Allison Miller-Mouer

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Allison is a business trial lawyer, representing clients in wide variety of industries, including energy, health care, manufacturing, commercial real estate and transportation. Allison has been the lead trial lawyer in self-dealing, fraud, breach of contract and contract termination cases. Allison also serves as a de facto general counsel.

Prior to joining MouerHuston (f/k/a the Mouer Law Firm) in January 2015, Allison was a partner at Connelly Baker Wotring, LLP, and a law clerk for the Honorable Earl S. Hines, United States District Court, Eastern District of Texas.

Allison has her undergraduate degree from Northwest University and a J.D., cum laude from Pepperdine University.

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The Practice of Practical Ethics

Ryder Scott Reserves Conference

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What is Ethics?
What does it mean to behave ethically?

- ✓ Does being ethical equal (=) following the law?
- ✓ Does being ethical equal (=) doing your job well?
- ✓ Does being ethical equal (=) following standards society accepts?

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Ethics

Ethics is well-founded ***standards*** of right and wrong that prescribe what humans ought to do, usually in terms of rights, obligations, benefits to society, fairness, or specific virtues.

Issues in Ethics IIE V1 N1 (Fall 1987) (Revised in 2010) , Manuel Velasquez, Claire Andre, Thomas Shanks, S.J., and Michael J. Meyer.

Fundamental Canon of Ethics

National Society of Professional Engineers

- Perform services only in areas of competence.
- Issue public statements only in an objective and truthful manner.
- Conduct yourself honorably, responsibly, ethically, and lawfully as to enhance the honor, reputation, and usefulness of the profession.
- Act as faithful agents or trustees for your employers and/or clients.
- Avoid deceptive acts.
- Hold paramount the safety, health, and welfare of the public.

NSPE Code of Ethics for Engineers, https://www.nspe.org/resources/ethics/code-ethics

Code of Conduct – Core Principles

Society of Petroleum Engineers

SPE Professionals:

- Exhibit the highest standards of competency, honesty, integrity, and impartiality;
- Are fair and equitable;
- Accept a personal responsibility for adherence to applicable laws, the protection of the environment, and safeguarding the public welfare in their professional actions and behavior.

SPE Code of Conduct, https://www.spe.org/en/about/professional-code-of-conduct/

Code of Conduct – Applied Principles

Society of Petroleum Engineers

- Offer services in the areas of their **competence** and experience affording full disclosure of their qualifications.
- Are **honest, truthful**, ethical, and fair in presenting information and in making public **statements** reflecting on colleagues professional matters and their professional role, whether verbal or through printed or electronic media.
- **Disclose** to affected parties known or potential conflicts of interest or other circumstances which might influence - or appear to influence - judgment or impair the fairness or quality of their performance.
- Act in professional matters for each employer or client as faithful agents or trustees **by not disclosing without consent,** or taking improper advantage of, anything of a proprietary or confidential nature concerning the business affairs or technical processes of any present or former client or employer.

SPE Code of Conduct, https://www.spe.org/en/about/professional-code-of-conduct/

The *Wicked* World of Estimating and Auditing Oil & Gas Reserves

- What do you mean - *wicked*?
- What makes the domain *wicked*?
- How is this relevant to ethics?

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SPE – Standards Pertaining to Estimating and Auditing Oil and Gas Reserves (2019)

1.2 Estimating and Auditing Reserves Information in Accordance With Generally Accepted Engineering and Evaluation Principles

The estimating and auditing of Reserves information is predicated upon certain historically developed principles of geoscience, petroleum engineering, and evaluation methodologies, which are in turn based on principles of physical science, mathematics, and economics. Although these generally accepted geological, engineering, and evaluation principles are predicated on established scientific concepts, the application of such principles involves extensive judgments by qualified individuals and is subject to changes in existing knowledge and technology; fiscal and economic conditions; applicable contractual, statutory, and regulatory provisions; and the purposes for which the Reserves information is to be used.

