

A close-up, low-angle shot of a microscope's objective lens and eyepiece, set against a dark, blue-tinted background. The lighting is dramatic, highlighting the metallic textures and glass elements of the instrument. A bright light source at the bottom creates a warm, golden glow that reflects off the microscope's base and lens.

2018/2019 CRO INDUSTRY COMPENSATION, TURNOVER, AND PLAN DESIGN TRENDS REPORT

Based on the Annual CRO Industry
Global Compensation & Turnover Survey

Table of Contents

- INTRODUCTION 1
- STATE OF THE INDUSTRY 2
- KEY FINDINGS AND TRENDS 6
 - 2018 / 2019 SALARY PLANNING6
 - HISTORICAL SALARY INCREASE TRENDS.....7
 - MIX OF PAY TRENDS.....9
 - TURNOVER TRENDS10
 - TURNOVER RATIONALE.....13
 - INCENTIVES.....14
 - ATTRACTION AND RETENTION BONUSES.....18
 - DEFERRED COMPENSATION21
 - DEFINED CONTRIBUTION PLANS22
 - SERPS, EMPLOYMENT CONTRACTS,
CHANGE OF CONTROL, AND
SEVERANCE AGREEMENTS22
 - PERQUISITES23
- A WAY FORWARD 24
- ABOUT THE ANNUAL SURVEY 25
 - SURVEY OVERVIEW.....26
 - SURVEY REPORT.....27
 - JOBS COVERED BY THE SURVEY 28
 - COUNTRIES COVERED IN THE SURVEY.....29
 - 2018 PARTICIPANT PROFILE 30
- SURVEY DEFINITIONS 31
- CONTACT US..... BACK COVER



Introduction

BDO USA, LLP, is pleased to present the *2018/2019 CRO Industry Compensation, Turnover, and Plan Design Trends Report* based on 10 years of findings from 48 clinical research outsourcing (CRO) companies who participated in the annual *CRO Industry Global Compensation & Turnover Survey*.¹

The annual survey is now in its **20th year**. The survey provides the answers to important questions about the CRO industry, including pay levels, design of compensation and benefit plans, and turnover rates. More information about the survey can be found in the "About the Annual Survey" section.

This special *2018/2019 CRO Industry Compensation, Turnover, and Plan Design Trends Report* focuses on trends and developments with regard to Clinical Research Associate (CRA) compensation practices. It provides an in-depth analysis of key topics that are critical for HR and clinical managers at CROs, including:

- ▶ Global salary planning highlights
- ▶ Pay trends for CRAs
 - What is happening to pay?
 - Why does the best talent seem to leave for more money?
- ▶ Turnover plaguing the industry
 - Is there any end in sight?
- ▶ Benefits and perquisites
 - What do employees expect?

To set the stage, we have developed a brief snapshot of the state of the CRO industry.

¹ source: HR+Survey Solutions, LLC

State of the Industry

The CRO industry typically comprises organizations related to:

- ▶ Clinical trials (~40 percent of market)
- ▶ Pre-clinical trials (~18 percent of market)
- ▶ Post-market surveillance (~13 percent of market)
- ▶ Other services such as clinical trials management, consulting, risk evaluation and mitigation, and strategy services (~29 percent of market)

In 2017, there were many mergers and acquisitions resulting in consolidation. CROs competed for market share in terms of enhanced therapeutic area expertise, enlarged geographic reach, full-service capabilities, improved technology, and increased functional capabilities.

The industry is poised for healthy growth. IBISWorld estimates the U.S. CRO industry to be at \$19.6 billion USD and growing at a historical rate of 6.5 percent annually. IBISWorld forecasts that CRO industry revenue will increase at an annualized rate of 2.2 percent to \$21.9 billion USD by 2023.

IgeaHub estimates the value of the global CRO services market at \$36.27 billion USD. They project a compound annual growth rate (CAGR) of 7.6 percent for the industry, from \$39.13 billion USD in 2018 to reach \$56.34 billion USD by 2023.

