia	WA	98502	WEST	LCH-3912	Chairs	3260.25
2018000014	Sales Invoice	ONL7833	1/2/2018	1/5/2018	Online	Olympia	WA	98502	WEST	TBL-4718	Tables	441.945
2018000015	Sales Invoice	RTL5880	1/2/2018	1/5/2018	Retailer	Seattle	WA	98103	WEST	LCH-487	Chairs	54900.09
2018000016	Sales Invoice	ONL7715	1/2/2018	1/5/2018	Online	Seattle	WA	98103	WEST	SOF-4374	Sofas	3137.4
2018000017	Sales Invoice	ONL8546	1/2/2018	1/5/2018	Online	Los Angeles	CA	90037	WEST	TBL-411	Tables	816.48
2018000018	Sales Invoice	RTL6225	1/2/2018	1/5/2018	Retailer	New York City	NY	10011	EAST	LCH-199	Chairs	439.74
2018000019	Sales Invoice	RTL6225	1/2/2018	1/5/2018	Retailer	Minneapolis	MN	55403	NORTH	LCH-246	Chairs	3272.22
2018000020	Sales Invoice	RTL6225	1/2/2018	1/5/2018	Retailer	New York City	NY	10011	EAST	SOF-576	Sofas	3148.74
2018000021	Sales Invoice	RTL6225	1/2/2018	1/5/2018	Retailer	Minneapolis	MN	55403	NORTH	TBL-949	Tables	15161.58
2018000022	Sales Invoice	ONL2391	1/3/2018	1/6/2018	Online	Washington	DC	20016	EAST	TBL-3889	Tables	530.6

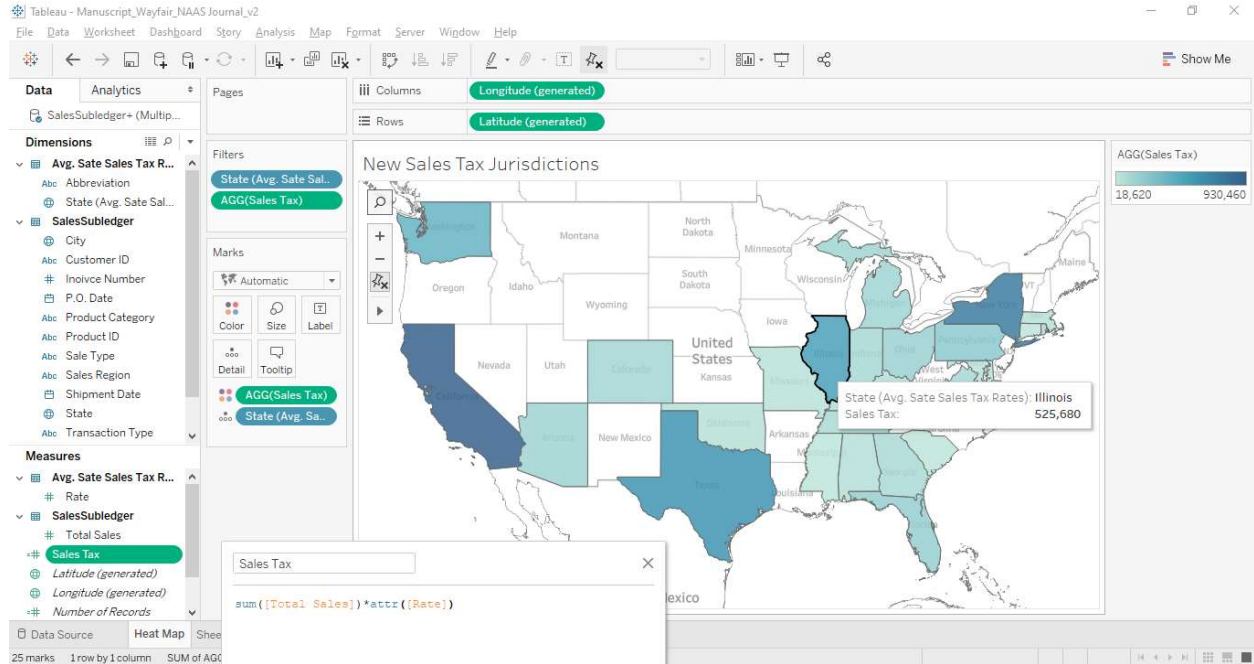
### Appendix C– Tax Rate Data Set Excerpt (Cammenga 2019)