Subject to changes…

1.3 The Inherently Imprecise Nature of Reserves Information

Inherently Imprecise

The reliability of Reserves information is considerably affected by several factors. Initially, it should be noted that Reserves information is imprecise as a result of the inherent uncertainties in, and the limited nature of, the accumulation and interpretation of data upon which the estimating and auditing of Reserves information is predicated. Moreover, the methods and data used in estimating Reserves information are often necessarily indirect or analogical in character rather than direct or deductive. Furthermore, the persons estimating and auditing Reserves information are required, in applying generally accepted petroleum engineering and evaluation principles, to make numerous unbiased judgments on the basis of their educational background, professional

Approved by the SPE Board, June 25, 2019.

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SPE – Definitions and Guidelines

Table 3—Reserves Category Definitions and Guidelines

Category	Definition	Guidelines
Proved Reserves	Those quantities of petroleum that, by analysis of geoscience and engineering data, can be estimated with reasonable certainty to be commercially recoverable from a given date forward from known reservoirs and under defined economic conditions, operating methods, and government regulations.	If deterministic methods are used, the term "reasonable certainty" is intended to express a high degree of confidence that the quantities will be recovered. If probabilistic methods are used, there should be at least a 90% probability (P90) that the quantities actually recovered will equal or exceed the estimate. The area of the reservoir considered as Proved includes (1) the area delineated by drilling and defined by fluid contacts, if any, and (2) adjacent undrilled portions of the reservoir that can reasonably be judged as continuous with it and commercially productive on the basis of available geoscience and engineering data. In the absence of data on fluid contacts, Proved quantities in a reservoir are limited by the LKH as seen in a well penetration unless otherwise indicated by definitive geoscience, engineering, or performance dat... may include pressure gradient a... Seismic data alone may not be s... for Proved reserves. Reserves in undeveloped locatio... provided that: A. The locations are in un... that can be judged with... commercially mature ar... B. Interpretations of availa... data indicate with reasc... objective formation is l... Proved locations. For Proved Reserves, the recov... reservoirs should be defined bas... supported by analogs and sound... considering the characteristics o... applied development program.
Probable Reserves	Those additional Reserves that analysis of geoscience and engineering data indicates are less likely to be recovered than Proved Reserves but more certain to be recovered than Possible Reserves.	It is equally likely that actual rem... be greater than or less than the ... plus Probable Reserves (2P). In... methods are used, there should... that the actual quantities recove... estimate. Probable Reserves may be assi... adjacent to Proved where data control or interpretations of available data are less certain. The interpreted reservoir continuity may not meet the reasonable certainty criteria. Probable estimates also include incremental recoveries associated with project recovery efficiencies beyond that assumed for Proved.
Possible Reserves	Those additional reserves that analysis of geoscience and engineering data indicates are less likely to be recoverable than Probable Reserves.	The total quantities ultimately recovered from the project have a low probability to exceed the sum of Proved plus Probable plus Possible (3P), which is equivalent to the high-estimate scenario. When probabilistic methods are used, there should be at least a 10% probability (P10) that the actual quantities recovered will equal or exceed the 3P estimate. Possible Reserves may be assigned to areas of a reservoir adjacent to Probable where data control and interpretations of available data are progressively less certain. Frequently, this may be in areas where geoscience and engineering data are unable to clearly define the area and vertical reservoir limits of economic production from the reservoir by a defined, commercially mature project. Possible estimates also include incremental quantities associated with project recovery efficiencies beyond that ...or Probable.

Category	Definition
Proved Reserves	Those quantities of petroleum that, by analysis of geoscience and engineering data, can be estimated with reasonable certainty to be commercially recoverable from a given date forward from known reservoirs and under defined economic conditions, operating methods, and government regulations.