KEY FACTORS DRIVING GROWTH

- ▶ **Research and development (R&D) spending**
 - Industry Standard Research (ISR) predicts that R&D will grow by an additional 18 percent by 2022.
- ▶ **An aging U.S. population, which increases the demand for new treatments and medications**
- ▶ **Increased demand from brand-name and generic-drug manufacturers**
 - CROs are attractive to drug companies because they offer cost savings through their size and specialization. According to the independent Tufts Center for the Study of Drug Development, clinical trials performed by CROs are conducted an average of 30 percent faster than those completed in-house. CROs deliver an average time savings of four to five months and cost savings between \$120 and \$150 million.
 - Over the past 10 years, it is estimated that the involvement of CROs in clinical studies has risen from about 64 percent to roughly 80 percent. This growth is attributed, in part, to the specialization that CROs can offer, enabling greater expertise in a particular therapeutic area and more efficient operations at a lower cost.
- ▶ **Demand from biotechnology**
 - The rise of biopharmaceuticals, in addition to the development of genomics and drugs tailored to the unique genetic profiles of individuals or specific diseases, will require an increased number of clinical trials.
- ▶ **Prime rate**
 - The level and movement of interest rates can influence spending and investment decisions in pharmaceutical companies. When interest rates are high, capital is more expensive to raise and investment in R&D may be reduced. Rising prime rates pose a potential threat to the industry.

Evidence of an expanding CRO industry can be seen by looking at the increase in new drug approvals since 2010 (Figure 1) and the growing number of registered studies conducted since 2014 (Figure 2).

FIGURE 1
NUMBER OF FDA DRUG APPROVALS OVER TIME

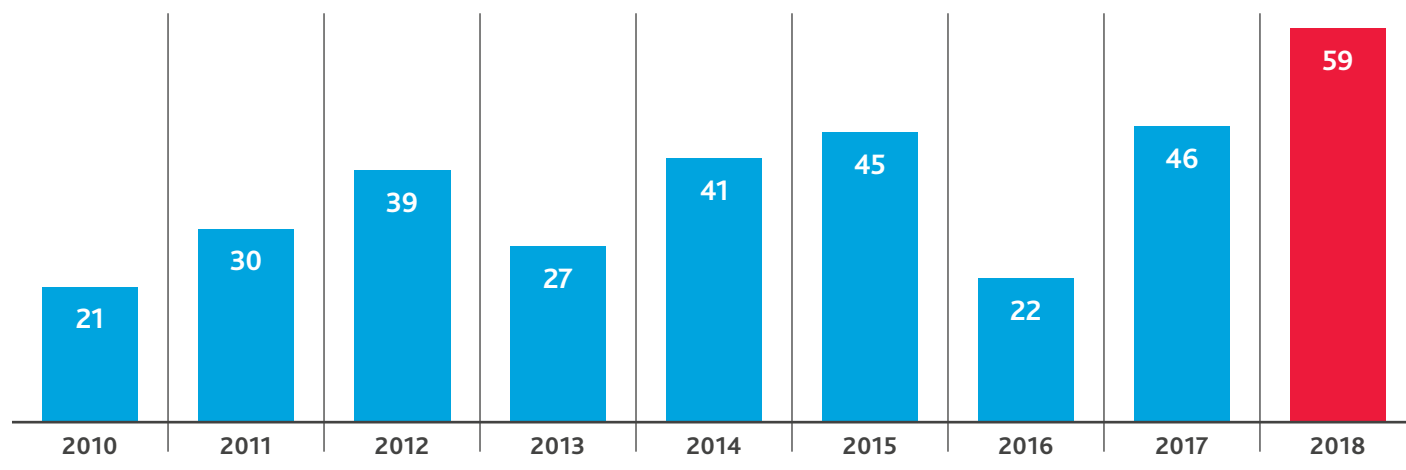


FIGURE 2
NUMBER OF REGISTERED STUDIES CONDUCTED AND PERCENTAGE OF TOTAL

Location	As of December 7, 2014	As of November 23, 2015	As of December 5, 2016	As of October 25, 2017	As of November 15, 2018
Non-U.S. Only	81,830 (45%)	93,032 (46%)	107,690 (47%)	121,142 (47%)	138,745 (48%)
U.S. Only	70,910 (39%)	77,202 (38%)	84,591 (37%)	91,968 (36%)	100,955 (35%)
Not Specified	16,651 (9%)	21,078 (10%)	26,203 (11%)	30,397 (12%)	34,694 (12%)
U.S. & O.U.S.	10,801 (6%)	11,881 (6%)	13,024 (6%)	14,075 (5%)	15,488 (5%)
Total	180,192	203,193	231,508	257,582	289,882

O.U.S. = Outside of the U.S.

