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How Much is Your Data Worth?

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Data is an Increasing Part of Healthcare Transactions

ealthcare data is being captured and utilized in an expanding range of applications and by a growing number of businesses. The volume and sources of these data are themselves expanding at a dramatic rate. According to RBC Capital Markets, data in the healthcare industry will grow at a 36 percent compound annual growth rate between 2018 to 2025, higher than in any other industry.1 As data in healthcare continues to grow, the sharing and selling of data is critical to the success of certain businesses. As testament to the value of this data, in July 2020, Sema4, a patient-centered health analytics company based in Stamford, Connecticut, raised \$121 million in a Series C funding round at a post-money valuation of over \$1 billion.² Sema4 exemplifies how new computing techniques such as machine learning and Artificial Intelligence are being applied to very large data sets to enable a wide range of applications from identifying potential therapeutic leads, to detecting disease presence and stage in medical images, to determining the best, most precisely targeted treatments for a given patient. Improved technologies have driven the demand for bigger and broader data sets, and aside from numerous startups, major players include Amazon, Apple, Google,

The data upon which these new applications rely has become critical to many businesses and as such, for healthcare entities that own these data, a valuable resource that can potentially be monetized. As a result, we see an increasing number of transactions that involve data, data-based analyses, and related products and services. When CNBC spoke with hospital executives in late 2019, many of them indicated they were receiving inquiries "all the time," sometimes once a day or more, from companies seeking access to patient health information through licensing arrangements or partnerships.3 Critical to successfully negotiating these transactions is to determine a well-supported value and to appropriately price the data and services being transacted. Aside from the strategic question of how much the data is worth or what a company is willing to pay to obtain the data, a formal valuation may be critical to ensuring compliance with healthcare regulations that govern the payments in these transactions. For compliance purposes, pricing can be supported in part through a robust analysis of the Fair Market Value (FMV) of the data and data-related products and services exchanged in these transactions.

These transactions encompass a wide range in the types of data and data-related services involved; examples include:4

- Demographics and socioeconomic data, e.g., age, gender, ethnicity, education
- Health status data, e.g., morbidity, disability, diagnoses, signs & symptoms, behavioral data, risk factor data
- Health resources data, e.g., provider, plan, or health system characteristics
- Healthcare utilization data, e.g., nature and characteristics of medical care visits, procedures, treatments, prescriptions, adherence/compliance, and other elements of health encounters
- Healthcare financing and expenditure data, e.g., costs, prices, charges, payments, insurance status, source
- Healthcare outcomes, e.g., health status and other outcomes of prior or current prevention, treatment, and other interventions over time
- Genomic and proteomic data, tissue samples, pathology results

Given the diverse types of data and services transacted, it is not surprising that we see a wide range of deal structures. In a license arrangement, the transaction gives the licensee rights to healthcare data for specific purposes, such as identifying drug candidates, developing diagnostics, and identifying optimal treatment alternatives within specified fields of use. Key valuation issues are likely to include determining an appropriate royalty rate and/or milestone payments to the licensor, projecting revenues and/or profits, and estimating the probability of reaching relevant developmental and regulatory milestones and achieving commercial launch. In a co-development or joint venture (JV) type arrangement, data, analytics, intellectual property (IP), and/or services may be provided to a partnership in exchange for payments and an equity share. Key valuation issues include the value of each of the elements contributed to the JV by each party, and the value of consideration received by each party. This may include valuing data, IP, and services; projecting the JV's development costs and risks; developing revenue and profit projections; and valuing the total equity of the JV and the share of equity to each owner based on the JV's capital structure.

The COVID-19 pandemic has created new demands for data to better understand disease incidence; analyze the effectiveness of alternative prevention, diagnosis, treatment, and vaccination strategies; and determine various economic and financial challenges faced by hospitals, insurers, manufacturers, and service providers. At the same time, the methods for valuing these data, discussed further below, often rely upon industry data and market forecasts. Projections have become significantly more difficult given unprecedented conditions in a post-COVID-19 world, and valuation methods need to be tailored to properly consider current risks and potentially wide-ranging future scenarios.