Petroleum Resources Management System, Revised June 2018

Oil and Gas Reserve Reporting
SEC Final Rule

SEC Final Rule defines the term "proved oil and gas reserves" in part as "those quantities of oil and gas, which, by analysis of *geoscience and engineering data*, can be *estimated* with reasonable certainty to be economically producible—from a given date forward, from known reservoirs, and *under existing economic conditions, operating methods, and government regulations*—prior to the time at which contracts providing the right to operate expire, unless evidence indicates that renewal is reasonably certain, regardless of whether deterministic or probabilistic methods are used for the estimation." (emphasis added)

SEC Modernization of Oil and Gas Reporting Release Nos. 33-8995; 34-59192; FR-78; File No. S7-15-08.

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Awareness & Acknowledgment - Reserve Estimating/Auditing Is a Wicked Domain

Creates an expectation and the grace needed to cultivate engineers and organizations that value and practice:

- Education/Training
- Confidence to Question
- Redundancy/Internal Controls

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SEC Complaints/SH Lawsuits
Internal Investigations

- Education/Training **
- Confidence to Question **
- Redundancy/Internal Controls

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Practice Pointers

Education/Training

- Recurring and ongoing training w/r/t standards (SEC v. SPE v. Other)
- Work Notes (workflows, rationales for judgments, explanation of technical decisions)

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Confidence to Question

- Adequacy of Information (complete/reasonable)
- Data sources
- Data anomalies (elevate/document)
- Over-reliance on software

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Redundancy/Internal Controls

- Corroboration (multiple methodologies, techniques, practioners)
- Draft Reports
- Work Notes (roadmap for checking & rechecking)

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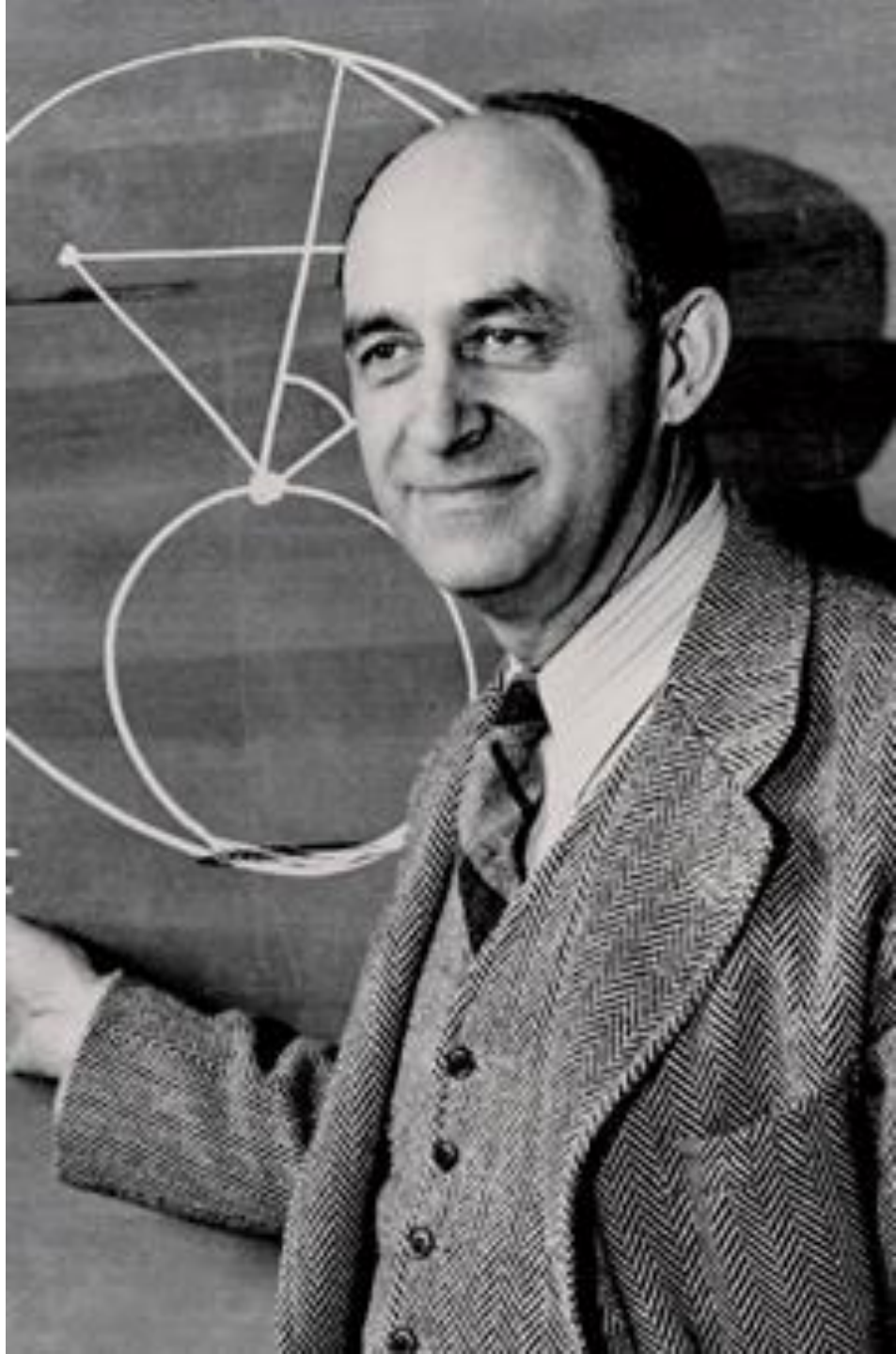
Confidence to Question

