

Data-Driven Decision-Making for IP Licensing and Transaction:

**Use LES Royalty Survey Reports and Other Data Sources
to Guide Monetization Campaigns**

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-In coordination with -
Licensing Executives
Society International (LESI)

LES 2021 Royalty Surveys

An Introduction

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LES USA and Canada Royalty Survey Program: 3 flagship Royalty Rates and Deal Terms Surveys

▶ **High Tech Survey:**

- 4 Surveys since 2011; covered period: 2008 to 2021.
- Most recent Survey Report: 2021, released in September 2022

▶ **Life Sciences Survey:**

- 6 Surveys since 2008; covered period: 2005 to 2021.
- Most recent Survey Report: 2021, released in May 2022

▶ **Physical Sciences** (formerly CEEM)

- First launched in 2010;
- Most recent Survey: 2022. report to be released by summer 2023.

LES 2021 Royalty Surveys

An Introduction

Confidentiality

- ▶ Confidentiality is the utmost priority of the LES Royalty Surveys.
- ▶ A third-party consulting firm, Vault Consulting, has been engaged to manage and perform the Surveys, including distributing the questionnaires and collecting the results.
- ▶ The LES teams do not have access to the identities of the submitters. All data provided by Vault is clear of confidential data and cannot, in any way, be tied back to any individual respondents.

LESI Annual Meeting 2023

Royalty Rates & Deal Terms Survey:
How to use the data in
IP Monetization

LIFE SCIENCES



-In coordination with -
Licensing Executives
Society International (LESI)

Survey Progression

Very minor changes were made in the research materials for the 2021 survey.

Survey Changes

(2009-2012)

- Separated **“Not Applicable”** and **“Don’t Know”** for several questions
- Refined **“Injectable”** to allow **“Subcutaneous/Intramuscular”** and **“Intravenous”**
- Added **“Medical Research Institute”** for organization type
- Added **“Multiples”** and **“Internal Rate of Return”** for approaches to Valuation

(2012-2014)

- Added **“Drug Use Deal”** as an option for the Deal Reason
- Clarified that the **revenue reported** should be for the **business unit** conducting the deal
- Provided additional clarification on reporting of **diagnostic stage of development**

(2014-2016)

- Added **“Effective Royalty Rate”** as an option for the method of financial modeling
- Collected information on the number of licenses executed in the past 12 months

(2016-2018)

- Collected information on **“Annual Fee”** within the Deal Terms section

(2019-2021)

- Questionnaire was significantly shortened
- Removed Operational and Financial Responsibility, financial modelling, specific valuation, and target split questions.



Report Highlights

Deal Statistics (continued)

- ▶ 62% of all deals submitted were still in the Preclinical stage of development (Discovery , IND Track/ Pre-IND, IND Filed, and Pre-IDE).
- ▶ 81% of deals were categorized as exclusive.
- ▶ 59% of deals included the U.S. and 54% of deals were considered “Global” in scope.

Fixed and Tiered Royalties

- ▶ Of the 116 deals, 53 deals were of the fixed/flat royalty type, 54 were tiered royalty type, and 9 did not have any royalty components.
- ▶ In the majority of deals, fixed/flat royalties are paid on Net Sales (87%) followed by Gross Sales (13%).

Valuation

While “upfront payment” was the most frequently indicated financial component (80%), “sales milestones” displayed the greatest average and median \$\$ amounts.

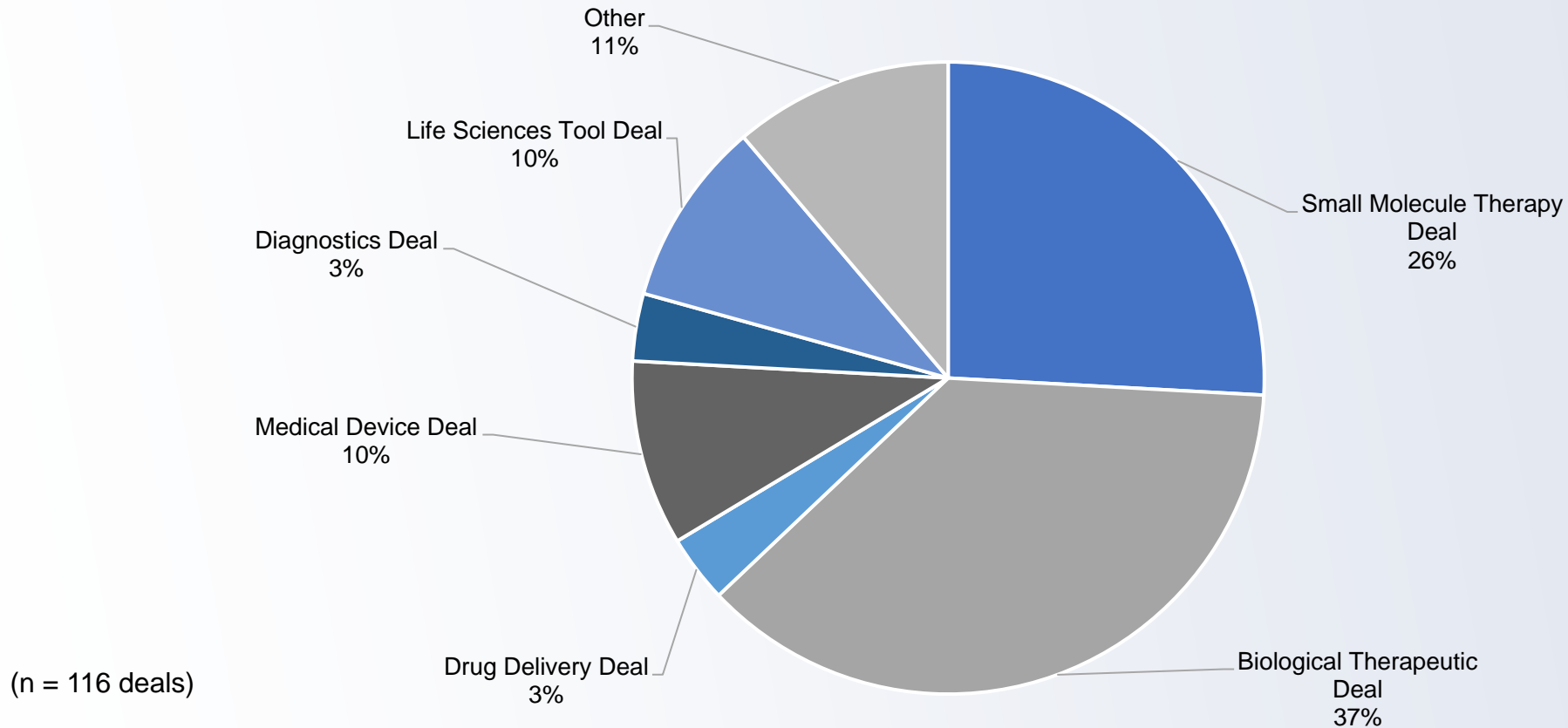


A Profile of Responses

A Profile of Responses – 2021 Survey

Deal Reason

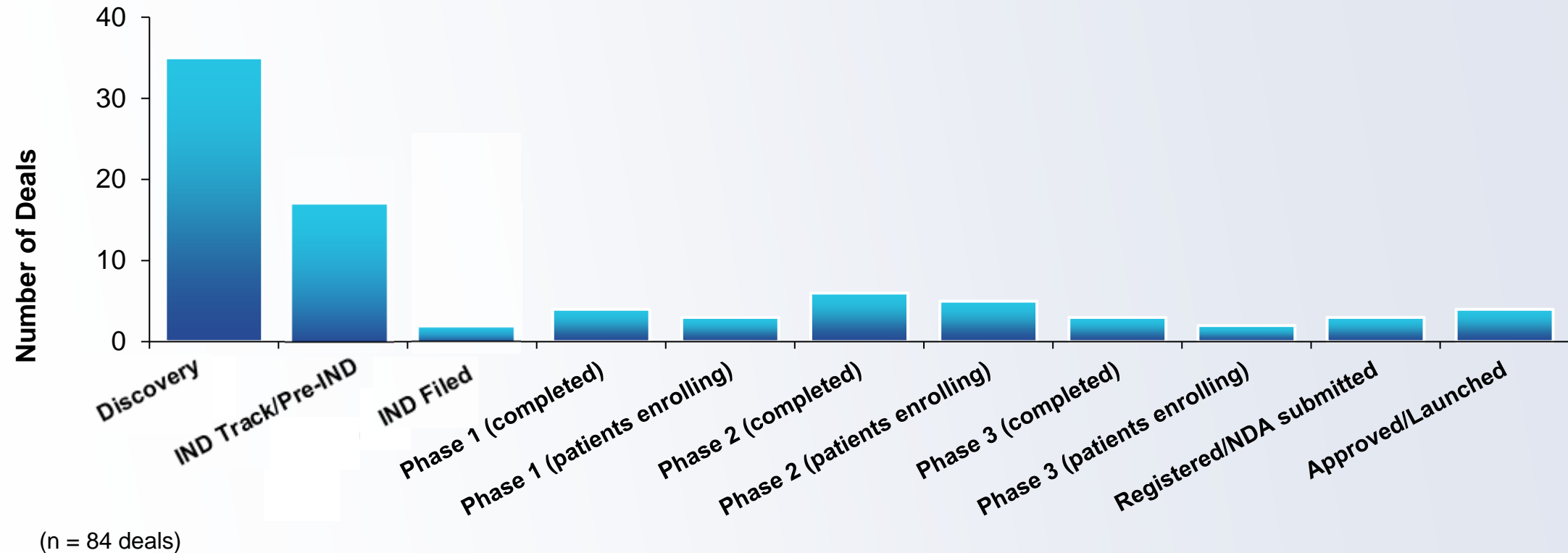
Deals included in the survey covered a wide variety of asset types



A Profile of Responses – 2021 Survey

Therapeutic/In vivo Diagnostic Stage of Development

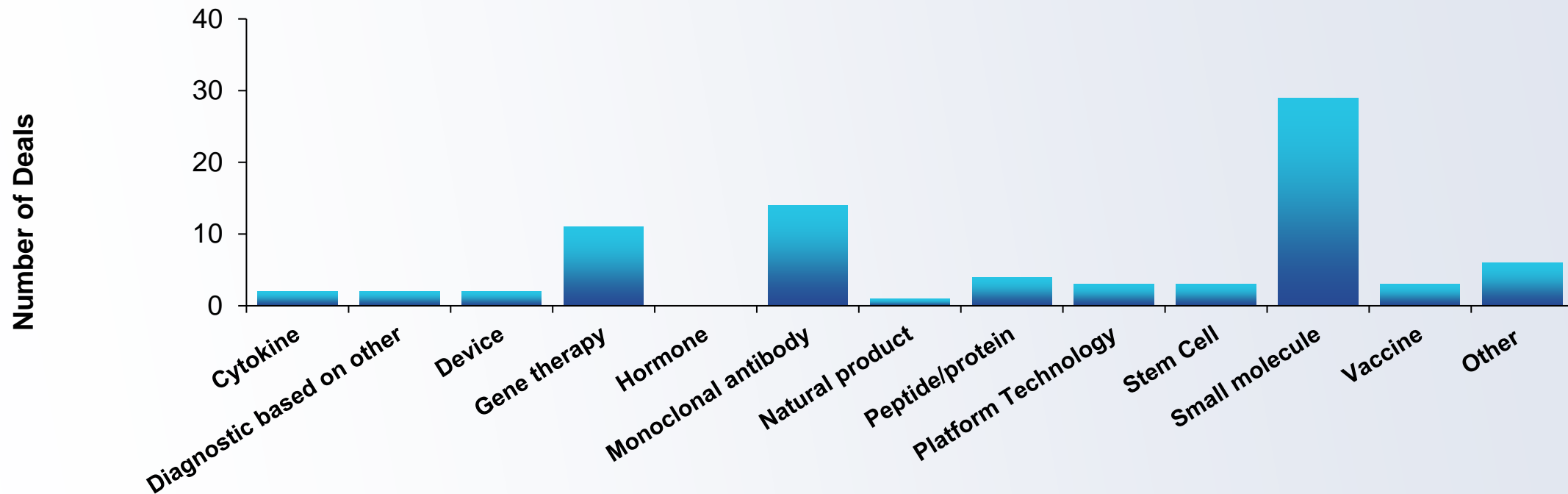
As in earlier surveys, the responses were weighted to early-stage deals