CROs can range from large, international full-service organizations to small, niche specialty operators. Several large organizations have formed from significant mergers in recent years. The ten largest companies are listed in Table 1 to the right. However, there is also healthy growth at the bottom, with high demand for niche CRO services contributing to a high number of industry entrants.

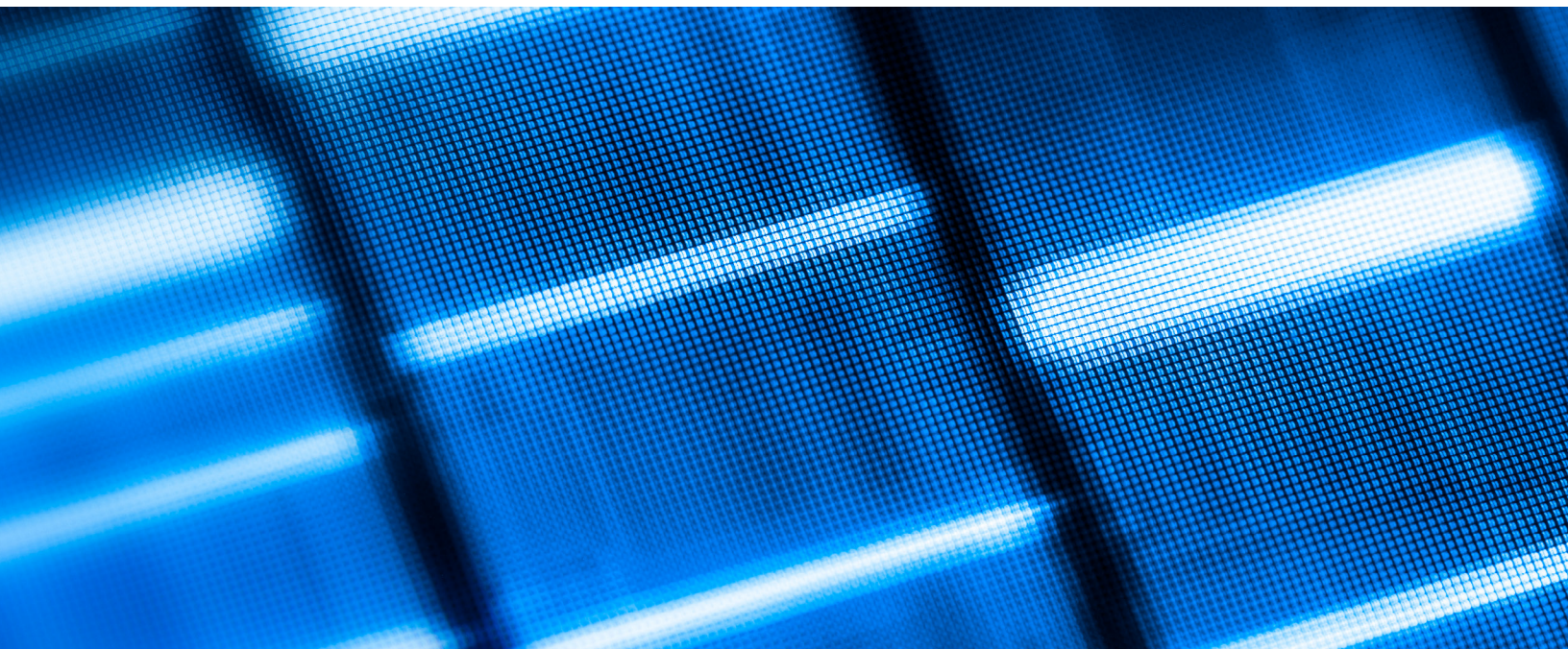
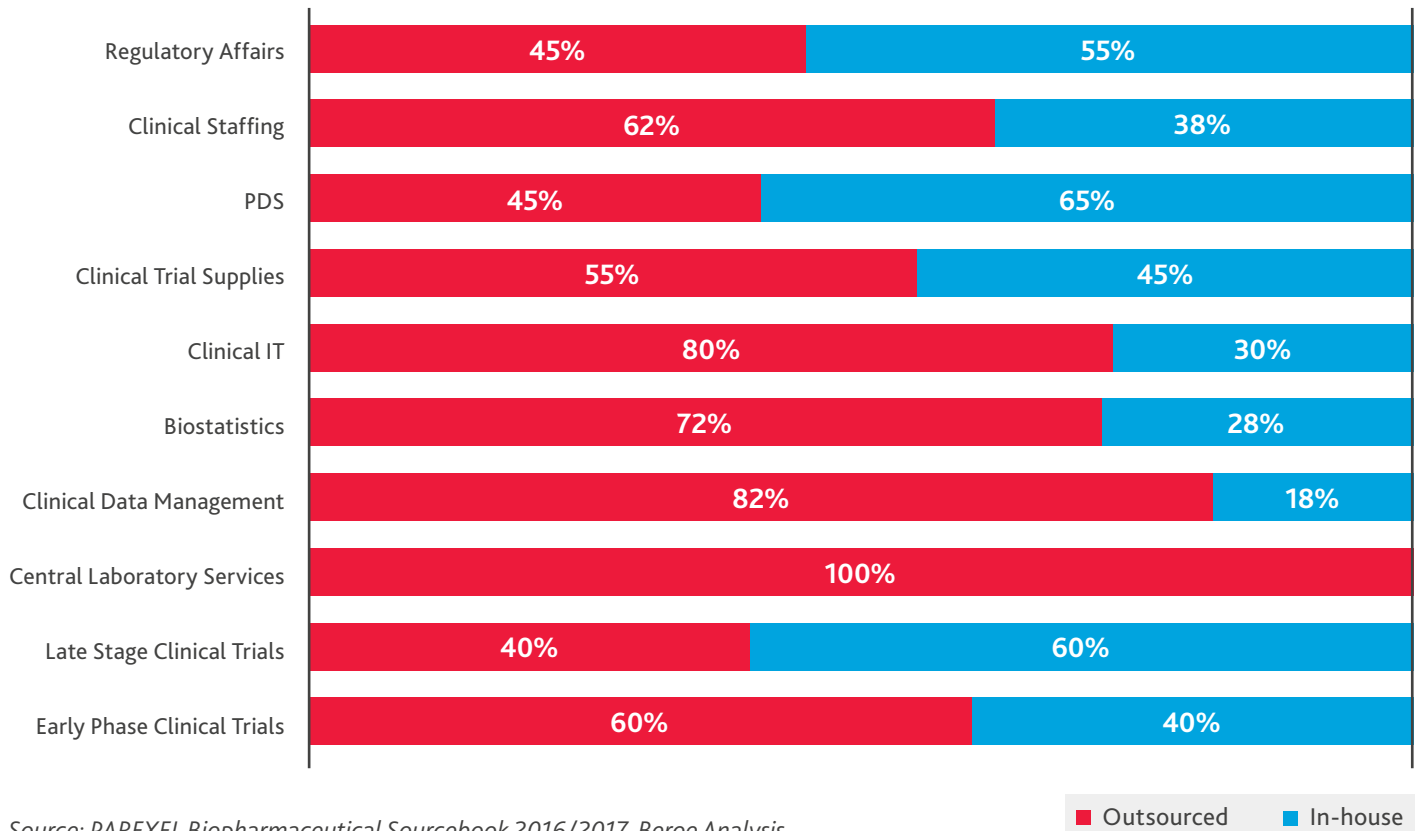
TABLE 1
TOP 10 CROS

Company	Revenue (\$ bil)
LabCorp (Covance + Chiltern)	10,441
IQVIA (Quintiles + IMS)	9,739
Syneos (INC and inventive)	2,672
Parexel	2,441
PRA	2,259
PPD	1,900
Charles River	1,857
ICON	1,758
WuXi AppTec	1,011
Medpace	436

Source: IgeaHub

Over 60 percent of sponsors have increased their use of outsourcing through strategic partnerships and functional outsourcing (online source: *Clinical Leader*). The following (Figure 3) shows the areas that are most commonly outsourced—central laboratory services is at the top of the list, followed by clinical data management and clinical IT.