Regulatory Compliance Considerations for Data Transactions

Participants in the healthcare industry receive scrutiny from regulatory agencies under anti-kickback, fraud and abuse, and pricing regulations, whether they are a healthcare provider, an insurer, a manufacturer, an information technology provider, or other actor. The federal government continues to aggressively pursue healthcare fraud and abuse with over \$2 billion annually in judgments and settlements won or negotiated in recent years. Transactions may be reviewed and/or challenged by the Department of Health and Human Services Office of Inspector General, the U.S. Department of Justice, the Internal Revenue Service, and the Centers for Medicare & Medicaid Services, as well as by state agencies. In addition to civil penalties, regulators often pursue criminal charges against individuals.

In any transaction that involves patient data, protection of data privacy is a paramount consideration. The Health Insurance Portability and Accountability Act of 1996 (HIPAA) established national standards to protect individuals' medical records and applies to health plans, health care clearinghouses, and health care providers that conduct certain health care transactions electronically. When exchange of patient healthcare data is part of a transaction being reviewed by the government, there may often be both data privacy and anti-kickback issues involved.

Federal and state statutes govern the pricing that is considered appropriate in deals that involve transfers of businesses, or business assets such as data. Included in these provisions is the requirement that healthcare entities may not pay or receive more than FMV for the assets or services exchanged. Additionally, certain payments tied to patient volume or referrals are construed as inappropriate inducements that are not allowed. Tax-exempt entities face additional considerations to ensure that a contemplated transaction does not result in private inurement.

Recently, new rules governing health data transfer and information blocking have created another area in which FMV considerations are relevant. In March 2020, the Department of Health and Human Services finalized the Office of National Coordinator for Health Information Technology's (ONC) interoperability rule, with an aim to facilitate patient access to, and ability to share, their electronic health information and enable more coordinated care among different healthcare and/or information providers. The new rules address information blocking: the intentional withholding of patient health information, either from one provider to another, or from a provider

to a patient. Among eight specified situations that provide an exception to being considered information blocking, one "enables actors to charge fees related to the development of technologies and provision of services that enhance interoperability, while not protecting rent-seeking, opportunistic fees, and exclusionary practices that interfere with access, exchange, or use of EHI." Provided certain conditions are met, it will not be considered information blocking if a fee is charged based on objective and verifiable criteria, such as the cost and a "reasonable" profit margin to provide access, exchange, or use of electronic health information.

Although the complexity and materiality of a transaction may drive the depth of analysis and documentation that is appropriate, it is highly advised to address the FMV of any transaction in which relevant compliance issues may apply.

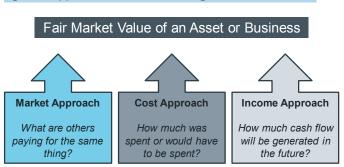
What is Fair Market Value and How Can It Be Estimated?

Fair Market Value is defined as the price that property would change hands between a willing buyer and a willing seller, neither being under any compulsion to buy or sell, and both having reasonable knowledge of relevant facts.⁷

Court decisions frequently state that the hypothetical buyer and seller are assumed to be able and willing to trade and be informed about the property and the market for such property. Further, the highest price a willing buyer would pay is also the price that a willing seller would accept. Additionally, for healthcare transactions, FMV means the price that an asset would bring as a result of bona fide bargaining between well informed buyers and sellers who are not otherwise in a position to generate business for the other and does not vary with, or take into account in any way, the referral or potential referral of patients or any other health care business between the parties for purposes of compliance with the Anti-Kickback Statue (42 U.S.C. § 1320a-7b), the Stark Law (42 U.S.C. § 1395nn), and the Stark regulations (42 C.F.R. 411.351).

Prior to negotiating and closing a deal, a robust valuation supports the pricing of the transaction and helps ensure regulatory compliance during post-deal execution. So how might one value such a transaction? As shown in the Figure 1 below, a Market Approach, Cost Approach, and/or Income Approach can support the concluded FMV of an asset or business.