A Profile of Responses – 2021 Survey

Type of Product

While small molecules contributed the highest share (26%), a highly diverse set of product types were represented in the survey responses

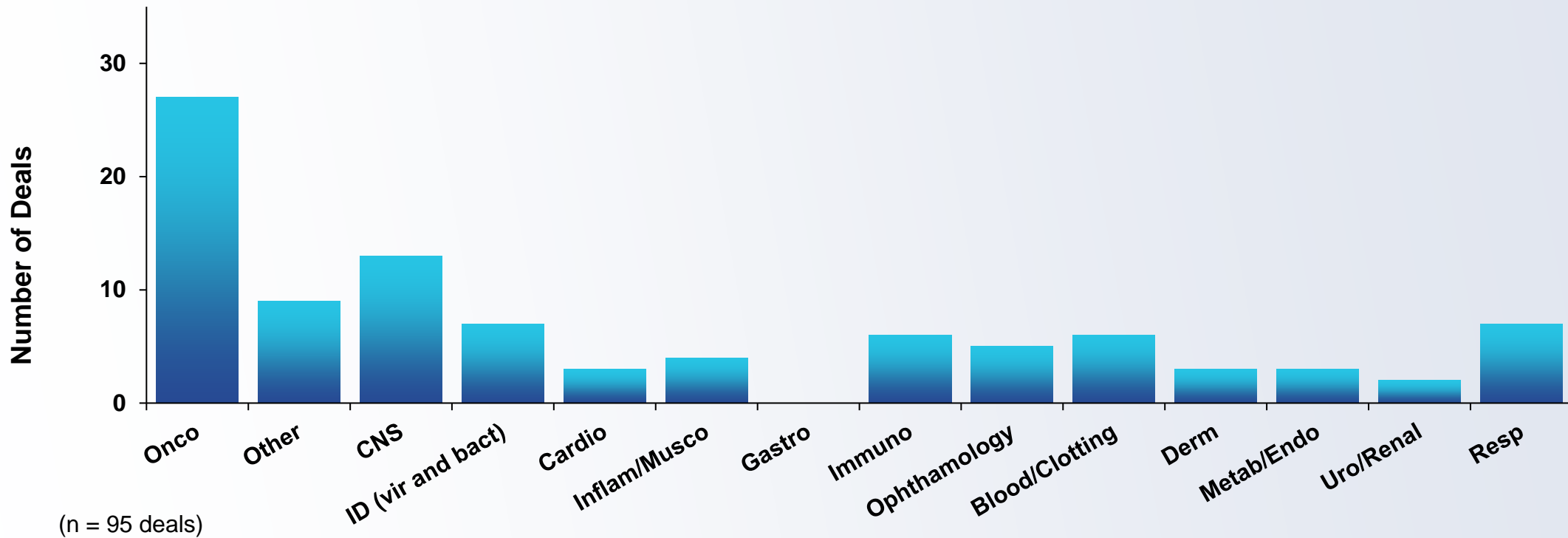


(n = 82 deals)

A Profile of Responses – 2021 Survey

Therapeutic/Diagnostic Area

The diversity of survey responses is seen again when we look at the spread across therapeutic areas with Oncology being the largest area reported





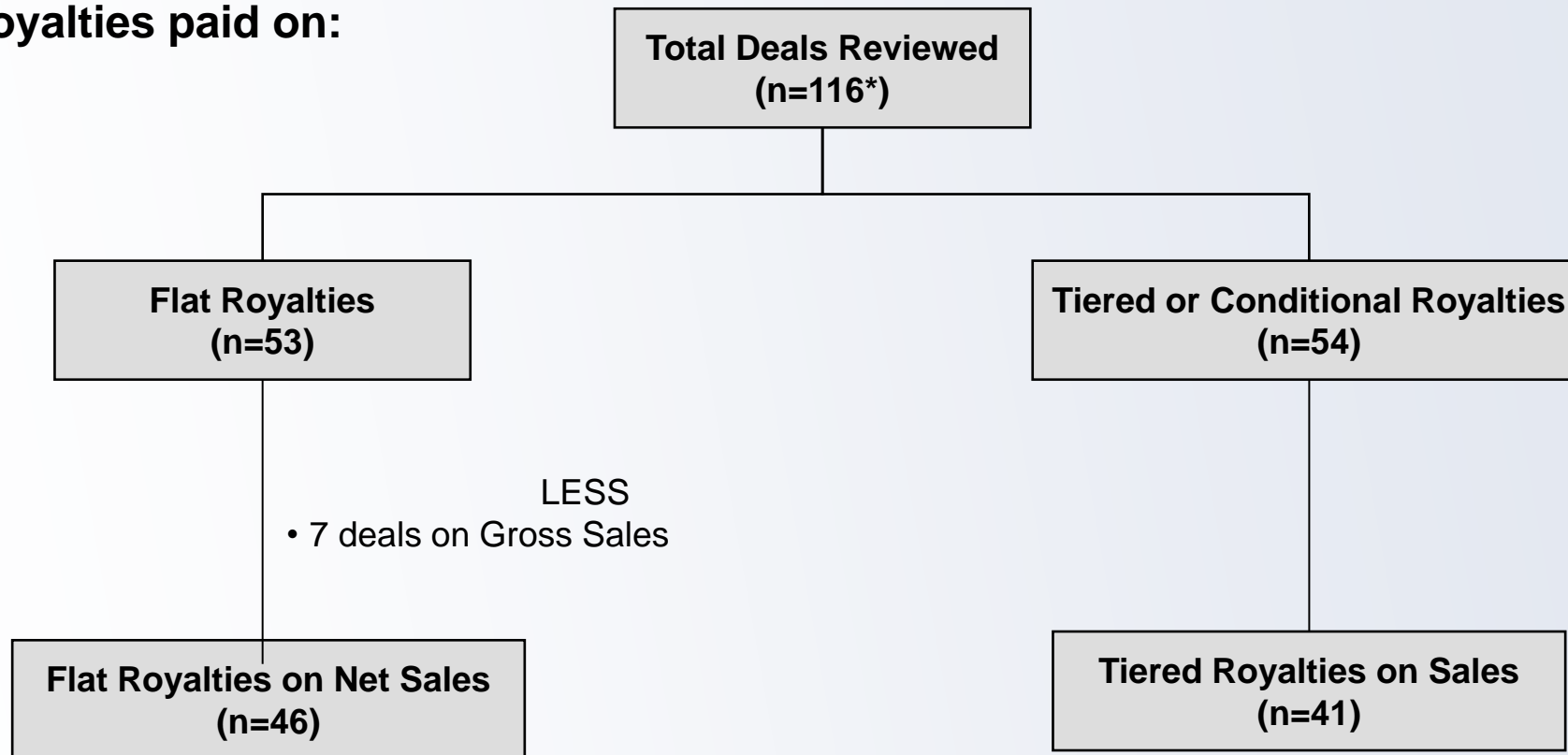
Royalty Analysis

Royalties

Analysis Structure

Did this deal have flat or tiered royalties?

Are the royalties paid on:

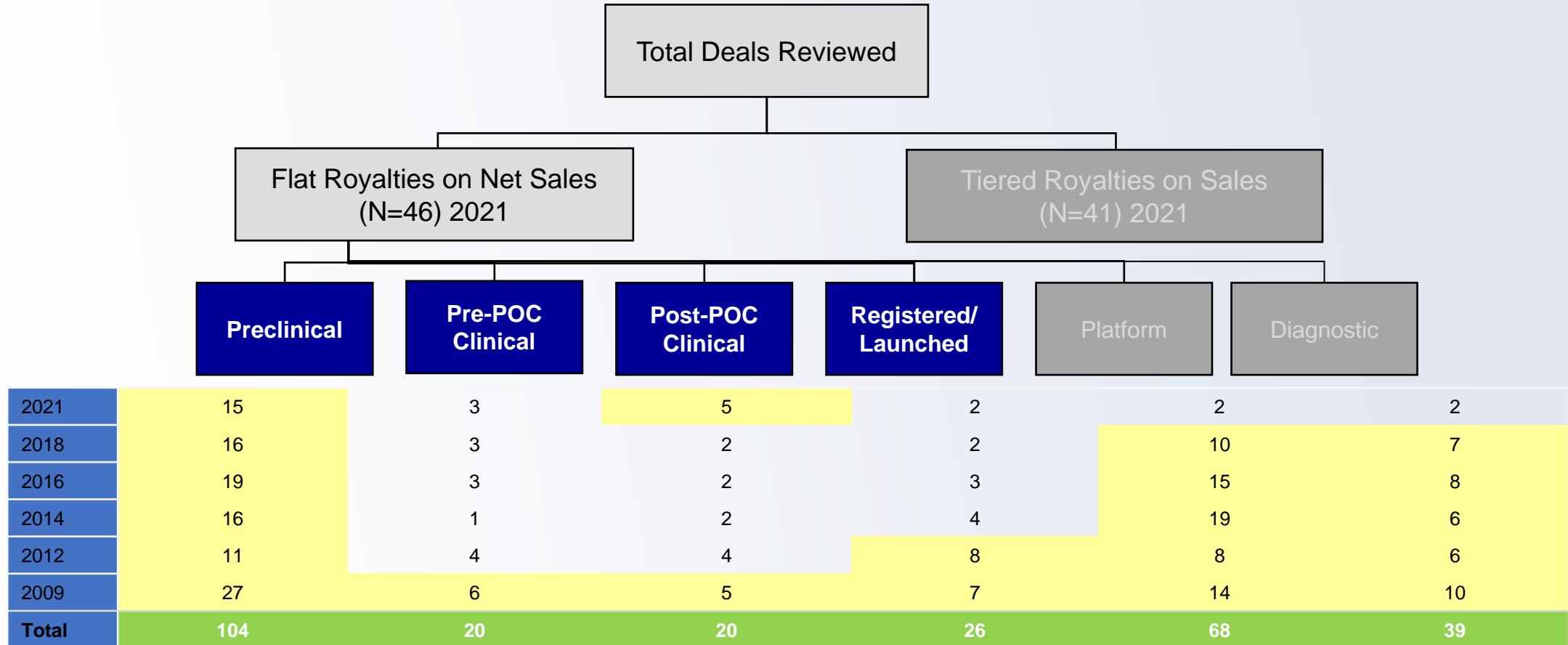


*9 deals had no royalty or profit-sharing component.