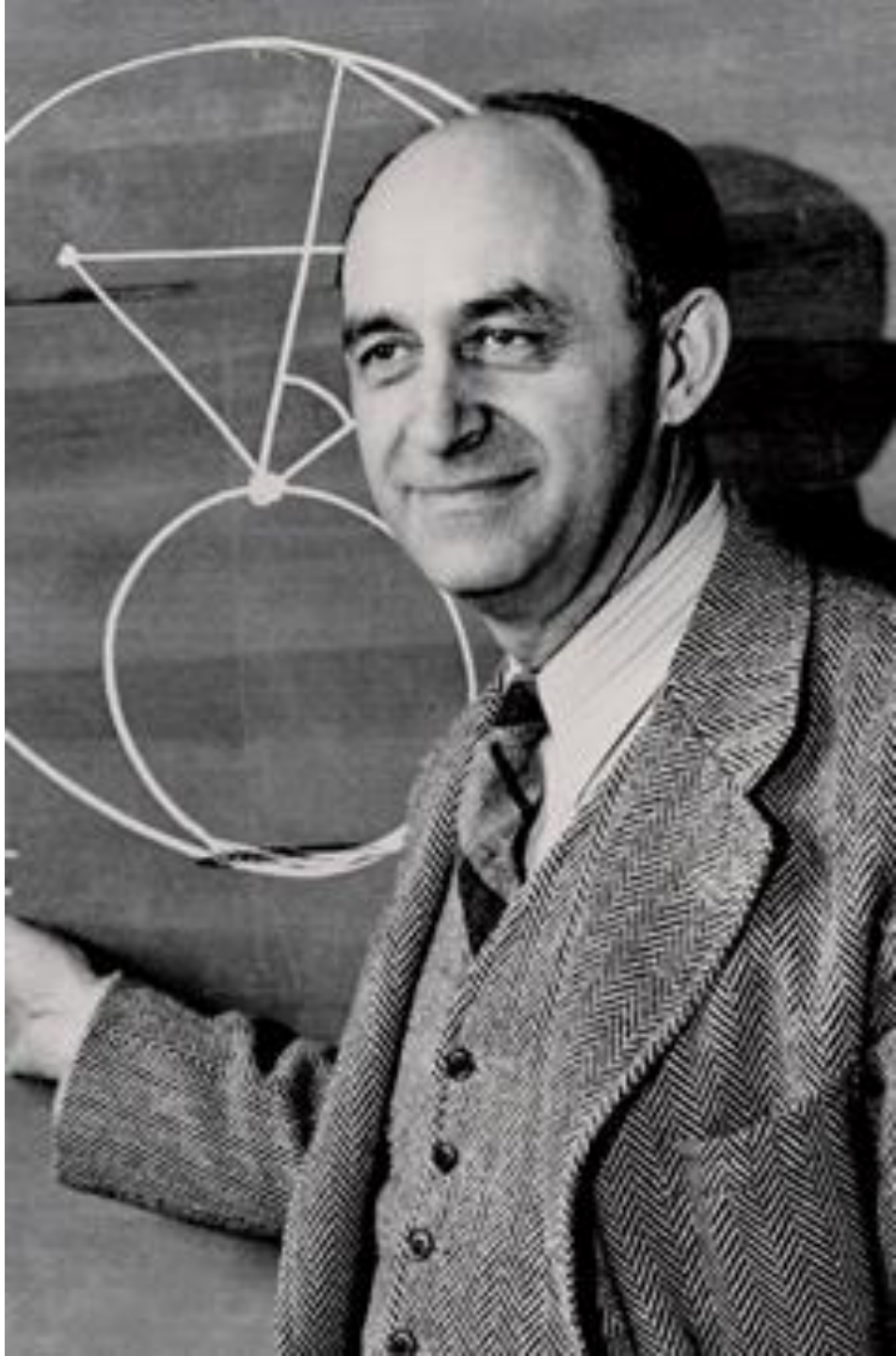
Fermi Estimations

- Big questions that seem impossible to answer, at first.
- How many engineers will graduate with a degree in petroleum engineering from American universities in 2022?
- How many Olympians will compete in the 2024 Summer Olympics in Paris?