State	Abbreviation	Rate
Alabama	AL	9.14%
Alaska	AK	1.43%
Arizona	AZ	8.37%
Arkansas	AR	9.43%
California	CA	8.56%
Colorado	CO	7.63%
Connecticut	CT	6.35%
Delaware	DE	0.00%
Florida	FL	7.05%
Georgia	GA	7.29%
Hawaii	HI	4.41%
Idaho	ID	6.03%
Illinois	IL	8.74%
Indiana	IN	7.00%
Iowa	IA	6.82%
Kansas	KS	8.67%
Kentucky	KY	6.00%
Louisiana	LA	9.45%
Maine	ME	5.50%
Maryland	MD	6.00%
Massachusetts	MA	6.25%
Michigan	MI	6.00%
Minnesota	MN	7.43%

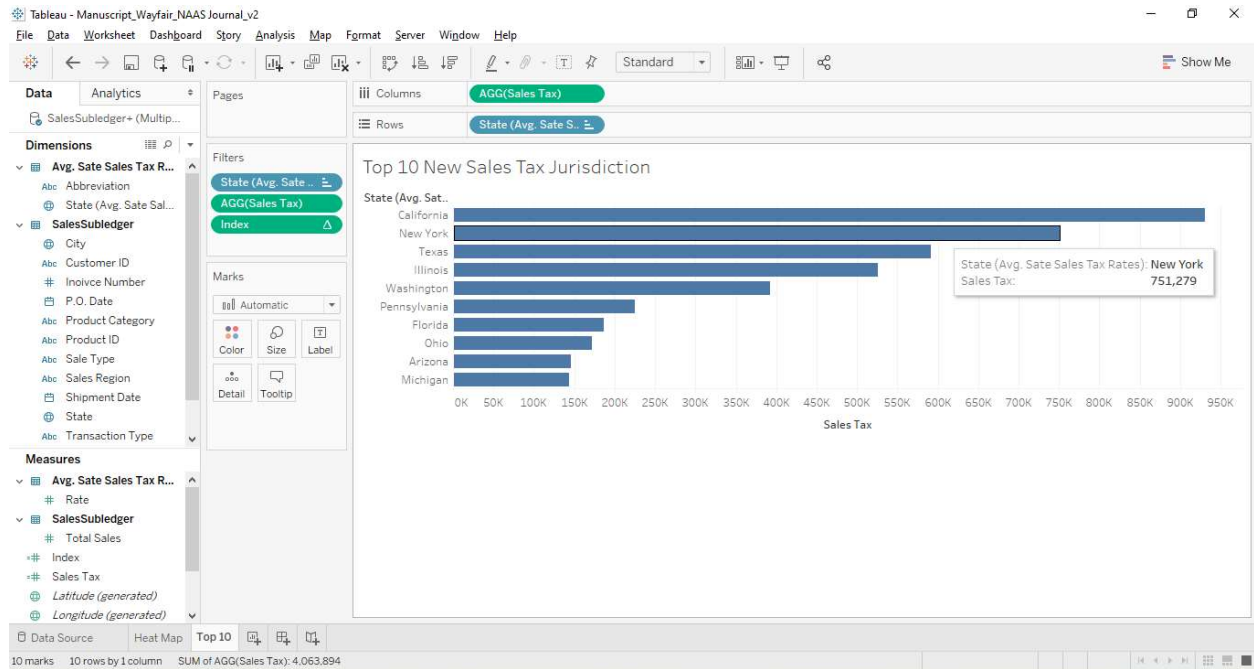


## Appendix D – Case Study Visualizations

### Heat Map



### Bar Chart



## Appendix E – Steps to Creating Visualizations

### Visualization #1 - Create Heat Map

- Step 1:** Download the Excel files posted to D2L titled *SalesSubledger\_2018\_SFD.xlsx* and *2019 Avg. Sales Tax Rates by State.xlsx*. Save these files locally on your personal computer.
- Step 2:** Open Tableau on your personal computer. Import *SalesSubledger\_2018\_SFD.xlsx* into a Tableau workbook. Import by clicking on *Microsoft Excel* in the left-hand column under “Connect” and locate the file saved locally on your personal computer.
- Step 3:** Import and connect *2019 Avg. Sales Tax Rates by State.xlsx* into the Tableau. Select a “**Left join**” to connect the two data sources by right-clicking on the Venn diagram and selecting left. Connect the worksheets via state abbreviation.
- Step 4:** In “Sheet 1,” create a heat map. To start, double click on the *State* dimension to generate a map in the worksheet.
- Step 5:** Create a calculated field to compute the estimated sales tax. Select **Create Calculated Field** from the Analysis drop-down menu. Label the calculated field *Sales Tax*. Enter the following calculation:  $SUM([Total Sales]) * ATTR([Rate])$
- Step 6:** Drag the  $=# Sales Tax$  measure to the *Color* mark.
- Step 7:** Drag *State* dimension to *Filters*. Deselect states where SFD collects and remits sales tax pre-Wayfair. Click on the *Conditions* tab in the filter menu. Select **By formula**. Enter  $SUM([TOTAL SALES]) \geq 100000$  OR  $COUNT([TOTAL SALES]) \geq 200$ .