Flat Royalties

Introduction

The robust data set now allows review of deals in a range of categories

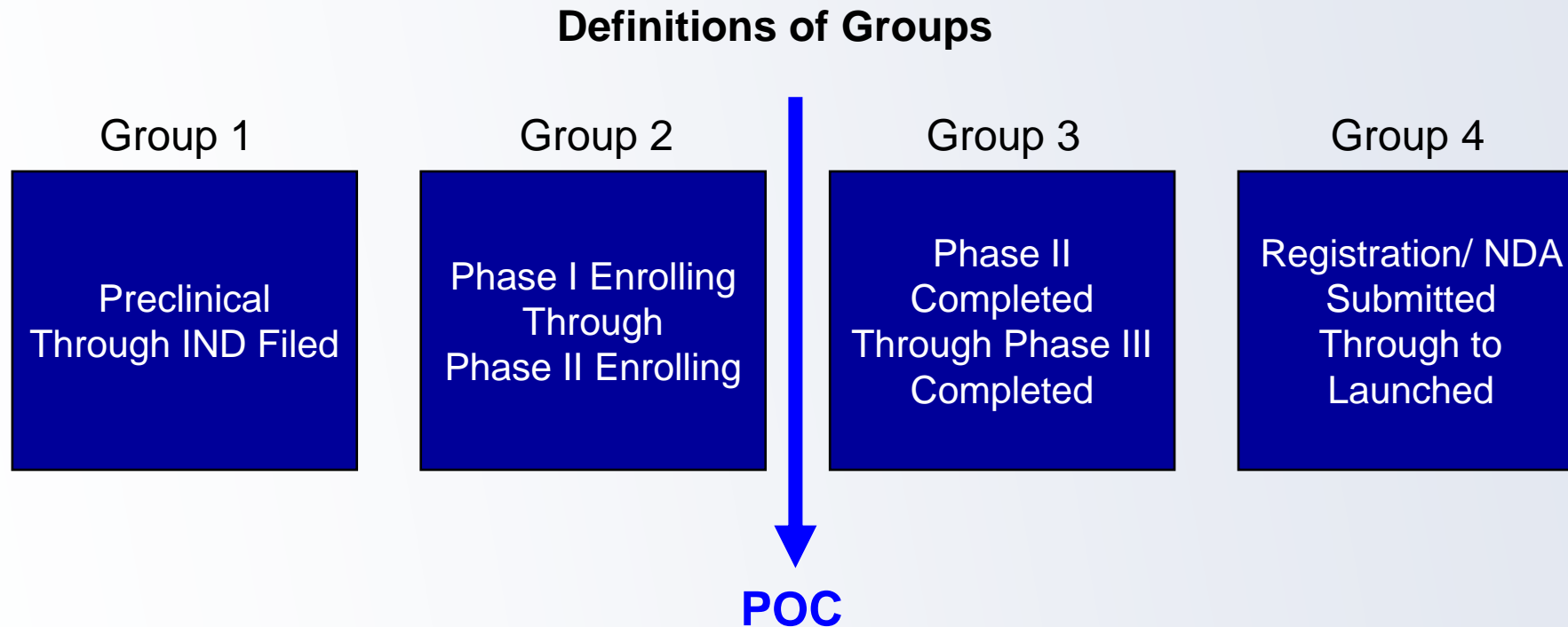


Adequate data for analysis. Not reported when deal number < 5

Royalties

Analysis Structure

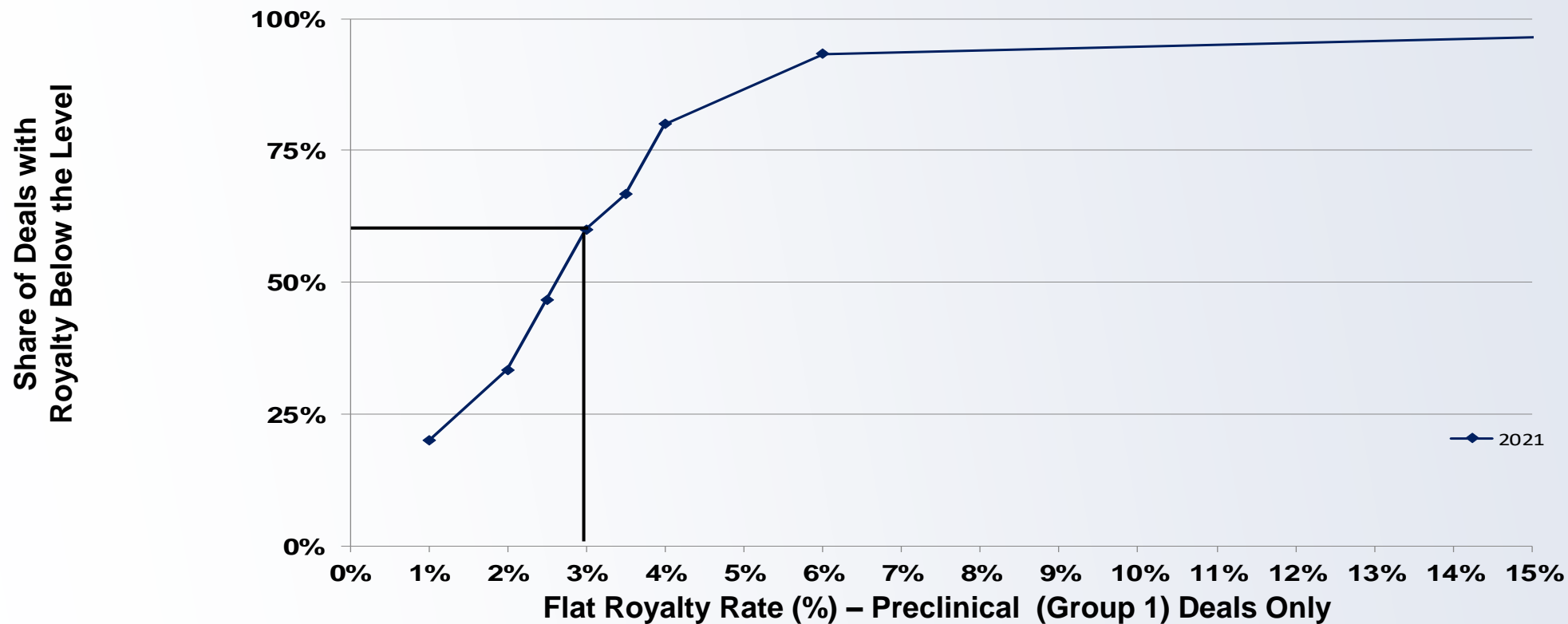
At several points in this analysis, we have grouped the observations according to key points in development



Flat Royalties - 2021 Survey

Distribution of Flat Royalty Rates (Preclinical)

In the 2021 survey, a majority of flat rate preclinical deals had royalty rates at 3% or below

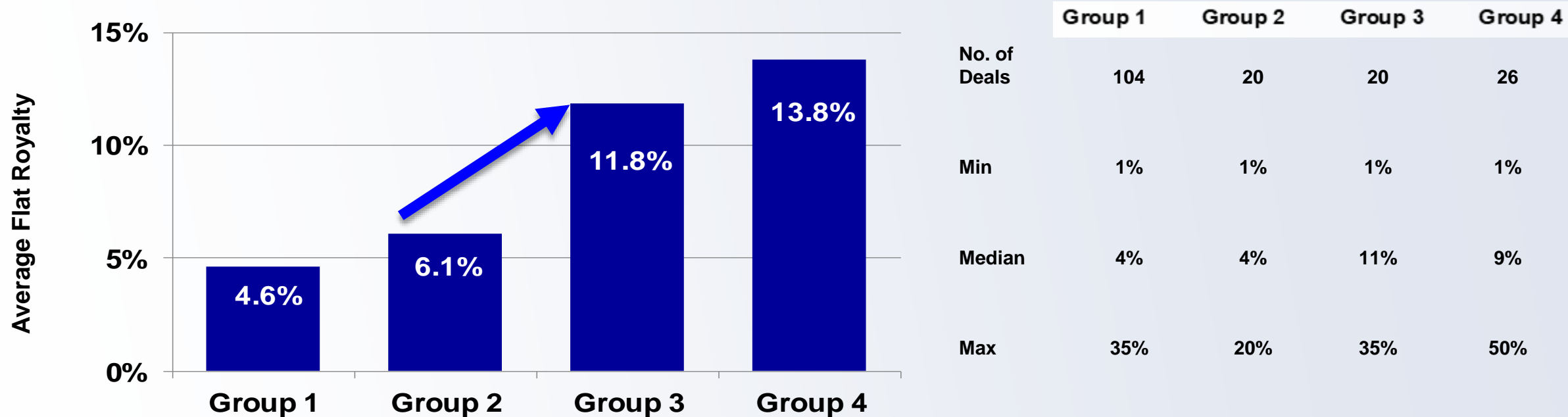


(n = 15)

Flat Royalties - Combined Surveys

Average Royalty by Stage of Development

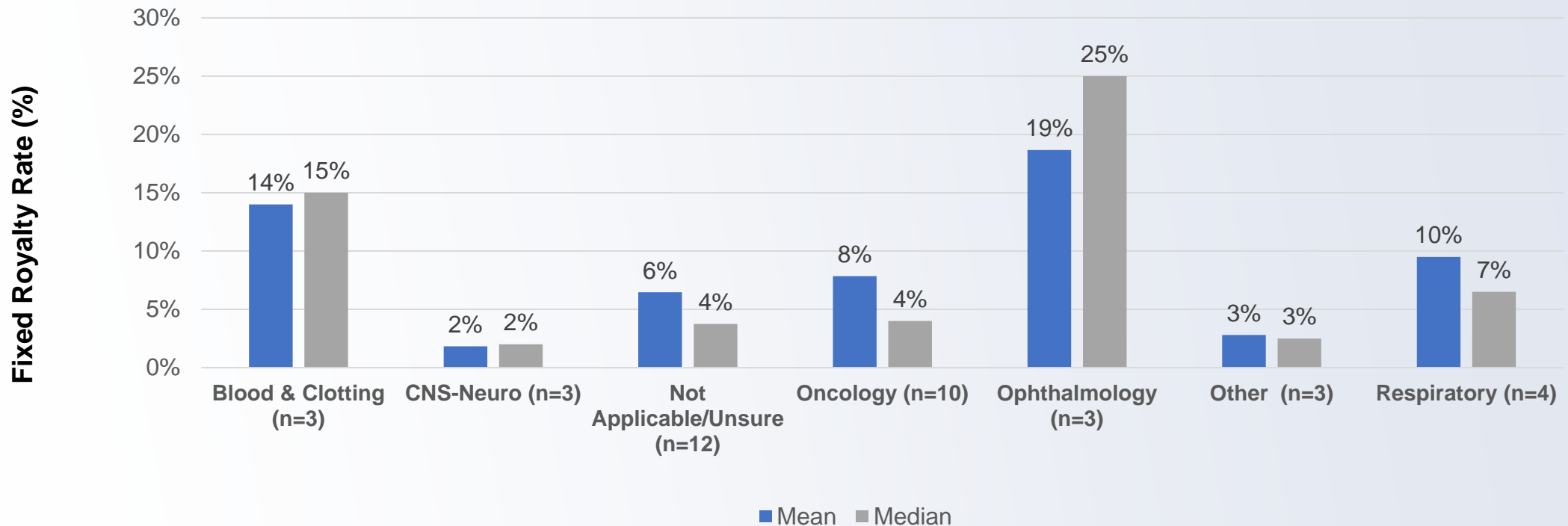
Drawing information from across the six most recent surveys reveals a substantial increase in royalty rate for assets that have achieved proof of concept