Figure 1. Approaches to Determining Fair Market Value



Market Approach

Ideally, one looks for the prices that others are paying for similar transactions in an arm's length arrangements. In applying this "Market Approach," one seeks to find transactions that are as comparable as possible to the transaction being reviewed. This is fairly straightforward when estimating the FMV of a relative commodity such as bags of saline solution or four hours of medical chart coding. When valuing something less commoditized, we need to apply well-supported adjustments to the pricing of transactions that are as close to comparable as possible. Business deals are typically complex transactions that involve multiple deliverables and several pricing components and contingencies, making it difficult at best to find comparable publicly reported arm's length deals.

In addition to examining market value based on comparable data transactions, we can estimate the value of data based on the value of a company that holds the data. Assuming that company's primary asset is the data that it holds, the value of a patient record is simply the value of the company divided by the number of patient records. For example, when Flatiron Health was sold for \$1.9 billion to Roche in 2018, its 2.2 million research-ready patient records could be viewed as having an implied value of almost \$1,000 per record.9 The value of a datarich company can be readily estimated for publicly traded companies based on their current stock price and filings. We can also rely on the implied company value in transactions where sufficient information is revealed publicly, as in the Flatiron example just mentioned.

A practical challenge with this approach is that a company is rarely just a data repository, and therefore, our analysis must address other assets, services, and products that contribute to the company's total enterprise value. In short, we need to carve out the portion of company value associated with its data from the portion of company value associated with everything else that contributes to its total enterprise value, which is not an easy exercise.

Finally, when reconciling different valuations implied by comparable transactions considered under the Market Approach, we must account for-and possibly make explicit adjustment for-key characteristics of a given data asset that affect its value. For example, data transactions often involve the purchase of raw or unstructured data from a health care provider by a data aggregator. The data aggregator may then process, clean, structure and combine raw data from multiple sources, steps that add value to the data set. The companies that perform this aggregation and sell these data to other third parties may be companies whose overall value we can see via their publicly traded stock prices or public transactions. The added value these companies are creating can be viewed as the increment between the value of the "raw" data transactions and the value of the company based on aggregated and clean data.

In summary, when we apply the Market Approach to value a particular data set of interest, we need to compare the specific characteristics of that subject data set to those of comparable companies and transactions, make appropriate adjustments to indicated prices, and determine where within a range of indicated values the FMV of the subject data set should fall.

Cost Approach

Given the practical challenges in applying the Market Approach, the "Cost Approach"—which values an asset based on what has been spent to create it or how much it would cost to re-create it—is sometimes considered. Here too, challenges exist. It may be difficult to identify relevant historical costs or to estimate the replacement cost. More importantly, the value of an asset may be substantially greater than the cost to create it, due to strategic value that goes above and beyond the asset's cost. For example, the cost that has been incurred by a healthcare entity to collect and warehouse data may be small in relation to its value in the hands of a startup company using it to create new products and services, particularly if that data is based on a unique sample of patients or cannot be obtained through another source.

Income Approach

A third approach, the "Income Approach," overcomes many of the challenges we have mentioned by valuing the asset, service, or company based on projected incremental cash flow. A discounted cash flow (DCF) estimates the present value of this cash flow by applying a discount rate that a market participant would consider appropriate given the riskiness and timing of the cash flow. When there is significant uncertainty surrounding future cash flow, for example, the impact of COVID-19, multiple scenarios may be considered. Cash flows associated with each scenario are weighted by the corresponding likelihoods of the scenarios. The FMV pricing of the transaction would then be based on the resulting expected, or probabilityweighted, DCF of the acquired asset or business. If the transaction consideration involves multiple components (e.g., an up-front payment and milestones tied to post-deal performance) then the analysis will consider the FMV of the transaction consideration as well as the FMV of the acquired asset or business.

The Income Approach is not without its own set of challenges. The valuation is sensitive to the cash flow projections and other inputs (e.g., discount rate, taxes, and long-term growth). As such, the assumptions behind these elements need to be well-supported. Additionally, in structuring payments and developing the corresponding cash flow projections, we must be cognizant of regulations governing payments that are tied to volumes or referral inducements.