- Step 8:** Drag  $=# Sales Tax$  measure to *Filters*. Set filter to *At Least* with the minimum value of 1.
- Step 9:** Label Sheet 1 “New Sales Tax Jurisdictions.”

### Visualization #2 - Create “Top 10 New Sales Tax Jurisdictions” Bar Chart

- Step 1:** Add a new worksheet by clicking *New Worksheet* in the bottom left corner.
- Step 2:** Drag *State* dimension to *Rows* bar.
- Step 3:** Drag  $=# Sales Tax$  measure to *Columns* bar.
- Step 4:** Click **Sort State by descending Sale Tax** from the toolbar to sort from highest to lowest tax jurisdictions.

**Step 5:** Drag *State* dimension to *Filters*. Deselect states where SFD collects and remits sales tax pre-*Wayfair*. Click on the *Conditions* tab in the filter menu. Select *by formula*. Enter SUM([TOTAL SALES])>=100000 OR COUNT([TOTAL SALES]) >= 200.

**Step 6:** Drag =# *Sales Tax* measure to *Filters*. Set filter to *At Least* with the minimum value 1.

**Step 7:** Create a calculated field to rank each new jurisdiction—Select *Create Calculated Field* from the Analysis menu. Label the calculated field *Index*. Enter the following calculation: INDEX( )

**Step 8:** Drag =*Index* measure to *Filters*. When prompted, set the range of values from 1 to 10.

**Step 9:** Label Sheet 2 “**Top 10 New Sales Tax Jurisdictions**”

### Create a Tableau Dashboard

**Step 1:** Select the **Dashboard 1** tab.

**Step 2:** Drag the **Heat Map** sheet to the dashboard interface.

**Step 3:** Select the “▼” in the upper right-hand corner of the heat map and select floating. Resize the map to fill the top half of the dashboard.

**Step 4:** Rename the Map **New Sales Tax Jurisdictions**.

**Step 5:** Drag the **Top 10 Bar Chart** sheet to the dashboard interface.

**Step 6:** Select the “▼” in the upper right-hand corner of the heat map in the dashboard and select floating. Resize the map to fill the bottom half of the dashboard.

**Step 7:** Rename the Bar Chart **Top 10 New Sales Tax Jurisdictions**.