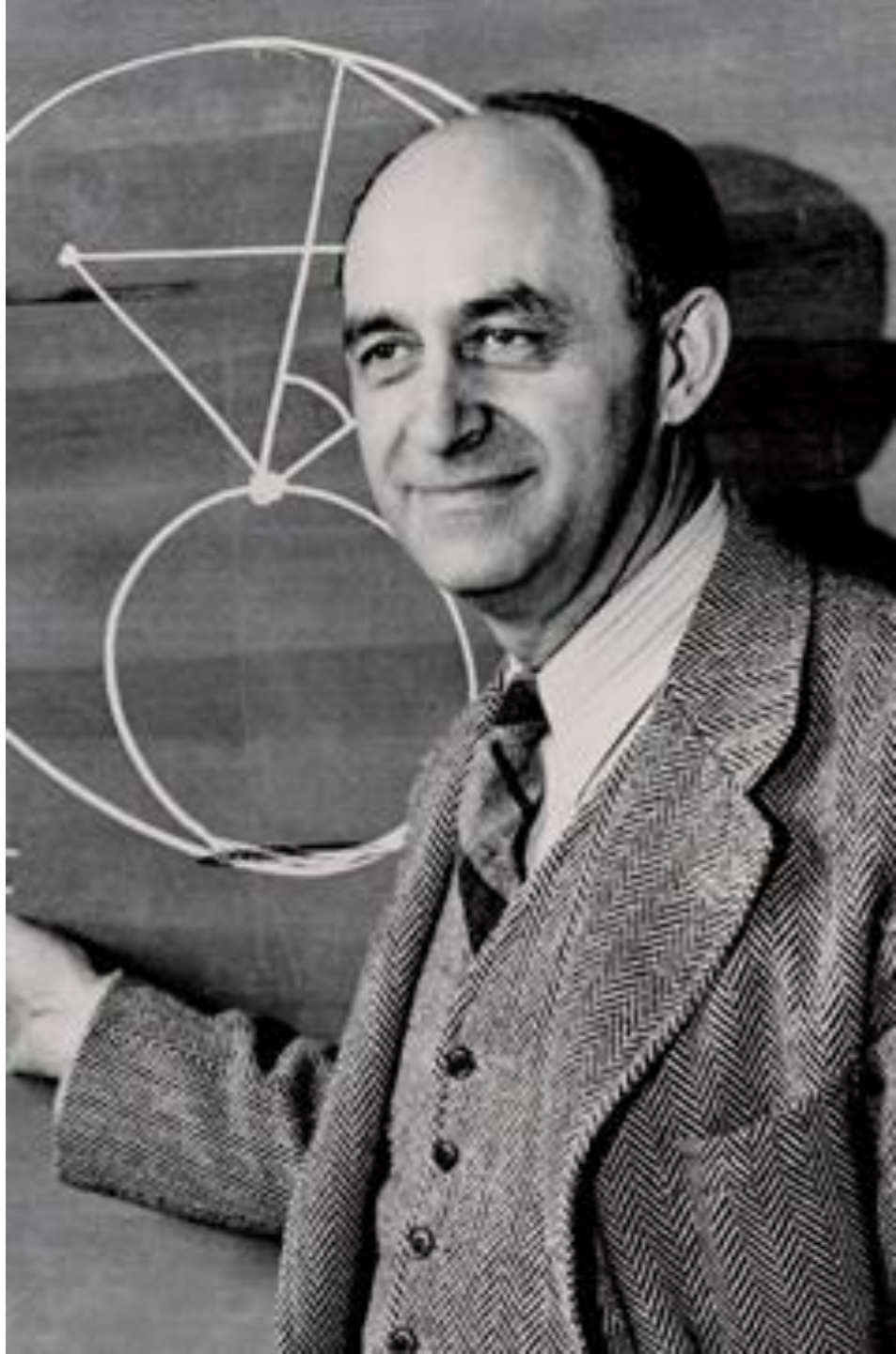
Fermi Estimations

- Fermi questions require several steps of estimation - you must begin by identifying the data values or "factors" needed to calculate the answer and then, estimate them.
- Step One – State the question and clarify the interpretation.
- Step Two – Identify the factors and the layers of factors needed to calculate an estimate.