Relief from Royalty Method

While a DCF values a business or asset based on projected incremental cash flow, the Relief from Royalty Method is a variation of the Income Approach specifically focused on valuing intangible assets including data and other IP. In the Relief from Royalty Method, the FMV of an asset is estimated by the present value of the royalties avoided because the company owns the intangible asset. The appropriate royalty rate is hypothetical. To determine an appropriate royalty rate, we employ a Market Approach by examining royaltybased transactions in which comparable data or IP has been licensed, making appropriate adjustments for differences in aspects such as fields of use, geographic coverage, and stage of development. Applying this estimated royalty rate to projections of the revenue or profit to which it would apply, we can estimate the stream of royalty that the IP owner would have to pay if they did not own the IP. The FMV

of the IP is then the avoided royalties, present-valued at a discount rate that reflects the risk and timeframe of the implied royalty stream. The challenges in implementing the Relief from Royalty Method mirror those of the Income Approach and Market Approach—namely, developing credible projections and identifying and adjusting comparable transactions.

How Can the Value of Data be Determined?

Estimating the FMV of data is often challenging due to the uniqueness of a given data set and the variety of data-driven products and services that may be associated with a data set. We will describe an approach we have used to value a variety of data products from one such provider, followed by two case study examples.

Contracts for data services often include an initiation charge or setup fee for the work of tailoring a data set or product offering to a customer's needs, along with an annual subscription-type fee for the data or product itself. The FMV of the setup fee can be estimated using a Cost Approach, as the uniqueness of a given data set implies that unique activities and/or levels of resources are needed to create it. A Cost Approach is preferred as finding market prices for comparable setup activities is likely not possible given how customized these activities are to each situation. The fee charged for ongoing access to the data is addressed via a Market Approach as we will describe later.

Figure 2. Typical Pricing Structure for a Data Contract

Fee for Customer Initiation or Setup

FMV based on:

- · Estimated resources
- Industry-based compensation rates
- Industry-based fair margin

Fee for
Data Access or
Subscription

FMV based on:

- Pricing of comparable products/services, if available
- · Buyer survey
- Provider survey

Initiation Charge or Setup Fee

In applying the Cost Approach to estimate the FMV of the setup fee, if the organization has captured historical information, we consider the average and range of resources it has incurred for such activities; for example, the per-customer cost for the activities required in the past to on-board similar customers. This can inform projections of the resources that would be needed to on-board a given customer. The resource estimates are typically a range of hours by job title and reflect the variability across customers to on-board them for a given service; for example, based on the complexity of the required dataset, whether multiple data sources need to be integrated, the number of organizational touchpoints involved, and other factors. Facts and circumstances should be carefully considered when there is a need to allocate the resources on a per-dataset or per-product basis for activities that support multiple products or customers.

The total cost for setup is based on the required resources and the fully loaded salary of each resource as supported by industry compensation benchmarks. Finally, a fair margin is applied to the total cost based on the observed margins of comparable public companies.

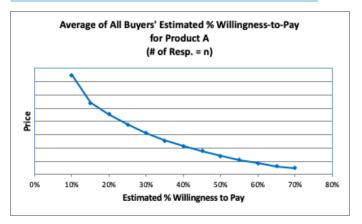
Fee Charged for Data Access or Subscription

Turning to the FMV analysis of the data itself, a Market Approach is typically used. If similar data products are available from several providers, the FMV of the data can be supported by the prices others charge for comparable products. However, the prices charged by other data providers are often confidential, or their products are not similar enough to be considered comparable. To support the FMV analysis it is helpful to research comparable data products, possibly through a customized survey of providers, to understand distinctions among their product offerings, gain at least a qualitative understanding of their pricing, and document how these findings corroborate a concluded FMV.

In the likely case that prices for comparable products are not available, information from a customized survey of "data buyers" can support application of the Market Approach by measuring buyers' likelihood to purchase, depending on price and other characteristics. We have designed and fielded a number of such surveys, focusing on various types of products and services and their corresponding targeted buyer segments. The survey can present buyers with hypothetical datasets and product offerings that vary in the types of data, geographic/patient/specialty coverage of the datasets, frequency of updates, and other characteristics that differentiate products and providers.

From their responses, the "willingness-to-pay" of each buyer for various products is estimated. Willingness-to-pay is a measure of the likelihood that a buyer will purchase a data product at a given price, and it reflects both how well the product meets the buyer's needs and other alternatives the buyer may have, either through another data product or provider, or by addressing the need internally or through other means. The final step is to estimate the FMV for each product based on a willingness-to-pay estimate for the market that is aggregated across survey respondents. The FMV for a given product is based on the price at which a specified percentage of buyers would be willing to pay for the service.