Analysis of Therapeutic Areas

- Fixed Royalty Rates

Mean and Median of Fixed Royalty Rates by Therapeutic Area



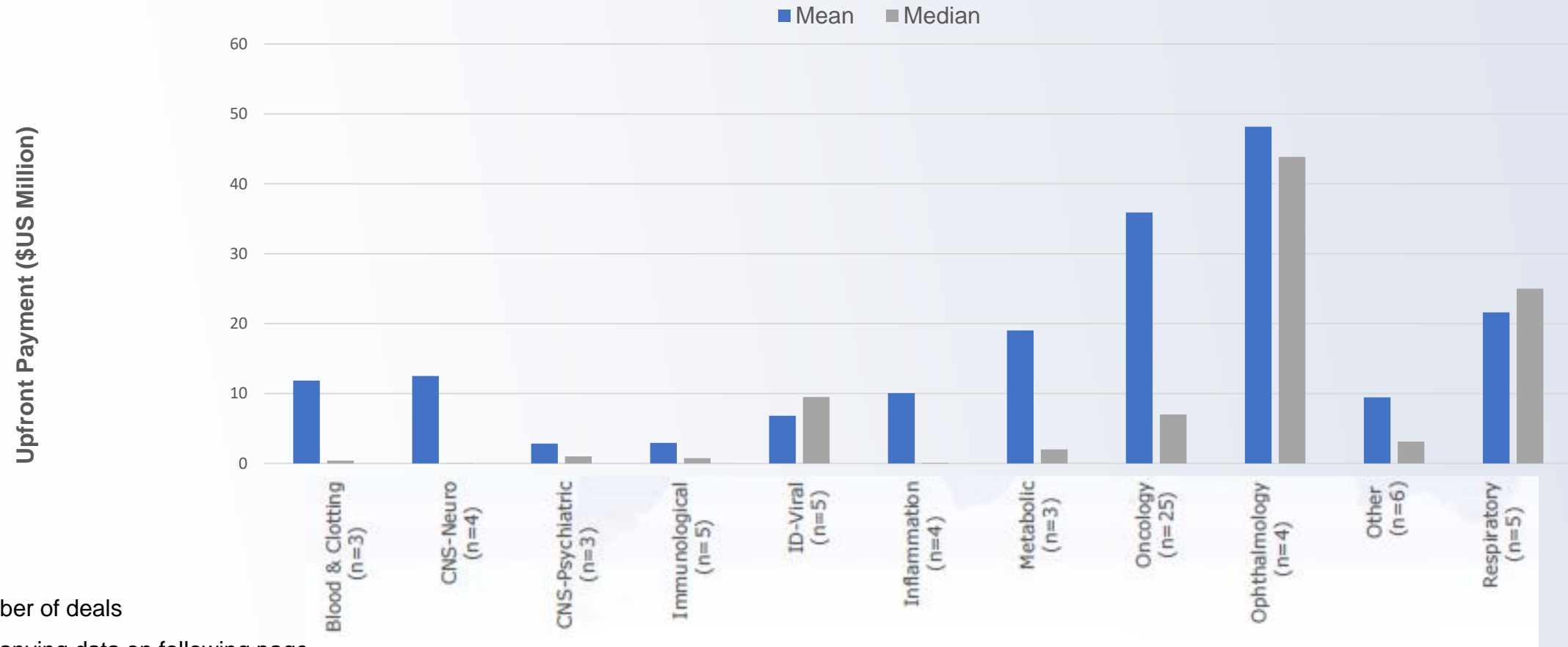
n = number of deals

Accompanying data on following page.

Analysis of Therapeutic Areas

- *Upfront Payments*

Mean and Median of Upfront Payments by Therapeutic Area



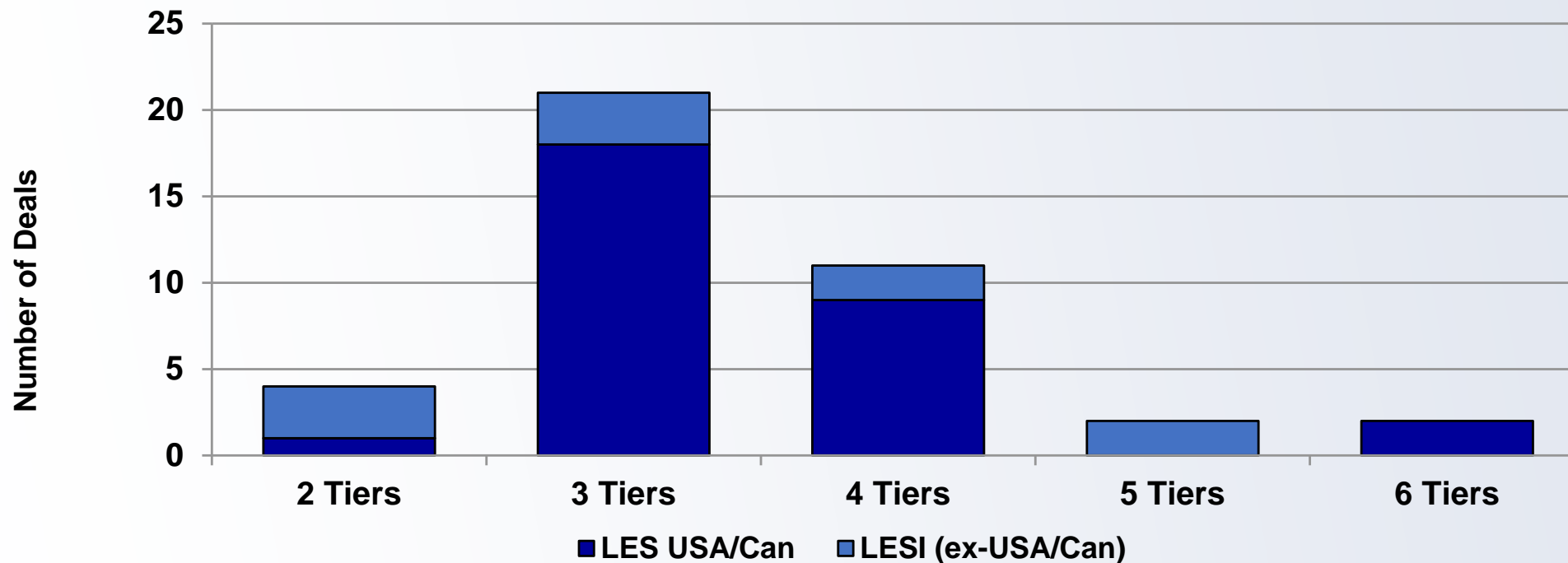
n = number of deals

Accompanying data on following page.

Tiered Royalties - 2021 Survey

Number of Tiers

As in earlier surveys, three royalty tiers is a common structure

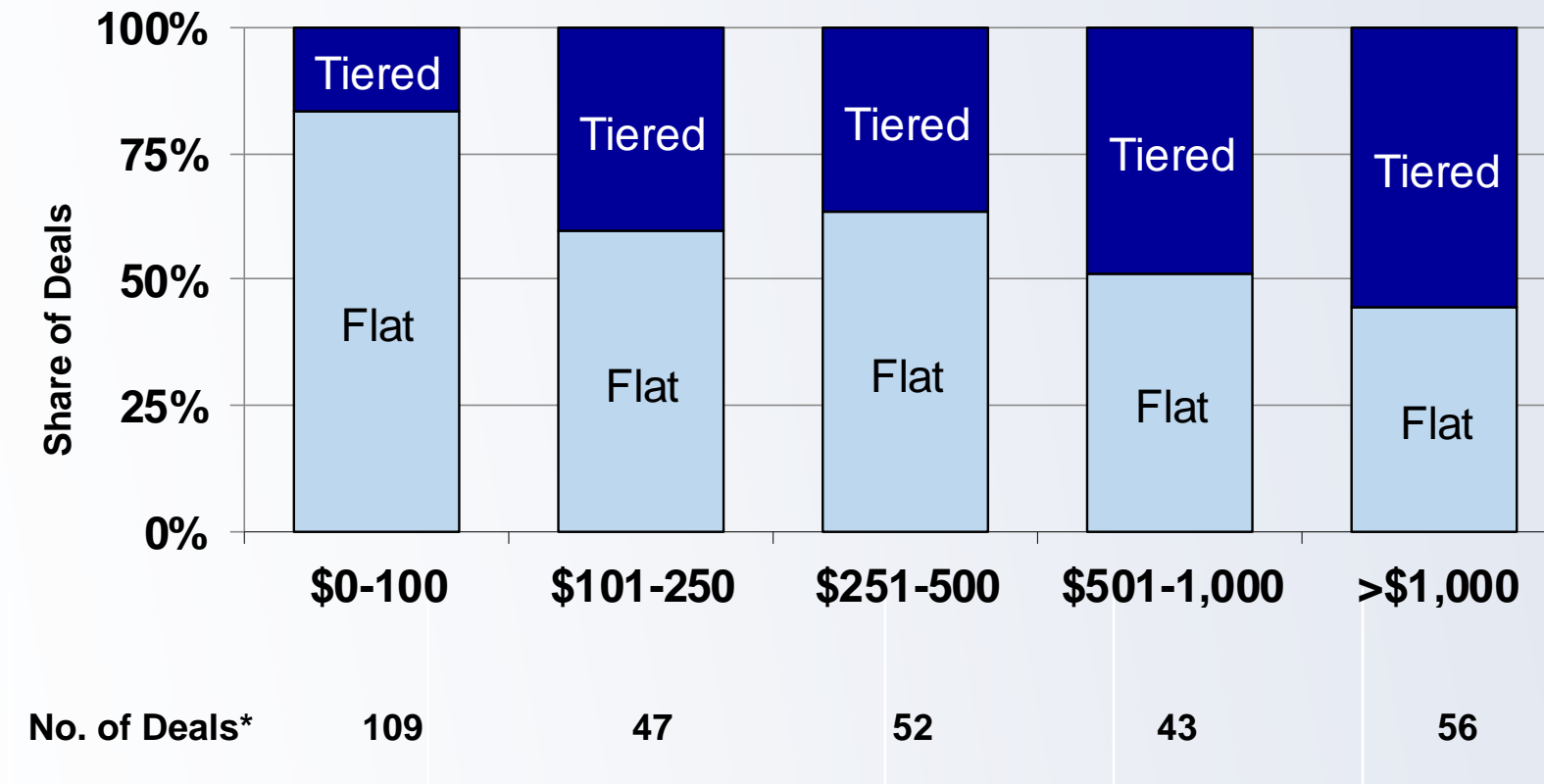


Number of Deals 4 21 11 2 2

Tiered Royalties – Combined Surveys

Tiered Royalties vs. Peak Sales Potential

There is a trend towards using tiered royalties with increasing Peak Sales Potential




*Includes the deals where peak sales was provided from the deals with either flat or tiered royalties paid on net sales.

Tiered Royalties – 2021 Survey

Group 1 Deal Design

Deals with tiered royalties tended to have more complex payment designs—often including both development and sales milestones.