- Step Three – Assign estimates to each factor and calculate.



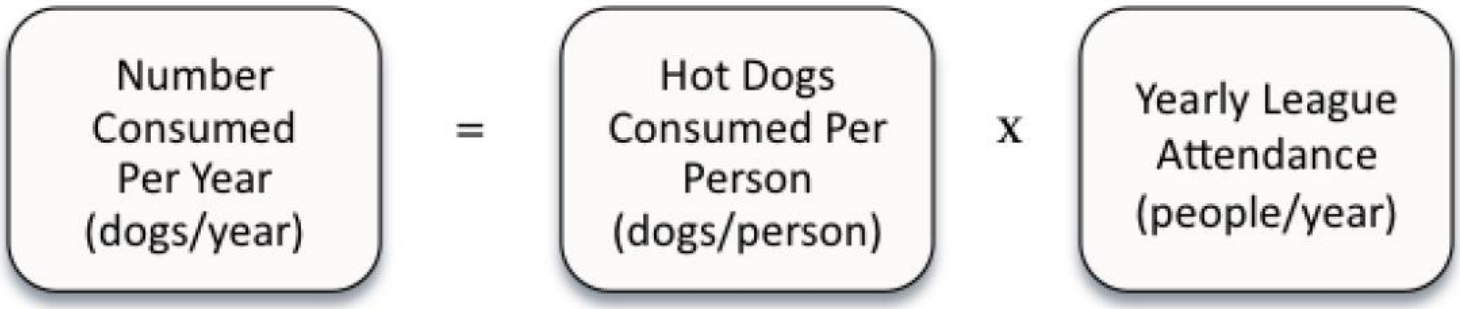
Fermi Estimations

- Application - Building habits of the mind
  - Confidence to Question
  - Confidence to Deconstruct
  - Community/Camaraderie



Question: How many hot dogs are consumed at major league baseball games each season?