Figure 3. Estimated Willingness-to-Pay for Product A



The combination of a Cost Approach for the setup fee and a surveybased Market Approach for the access fee provides solid support for the indicated FMV of unique data products. A more sophisticated survey approach, conjoint measurement, can be used to provide robust support for more granular FMV pricing of data products that vary along a wider and deeper spectrum of characteristics.

Case Study 1: Valuation of Data Provided in Exchange for Services

An academic medical center with a rich source of healthcare data entered into a transaction with a healthcare analytics company, in which access to data would be provided in exchange for data structuring to facilitate research applications, de-identification to ensure patient privacy, data set cleansing, and receipt of software to enable medical center researchers and other staff to access the data. For compliance purposes, it was critical to ensure that the FMV of the data provided by the medical center was aligned with the FMV of the services received.

The value of providing access to de-identified data was estimated based on a Market Approach. Comparable publicly reported data transactions were identified. Based on the prices paid in these transactions and the sizes of the data sets involved, an implied price per patient record was estimated for each of these data sets. Although there are a large number of announced data transactions, financial details are rarely disclosed. The analysis was limited to only those transactions with sufficient details on pricing and other terms to support a conclusion as to the transaction's implied price per patient record, taking into consideration differences in characteristics of the various data sets.

For the data structuring, de-identification, and cleansing services, a Cost Approach was used. An estimated FMV for these services was based on the estimated resources required to perform them, considering the number and titles of required staff, hours per staff, and industry compensation data. The estimated FMV includes a fair margin on cost based on industry benchmarks. The FMV of the software provided to the medical center was based on analysis of comparable commercially available software.

The FMV analysis provided robust, independent support for the medical center's review of the transaction's compliance with applicable regulations.

Case Study 2: Valuation of Data and Analytics Sold to Manufacturers

A national clinic network provides a unique source of data which it makes available, along with analytics and software tools, to drug and equipment manufacturers to enable them to track usage of their products and competing products and analyze associated healthcare outcomes. For compliance purposes, the data provider needed to ensure that its pricing is consistent with FMV.

To estimate the FMV of these data and related services, a surveybased approach was used involving two components: a buyer survey and a data provider survey. Each was highly customized to the segments of products and buyers relevant to the data services addressed.

In the buyer survey, decision makers for data purchases from drug and equipment companies that are current or potential buyers of

these types of data were interviewed. To measure their willingnessto-pay for various data products, the survey described hypothetical data products and asked each buyer to express prices that they would associate with specified levels of their likelihood to purchase. Aggregating the results across the sample of buyers provided a willingnessto-pay curve for each data product—that is, the percentage of buyers willing to pay a given price for that product. A concluded FMV range for each product was associated with a specified portion of the product's willingness-to-pay curve.

In the data provider survey, representatives from companies that sell comparable data products were interviewed. A key part of the survey was to understand the characteristics that differentiate each company's products from those of other companies. Additionally, some hypothetical scenarios for a customer's needs were described as a basis to discuss how each company might address that need with its product offering and price its product accordingly. The survey provided a better understanding of differences in products and pricing between data providers and corroborated the FMV range concluded from the buyer survey.

So, How Much is Your Data Worth?

With applications of healthcare data growing at a rate that implies a doubling of data use every two to three years, and with many startups and established companies seeking bigger and broader datasets, data has become more valuable than ever. Valuations are critical to establishing the right price in a transaction, whether for strategic purposes, compliance purposes, or both. In this article, we have highlighted valuation approaches and challenges when pursuing transactions involving data and data-related products and services. Since no two transactions are the same, facts and circumstances must be considered, and valuations must be tailored to the information available to support a robust conclusion. An experienced and independent third party can facilitate a valuation process that lends confidence and defensibility to decisions on how much your data is worth.

Endnotes

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- 8 Estate of Newhouse v. Commissioner, 94 TC 193 (1990), Footnote 23 at 233.
- 9 See supra note 3.

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