FIGURE 3
CLINICAL SERVICES OUTSOURCED VS. IN-HOUSE



FUTURE OUTLOOK

Industry experts believe the following key factors will impact the CRO industry going forward.

1. Consolidation

The deal market has been active in recent years, and consolidation is likely to continue.



2. Globalization

CRO industry profits remained relatively stable between 2013 and 2017, according to IBISWorld. However, there are several factors placing downward pressure on profits. India, China, and Eastern Europe emerged as industry players during that time. The lower cost of recruiting patients and conducting trials in these emerging CRO markets is putting downward pressure on domestic industry profitability (Table 2). Furthermore, IBISWorld predicts that U.S. wages for this industry will increase at an annualized rate of 8.3 percent to \$5.1 billion. Combined with other increasing operational costs, this may force CROs to expand more operations overseas.



3. Biopharmaceutical Growth

Historically, pharmaceutical companies have accounted for 50 percent of the CRO's market, with biotechnology a distant second at 30 percent. Market share is expected to shift in the years ahead. Over the next five years, biotechnology company R&D spending is projected to account for a greater proportion of overall R&D spending. In addition, biotech companies often outsource a greater proportion of their development because of a lack of internal expertise and more limited financial resources than larger pharmaceutical companies.



4. Strategic Partnerships

Strategic partnerships are expected to increase over the next five years, as industry operators realize greater value from the pre-negotiated rates that CRO partnerships guarantee. However, strategic partnerships will limit CROs' ability to respond to changes to their internal cost structures.



5. Regulation

CROs are highly regulated. U.S. regulatory changes bring increased operating costs, but also help to limit foreign competition. Heightened international regulation will create challenges for CROs' global expansion plans.



6. Wages

Employee wages account for an estimated one-quarter of the average costs for a CRO company (25 percent), compared with over 40 percent of the costs within the broader life science industry. This implies that increasing wages will not necessarily have a significant hit to the bottom line for CROs.



TABLE 2

GLOBAL RESEARCH COSTS: RELATIVE COST INDEXES OF PAYMENTS TO CLINICAL TRIAL SITES

Country	Cost of Clinical Trials Relative to the United States	Cost
United States		1
Australia		0.67
Argentina		0.65
Germany		0.5
Brazil		0.5
China		0.5
Russia		0.41
Poland		0.39
India		0.36

Source: Califf, 2009.

Key Findings and Trends

The *2018/2019 Trends Report* provides key findings and trends related to compensation levels and plan designs with a special focus on CRAs.

The CRA's roles in CROs are:

- ▶ Pivotal to the success of clinical details
- ▶ Characterized by high turnover
- ▶ In high demand with limited talent supply
- ▶ Characterized by steep learning curves early in their career

The *Trends Report* is based on almost a decade of market pay data on CRAs, providing a unique perspective on historical trends and a potential guide for future compensation and turnover trends. The report covers the following details related to CRA pay:

- ▶ Global salary planning
- ▶ U.S. pay policies and trends
 - Historical pay trends
 - Annual incentive (AI) and long-term incentive (LTI) trends
 - Attraction and retention bonus trends
 - Mix of pay
 - Other compensation-related programs
- ▶ Global turnover trends

The report also includes highlights from our annual *CRO Global Salary Planning Survey*, as well as turnover trends, benefits and perquisites impacting the broader employee population (CRAs and all other positions).