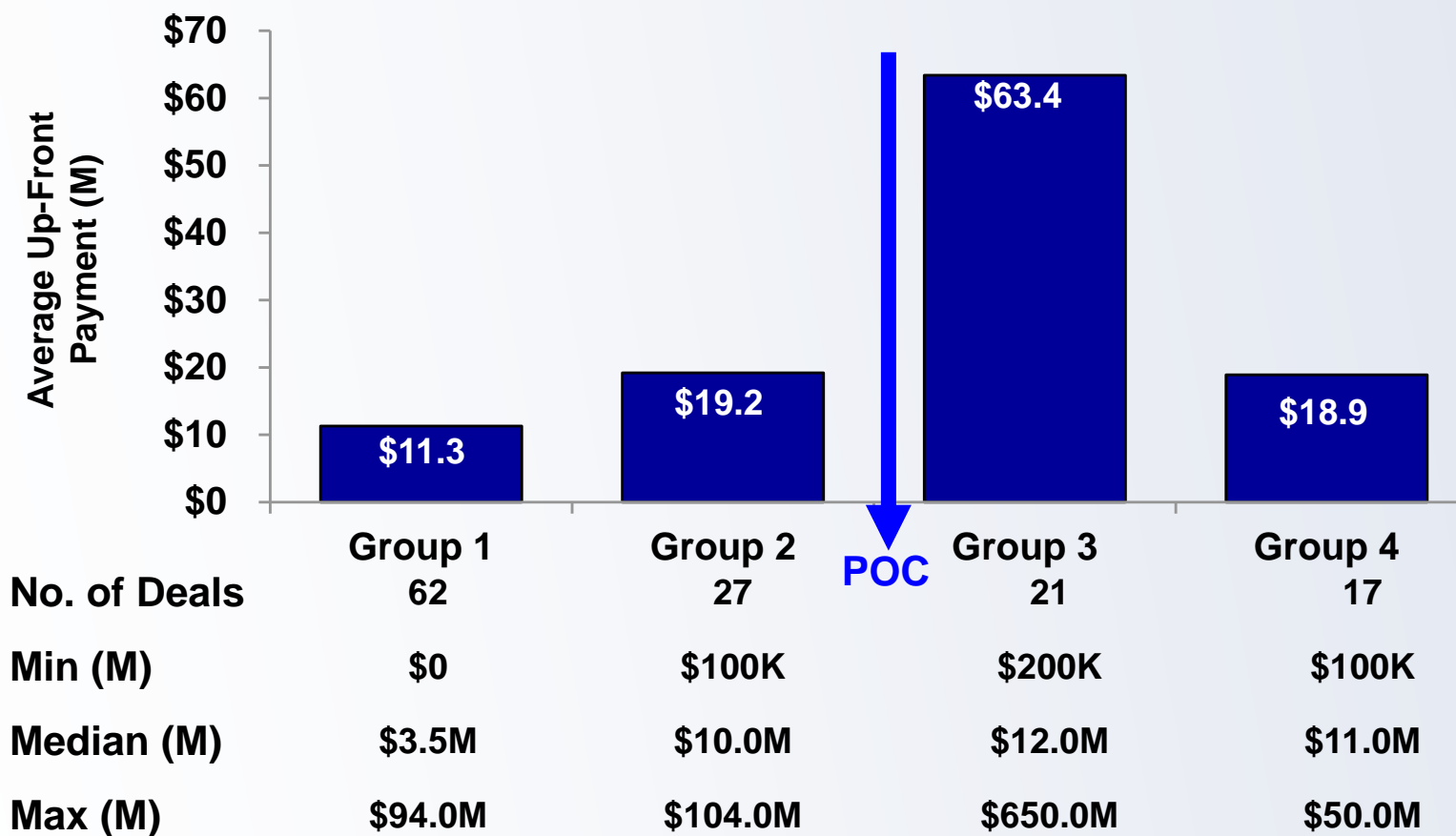
 = Value Reported

Year	Deal	Up-Front Payment	Equity Investment	Tech Access Fee	R&D Funding	Development Milestones	Sales Milestones	Annual Fee	Other Fee(s)
2021	1	Value Reported				Value Reported	Value Reported	Value Reported	
	2	Value Reported			Value Reported	Value Reported	Value Reported	Value Reported	
	3	Value Reported				Value Reported	Value Reported	Value Reported	
	4	Value Reported				Value Reported	Value Reported		
	5	Value Reported			Value Reported	Value Reported	Value Reported		
	6	Value Reported			Value Reported	Value Reported	Value Reported		
	7	Value Reported			Value Reported	Value Reported	Value Reported		
	8	Value Reported				Value Reported	Value Reported	Value Reported	
	9	Value Reported				Value Reported	Value Reported		
	10	Value Reported	Value Reported			Value Reported	Value Reported		
	11	Value Reported				Value Reported	Value Reported		
	12	Value Reported				Value Reported	Value Reported	Value Reported	Value Reported
	13					Value Reported	Value Reported	Value Reported	
	14					Value Reported	Value Reported	Value Reported	
	15	Value Reported				Value Reported	Value Reported	Value Reported	
	16	Value Reported	Value Reported			Value Reported	Value Reported		
	17	Value Reported				Value Reported	Value Reported		Value Reported
	18	Value Reported	Value Reported	Value Reported	Value Reported	Value Reported	Value Reported		Value Reported
	19	Value Reported				Value Reported	Value Reported		
Percent of Deals		89%	21%	5%	32%	100%	89%	32%	16%

Tiered Royalties – 2009-2021 Surveys

Up Front Payments

Up-front payments generally increased with development status.



The values represent the mean for those deals where a value was reported (excludes deals where respondent said "Not Applicable" or "Don't Know").

BENCHMARK DATA FROM HIGH TECH SURVEY: How to Use the Data to Guide IP Monetization

The 2021 High Tech Royalty Survey

Descriptive Statistics: Financial Terms

Reported Deals by Payment Method and Structure: Combined Samples

Payment Method	Count	Percentage
Percentage Rate	286	53.46%
-Flat Rate	240	44.86%
-Tiered Rate	46	8.60%
Unit Rate	42	7.85%
-Flat Rate	36	6.73%
-Tiered Rate	6	1.12%
Patent Sale	13	2.43%
-with lump sum	4	0.75%
-with upfront & backend	6	1.12%
Lump Sum	126	23.55%
Milestone Payment	19	3.55%
No Royalty Payment	39	7.29%
Other percentage rate	10	1.87%
Total	535	100.00%

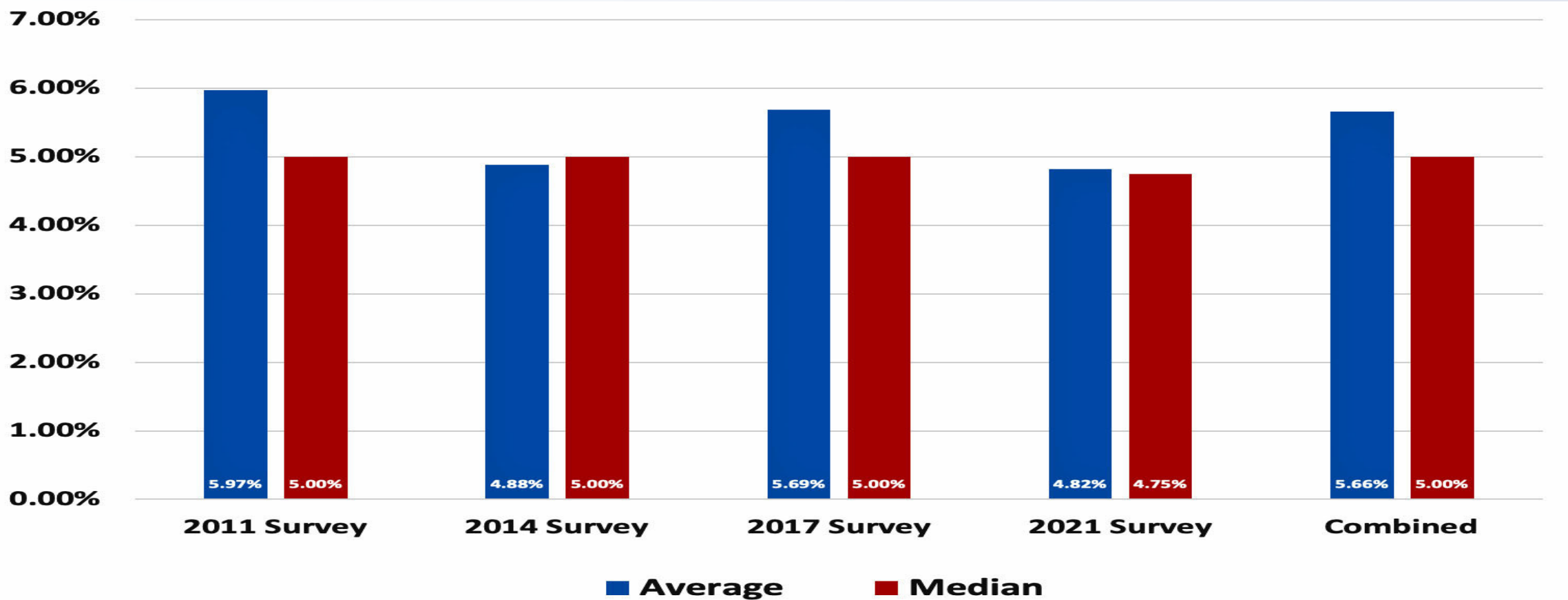
While several payment methods have been adopted, the majority of the deals, precisely 75.9% in the 2021 Survey and 77.0% among the combined samples, structured the payment methods as sales percentage royalty rates or lump sum fees.

-- High Tech Sector Royalty Rates & Deal Terms Survey Report 2021, Licensing Executives Society (USA & Canada)

The 2021 High Tech Royalty Survey

Descriptive Statistics: Financial Terms

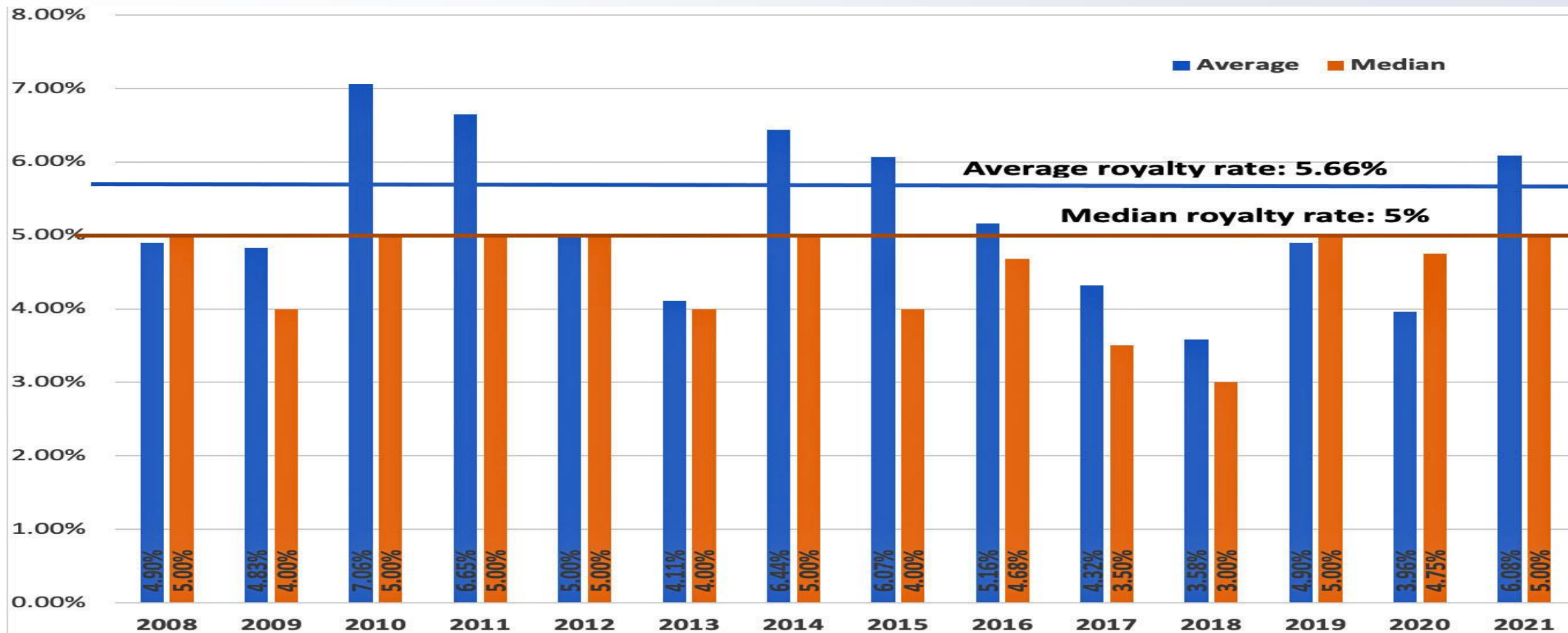
Average and Median Royalty Rates: 2021, 2017, 2014, and 2011 Surveys