What two factors will yield the answer?



Journal of Applied Business and Economics, Phillip M. Anderson and Cherie Ann Sherman, Applying The Fermi Estimation Technique to Business Problems.

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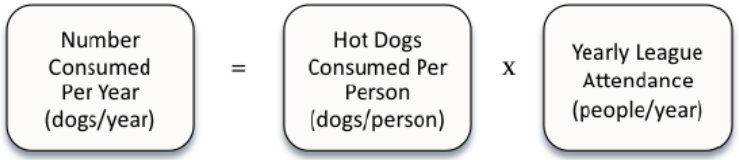
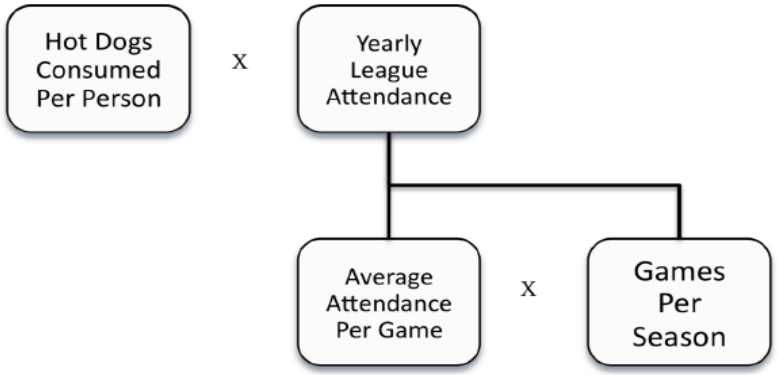
Question: How many hot dogs are consumed at major league baseball games each season?



Next step, which of the two factors above can be reasonably estimated and which cannot? Then, deconstruct the "cannot" factor into additional factors.



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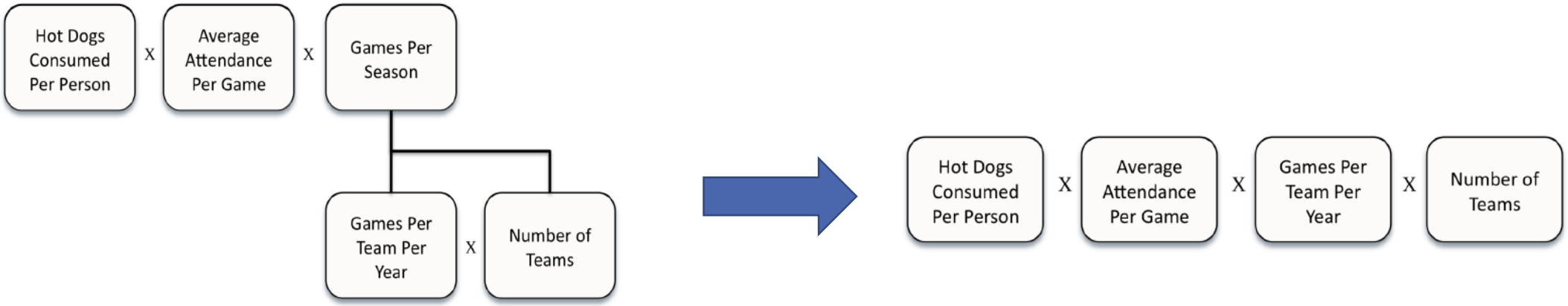
Question: How many hot dogs are consumed at major league baseball games each season?

The deconstructing process repeats until each "factor" can be estimated without further information.