The 2021 High Tech Royalty Survey

Descriptive Statistics: Financial Terms

Annual Average and Median Royalty Rates: 2008 – 2021



The 2021 High Tech Royalty Survey

Descriptive Statistics: Financial Terms

Average and Median Royalty Rates by Licensor Organization Type:
Combined Samples

Type	Count	Mean	Median
Academic	118	4.87%	4.50%
Aerospace & Transportation	38	10.80%	6.88%
Communications	6	4.83%	4.00%
Government	40	3.37%	2.50%
NPE/IP Firm	6	6.67%	4.25%
All Others	25	4.94%	5.00%

Average and Median Royalty Rates by Licensee Organization Type:
Combined Samples

Type	Count	Mean	Median
Aerospace & Transportation	36	10.19%	6.50%
Bio/Med/Pharm	40	5.65%	5.00%
Cleantech, Energy & Environmental	19	3.63%	3.00%
Computer Hardware & Personal Electronics	11	3.89%	4.00%
Imaging and other tech based services	19	5.08%	5.00%
Industrial, Equipment & Manufacturing	22	5.09%	5.00%
Semiconductor	9	4.28%	3.50%
Software	11	9.05%	6.00%
Start-up/New Venture	26	4.17%	4.25%
All Others	40	3.82%	4.00%

The 2021 High Tech Royalty Survey

Descriptive Statistics: Financial Terms

Average Royalty Rate by Number of IP Types Licensed: Combined Samples

Type	Count	Mean
One Type of IP Only	110	4.90%
Patent Only	82	3.77%
Multiple IP	123	6.28%
Patents plus any other IP	86	5.55%
Patents plus know-how	56	5.12%
Patents plus software	19	5.62%
Patents plus drawings	18	5.81%
Patents plus industrial designs	13	7.92%
Know-how plus drawings or designs	36	10.10%

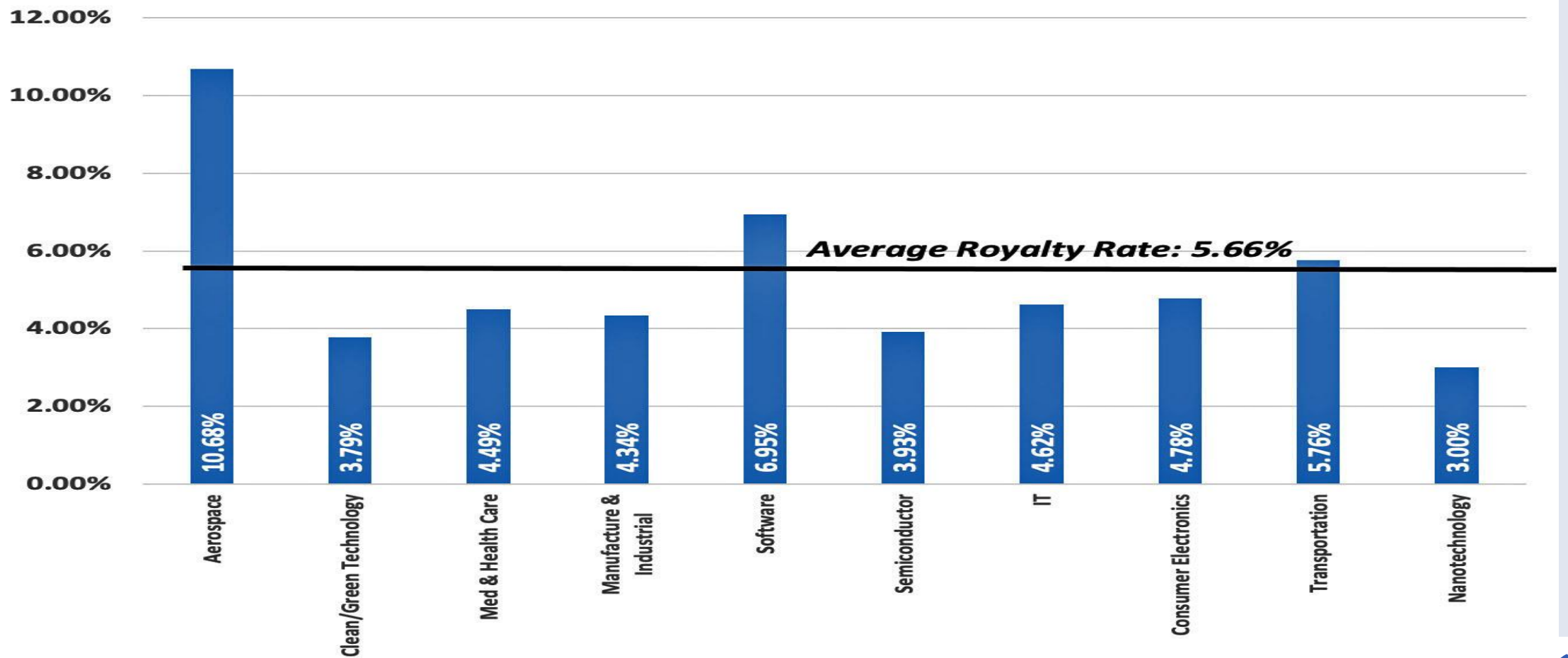
Average Royalty Rate by Type of IP Licensed (Standalone or with Other IP): Combined Samples

Type	Count	Mean
Patents/Applications	178	4.58%
Know-how/Trade Secret	95	6.96%
Trademark(s)	21	6.23%
Copyright(s)	17	7.49%
Software	39	6.32%
Drawings	40	7.40%
Industrial Designs	30	7.72%

The 2021 High Tech Royalty Survey

Descriptive Statistics: Financial Terms

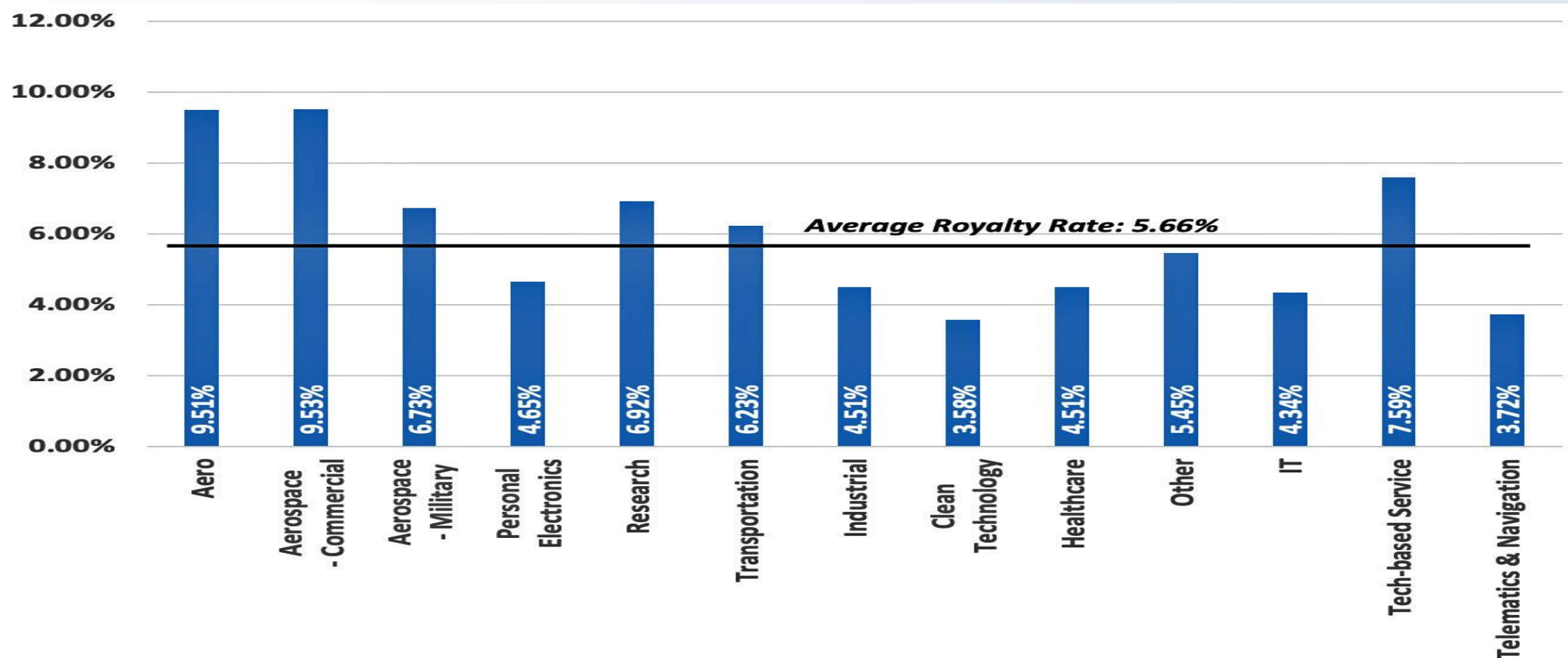
Average Royalty Rate by Major Technology Types: Combined Samples



The 2021 High Tech Royalty Survey

Descriptive Statistics: Financial Terms

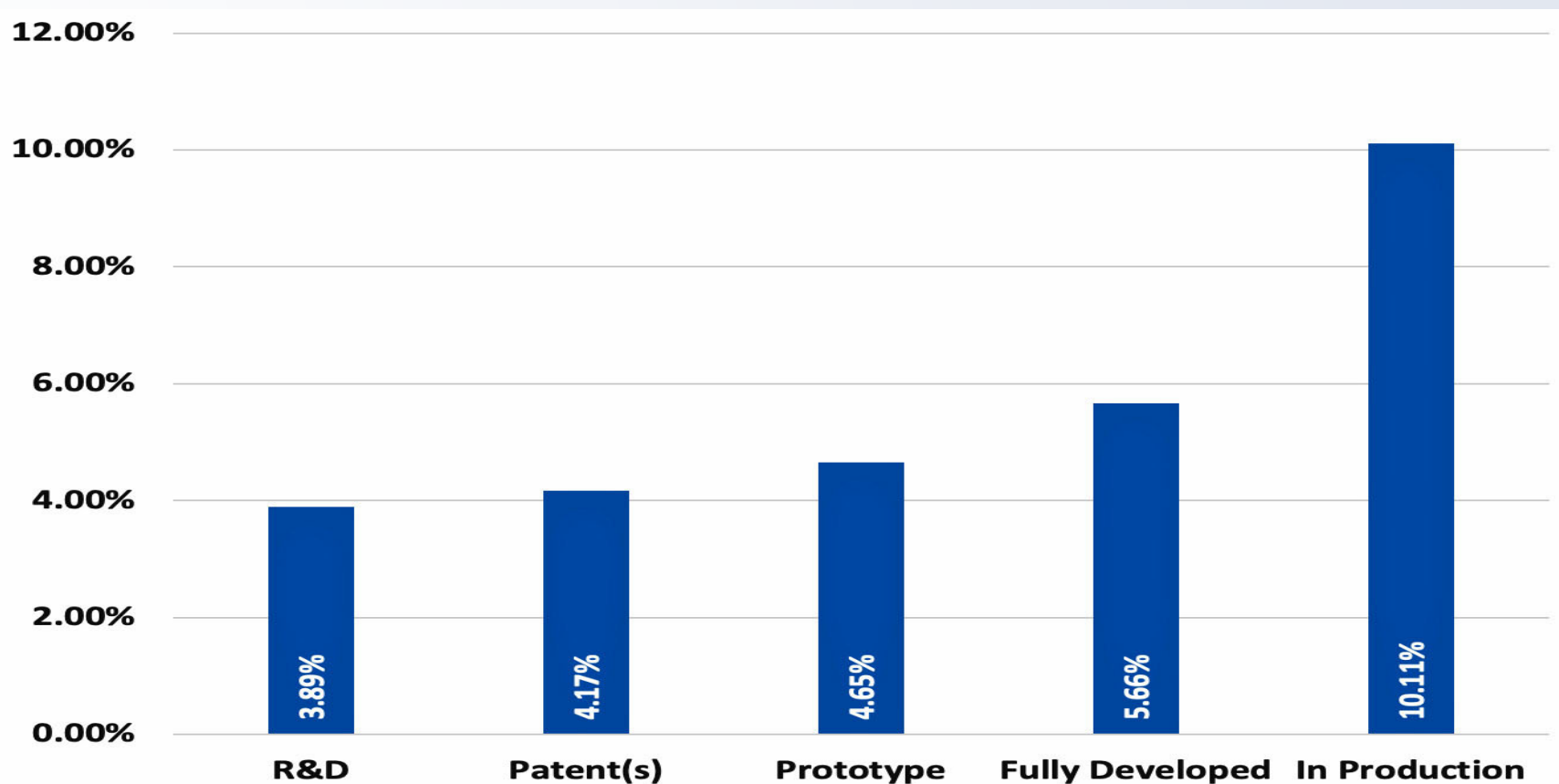
Average Royalty Rates by Major Fields of Use: Combined Samples



The 2021 High Tech Royalty Survey

Descriptive Statistics: Financial Terms

Average Royalty Rate by Technology Development Stage: Combined Samples



The 2021 High Tech Royalty Survey

Descriptive Statistics: Financial Terms

Descriptive Statistics: Lump Sum Payment Deals in Four Surveys

Survey Year	Number of Deals	Number of Patents	Payment	Average Payment Deal	Median Payment Per Deal
2011	44	N/A	\$2,500 to \$80,000,000	\$3,000,000	\$516,000
2014	24	1 to 10,000	\$240,000 to \$95,000,000	\$9,800,000	\$3,000,000
2017	38	1 to 100	\$100 to \$9,000,000	\$1,350,000	\$165,000
2021	20	1 to >100	\$5,000 to \$60,000,000	\$3,339,900	\$125,000

The 2021 High Tech Royalty Survey

Descriptive Statistics: Financial Terms

Average Lump Sum Payment by Technology Type, Industry, and IP Type: Combined Samples

1. Breakdown by Technology Type

Type	Count	Average
Aerospace	10	\$0.43
All Others	29	\$6.46
Communications	22	\$8.04
Computer Hardware	6	\$5.35
Consumer Electronics	12	\$18.44
Medical and Biotech	23	\$1.40
Semiconductor	21	\$2.98
Software	27	\$1.99
Telecom	17	\$2.93

2. Breakdown by Field of Use

Type	Count	Average
Aero	11	\$0.39
All Others	31	\$3.74
Communications	21	\$1.25
Computer Hardware	12	\$0.31
Computer Software	13	\$3.46
Digital Home & IOT	6	\$20.43
Healthcare	22	\$0.96
Mobile Devices, Networks and Services	23	\$3.42
Personal Electronics	11	\$9.64
Research	5	\$0.18
Semiconductor	18	\$1.16
Transportation	9	\$2.37

3. By the Type of IP Licensed

Type	Count	Average
One Type of IP	98	\$3.69
Patents Standalone or in Combination	86	\$5.18
Patents Only	69	\$5.02
Know-how Standalone or in Combination	26	\$1.71
Software Standalone or in Combination	23	\$1.08

The 2021 High Tech Royalty Survey

Descriptive Statistics: Financial Terms

How Royalty Payments Are Structured: Royalty Rate vs. Lump Sum Payment

License Parameters	Royalty Rate Deals	Lump Sum Payment Deals
Exclusive Deals	67.6%	31.7%
- <i>Exclusive deals by governmental & academic licensors</i>	39.7%	12.5%
Technologies in fully-developed or in-production stages	32.4%	53.3%
Academic or governmental licensors	72.8%	32.5%
Licensee in IT industry	14.9%	55.0%
Licensee size (annual sales > \$500M)	14.5%	68.5%
Peak annual sales of licensed products >\$500M	11.4%	38.1%
One type of IP Only	55.9%	77.1%
Licensed IP including trade secrets, drawings, & designs	25.4%	20.8%
- <i>Licensed IP including only drawings & designs</i>	20.0%	5.4%

The 2021 High Tech Royalty Survey

How to use the data to price royalty rates in license agreements

36

Addressing the Challenges in Royalty Rate Determination

- ▶ **Revise royalty rate when converting a nonexclusive license to an exclusive one, or vice versa.**
 - Everything else being equal, exclusive licenses command higher royalty rates than nonexclusive ones.
 - ..., but by how much?
- ▶ **Determine royalty rate for a license agreement with technology in advanced stage of development vs. early stage of development**
 - Technologies in their advanced stages of development have lower technical and market risks, and accordingly, higher royalty rates.
 - How much higher on average?
- ▶ **Price royalty rate for a license agreement with patents only vs. patents plus other IPs such as trade secrets, know-hows, designs and drawings etc.**
 - Generally, licenses with one single type of IP such as patents only carry lower royalty rates than those with multiple types of IPs.
 - Can the differences be quantified?

The 2021 High Tech Royalty Survey

How to use the data to price royalty rates in license agreements

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A Solution: Econometric Model

Econometric Model for Decomposing, Identifying, and Quantifying the Value Contributions of License Parameters

**R = (Rate for a basic or plain vanilla license) + Exclusivity Premium + Advanced-Stage Tech Premium +
+ IP Type Premium + ... + \sum (Premiums or discounts of different licensor/licensee organization types or
different tech fields such as aerospace, software, med-biotech ...)**

Two Assumptions

- ▶ Each parameter (such as exclusivity, tech development stage, IP type, licensor organization types, tech fields, among various others) of a license agreement contributes to, and has been priced into, royalty rate;
- ▶ The royalty rate stipulated in an agreement reflects the value contribution from each of the parameters.

The Goal: LES Build-Up Method for Royalty Rate Determination

- ▶ Analogous to the build-up method in business valuation ...

The 2021 High Tech Royalty Survey

How to use the data to price royalty rates in license agreements

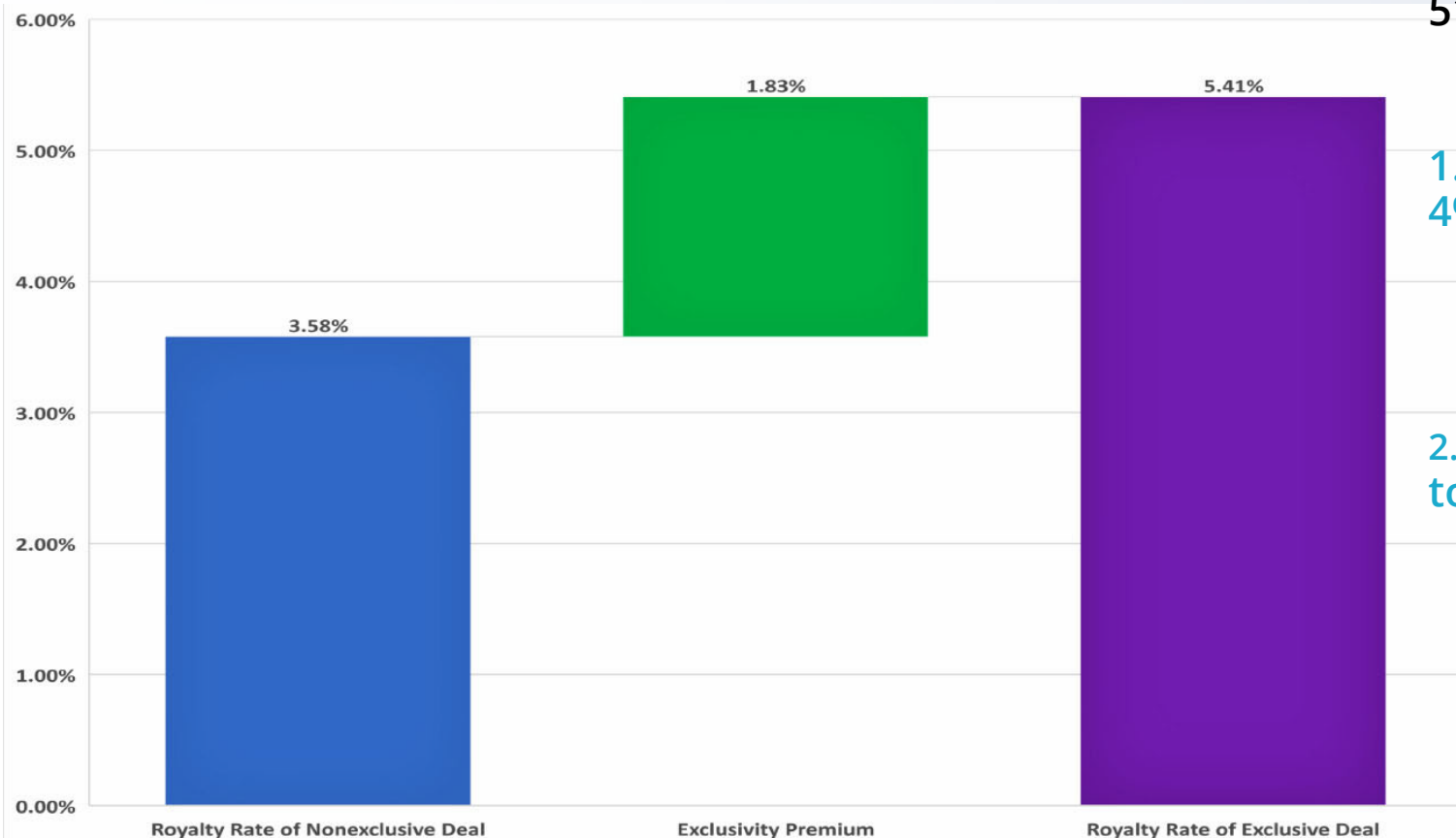
Summary of Dummy Variable Regression Analysis on Royalty Rates