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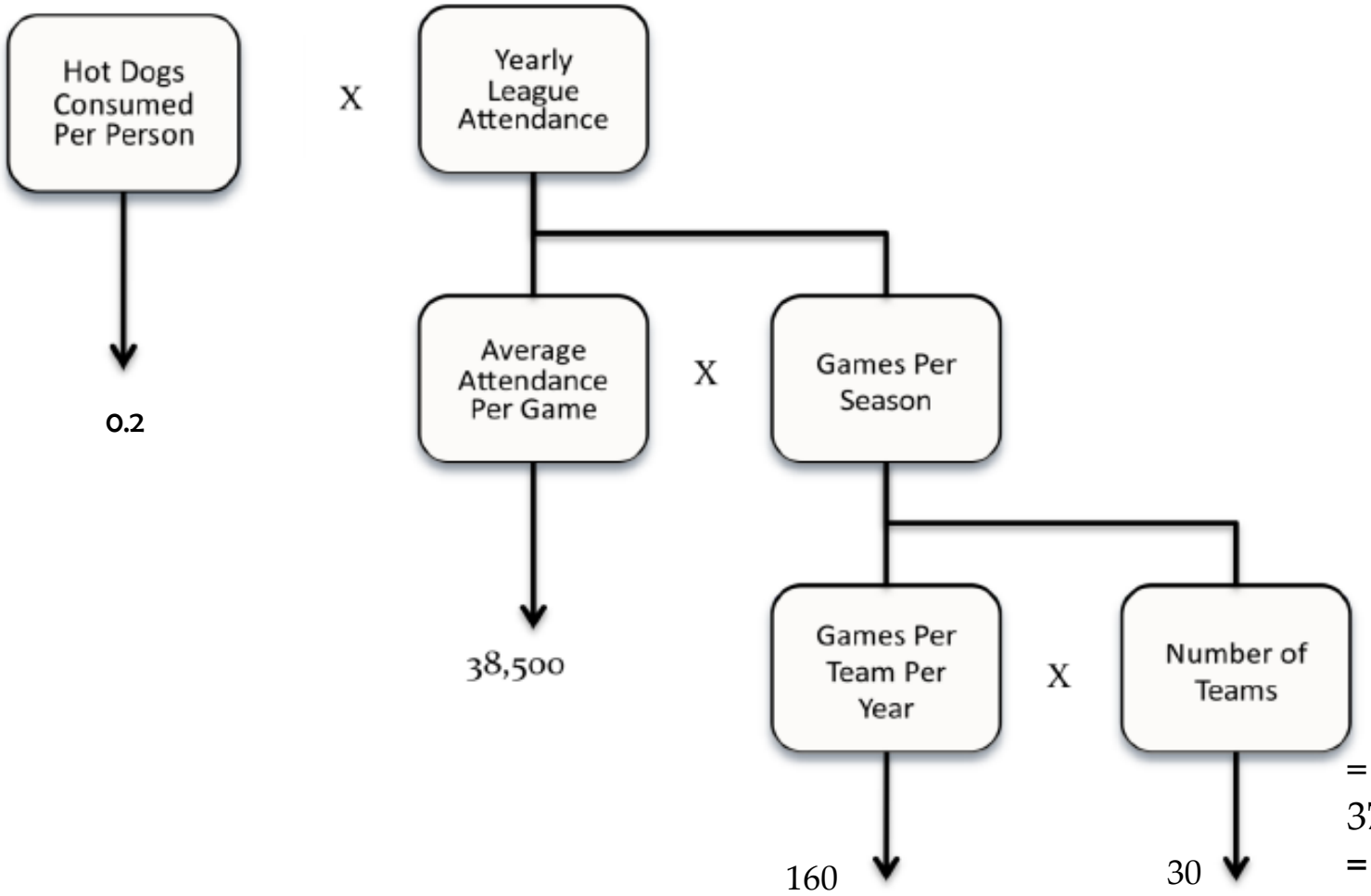
Question: How many hot dogs are consumed at major league baseball games each season?

Now that we have factors that we can assign estimates to, assign estimates and calculate:



= 37 million hot dogs
37/2 team per gam
= 19 million hot dogs

Questions, Comments, Criticisms

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