	[1]		[2]		[3]		[4]	
R ²	0.297		0.295		0.299		0.300	
	Coef.	p	Coef.	p	Coef.	p	Coef.	p
Intercept	3.60%	0.000	3.61%	0.000	3.64%	0.000	3.47%	0.000
Aerospace	4.23%	0.000	4.31%	0.000	4.30%	0.000	4.41%	0.000
Software	2.19%	0.038	1.26%	0.109	2.03%	0.055	2.39%	0.025
Knowhow/Drawing/Design	1.80%	0.013	1.82%	0.012	1.45%	0.058	1.73%	0.018
Fully developed or in production	2.80%	0.000	2.73%	0.000	2.90%	0.000	2.78%	0.000
Exclusive	1.86%	0.048	1.84%	0.051	1.83%	0.051	1.78%	0.057
Governmental licensor	-4.16%	0.001	-4.02%	0.002	-4.24%	0.001	-4.26%	0.001
Academic licensor	-0.89%	0.425	-0.79%	0.481	-0.89%	0.425	-1.07%	0.338
Medical & Biotech							1.16%	0.093
<i>Variables Impacted by Market Factors</i>								
Exclusive post-AIA/IPR	-3.85%	0.002	-3.72%	0.002	-3.48%	0.005	-3.86%	0.002
Governmental licensor post-AIA/IPR	4.07%	0.017	3.68%	0.028	3.87%	0.023	4.07%	0.017
Academic licensor post-AIA/IPR	1.70%	0.177	1.40%	0.257	1.93%	0.128	1.84%	0.143
Software post-Alice	-1.95%	0.189			-1.57%	0.297	-1.96%	0.186

The 2021 High Tech Royalty Survey

LES Build-Up Method for Royalty Determination

Exclusivity Premium



Relative Exclusivity Premium:

51% (= 1.83%/3.58%)

1. Convert a nonexclusive license with a rate of 4% to an exclusive license:

6% [= 4% x (1+51%)]

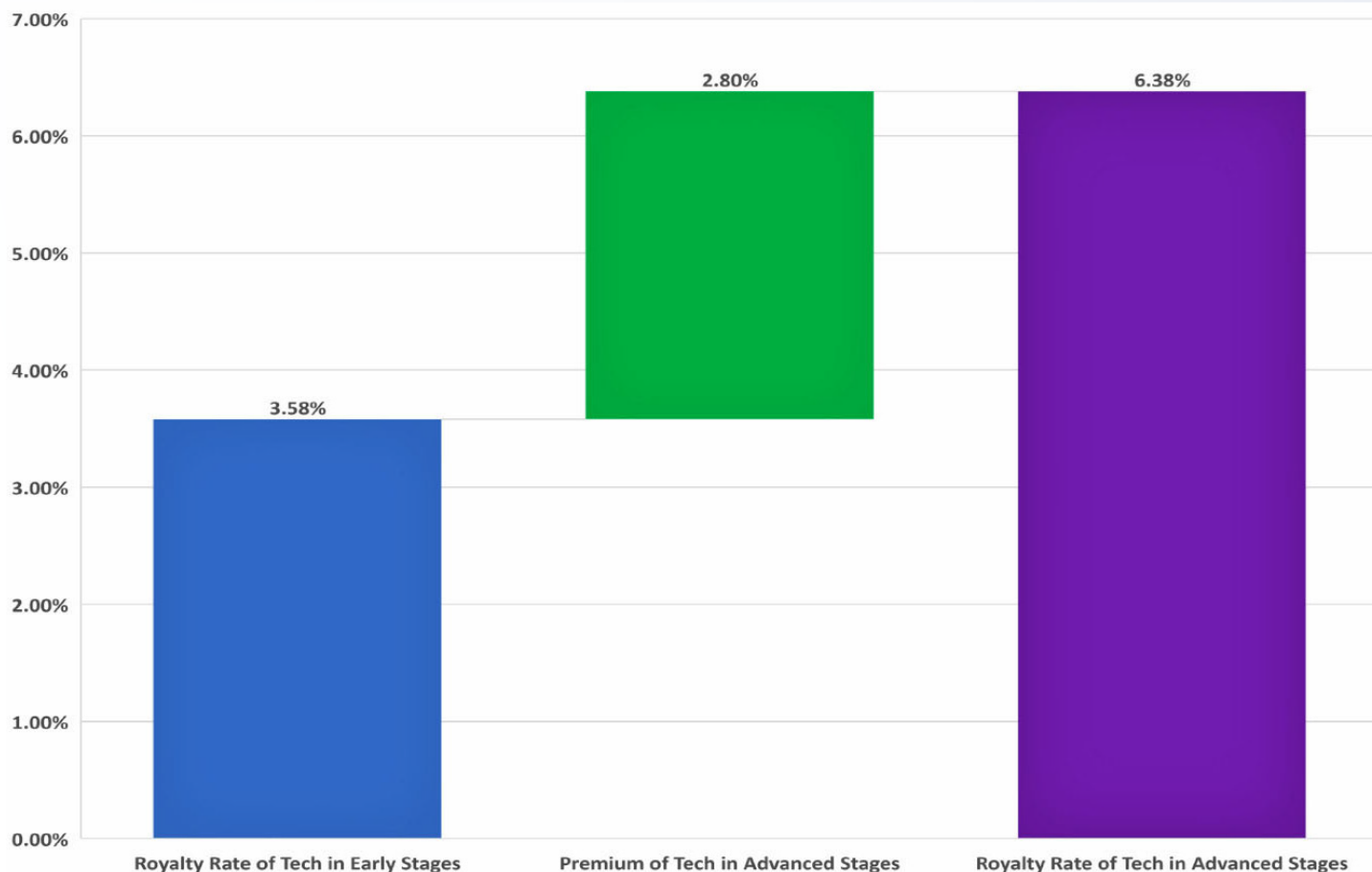
2. Convert an exclusive license with a rate of 5% to a nonexclusive license:

3.3% [= 5% / (1+51%)]

The 2021 High Tech Royalty Survey

LES Build-Up Method for Royalty Determination

Premium for Advanced-Stage Technologies



Relative Advanced Stage Premium:

78.2% (= 2.80% / 3.58%)

1. Convert a license for early-stage tech with a rate of 2% to a license for advanced-stage tech:

$$3.6\% \quad [= 2\% \times (1+78.2\%)]$$

2. Convert a license for advanced-stage tech with a rate of 6% to a license for early-stage tech:

$$3.4\% \quad [= 6\% / (1+78.2\%)]$$

The 2021 High Tech Royalty Survey

LES Build-Up Method for Royalty Determination: A case study

Dear counsel/consultant:

We are phasing out the ABC product line, and decided to license out some patents with R&D stage technology exclusively to Company XYZ. In the past, we entered several nonexclusive licenses with other companies for technologies in ABC product line at royalty rate of 6.5%, but the technologies in those licenses were all at in-production stage, and we also provided the licensees with full sets of designs, drawings, and other trade secrets and know-hows.

We need your help to determine the royalty rate for this exclusive license. I know that you charge us 10 minutes incrementally, could you please spend fewer than 10 minutes because I don't have a budget to pay you?

Key Words

- ▶ Need to determine a royalty rate for an **exclusive license with early-stage technology**
- ▶ **Comparable license:** Royalty rate of 6.5%
 - Nonexclusive
 - Advanced-stage technology
 - Licensed IP includes patents, designs, drawings, know-hows and trade secrets.

The 2021 High Tech Royalty Survey

LES Build-Up Method for Royalty Determination: A case study

Step 1: Use the LES Build-Up Method to synthesize a royalty rate for a hypothetical nonexclusive license with advanced-stage technology plus designs/drawings/know-how etc.

$$\begin{array}{ccccccc} r = 3.58\% & + & 2.8\% & + & 1.7\% & = & 8.08\% \\ \textit{Basic rate} & & \textit{Advanced-stage Premium} & & \textit{Design/know-how premium} & & \end{array}$$

Step 2: Calculate the value contribution percentage of each of the three components

$$\begin{array}{ccccccc} \% = 3.58\%/8.08\% & + & 2.8\%/8.08\% & + & 1.7\%/8.08\% & = & 100\% \\ \% = 44.3\% & + & 34.7\% & + & 21\% & = & 100\% \\ \textit{Basic rate} & & \textit{Advanced-stage Premium} & & \textit{Design/know-how premium} & & \end{array}$$

The 2021 High Tech Royalty Survey

LES Build-Up Method for Royalty Determination: A case study

Step 3: Use the value contribution percentages to decompose the 6.5% comparable rate:

$$\begin{aligned} R &= 44.3\% \times 6.5\% & + & 34.7\% \times 6.5\% & + & 21\% \times 6.5\% & = & 6.5\% \\ R &= 2.88\% & + & 2.25\% & + & 1.37\% & = & 6.5\% \\ & \textit{Basic rate} & & \textit{Advanced-stage Premium} & & \textit{Design/know-how premium} & & \end{aligned}$$

Step 4: Use the LES Build-up Method to calculate reasonable royalty rate (RR) for the exclusive license with early-stage technology

$$\begin{aligned} RR &= 2.88\% & + & 2.88\% \times 51\% & = & 4.35\% \\ & \textit{Basic rate} & & \textit{Exclusive Premium of 51\%} & & \\ RR &= 2.88\% & + & 1.47\% & = & 4.35\% \\ & \textit{Basic rate} & & \textit{Exclusive Premium of 51\%} & & \end{aligned}$$

The 2021 High Tech Royalty Survey

LES Build-Up Method for Royalty Determination: A case study

Please keep in mind that the premiums derived from the High Tech Royalty Survey data represent the average premiums calculated from the data samples. What a licensor will eventually get or a licensee will eventually pay depends on numerous other factors ...

Prof. Mark Lemley of Stanford Law School and Prof. Carl Shapiro of UC Berkeley presented a simple model for royalty rate determination:

Benchmark royalty rate

= Bargaining power of patent holder x Patent strength x Value of patented feature

... in other words, the premiums serve as a starting point for your royalty rate negotiation, and from here, GOOD LUCK ...

► Royalty data vendors

- RoyaltySource, ktMINE, and several others ...
- Historical data mostly from publicly-traded companies' SEC filings, usually without information in tech development stage and other related information.

► Standard Essential Patents (SEP) licensing

- IPlytics ...
- Data and intelligence about SEPs, including technology trends, market developments and a company's competitive position. Based on publicly available information, and constantly updated. Also with FRAND rates for SEP pools.

► Patent sale price

- LES Royalty Surveys, especially High Tech Royalty Survey, have been collecting the data in patent sales.
- Various service providers have accumulated patent transaction data in certain market segments ...

LES Royalty Rate Surveys: High Tech, Life Sciences, and Physical Sciences

- Participate in the future LES Royalty Rate Surveys, and submit your license deals;
- Renew your LES membership, or join LES if you are not a member yet, so that you have the access to all of the LES Royalty Survey Reports, the most recent royalty premium or discount data, and the updated LES Build-Up Method for Royalty Determination ...

THANK YOU

Questions?