2018 / 2019 SALARY PLANNING

Our *CRO Global Salary Planning Survey* is conducted each year in association with the *CRO Industry Global Compensation & Turnover Survey*. It covers:

- ▶ The U.S. and 55 countries O.U.S.
- ▶ 2018 actual increases relative to budgeted pay-outs
- ▶ Planned 2019 increases
- ▶ Other budgeted increases (such as promotional increases and equity adjustments)
- ▶ Timing of most recent adjustments
- ▶ Executive, exempt, and non-exempt merit budgets

Highlights from the 2018 *CRO Global Salary Planning Survey*:

- ▶ The U.S. CRO projected merit increase budget holds steady at 3 percent. Despite the high level of turnover, it appears that companies are not planning to increase wages at an above-market rate as a strategy for retaining or recruiting talent.
- ▶ Argentina had the highest actual merit increase in 2018 at 15.6 percent, which is below their projected increase of 20.2 percent. Argentina also has the largest projected 2019 merit budget at 15.7 percent. However, much higher than forecasted inflation rates have forced many companies to provide additional increases in 2018.
- ▶ Belgium had the lowest actual merit increase in 2018 at 1.7 percent.
- ▶ 2018 merit increases for all countries combined averaged 3.9 percent, less than the projected 4.2 percent increase.
- ▶ Brazil had the largest gap between actual and budgeted increases in 2018, falling 1.7 percentage points below the budgeted merit increase.
- ▶ On average, companies' actual 2018 merit increases were .10 percentage points less than budgeted.
- ▶ Projected 2019 merit budgets for all countries combined averages 4.1 percent, up slightly from the 2018 actual increase of 3.9 percent.
- ▶ Switzerland has the lowest projected 2019 merit budget of 2.0 percent.

HISTORICAL SALARY INCREASE TRENDS

Base pay for CRAs increased an average annualized rate of 2.1 percent per year, while total cash compensation (TCC) increased 2.3 percent, indicating a slight increase in incentive pay over the period from 2009 through 2018. Pay levels for more senior positions increased at a much faster rate than for the more junior level positions. (Figure 4).

A historical analysis of the annual survey shows that pay increased at a faster rate in the most recent five years (2013–

2018) than for the first five years (2009–2014) of our research period. This was especially true for the entry-level CRA roles. Figure 5 shows the difference between the annualized rate of increase during the most recent five years, compared to the previous five years.

The total change in pay mirrored the growth of the annualized change in pay. Figure 6 shows how pay has increased since 2009, with some positions experiencing increases as high as 35 percent.

FIGURE 4
ANNUALIZED CHANGE IN PAY BY POSITION 2009-2018

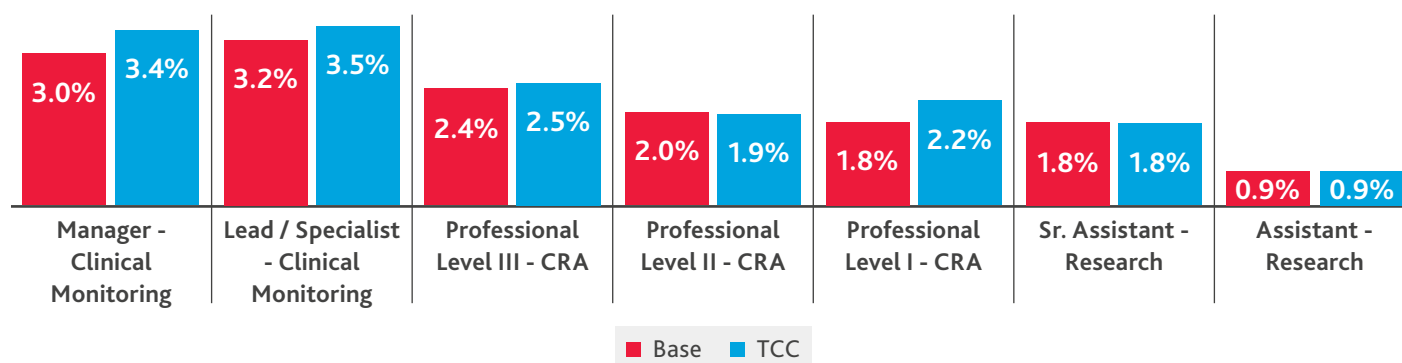


FIGURE 5
COMPARISON OF ANNUALIZED SALARY INCREASES OVER FIVE-YEAR INCREMENTS

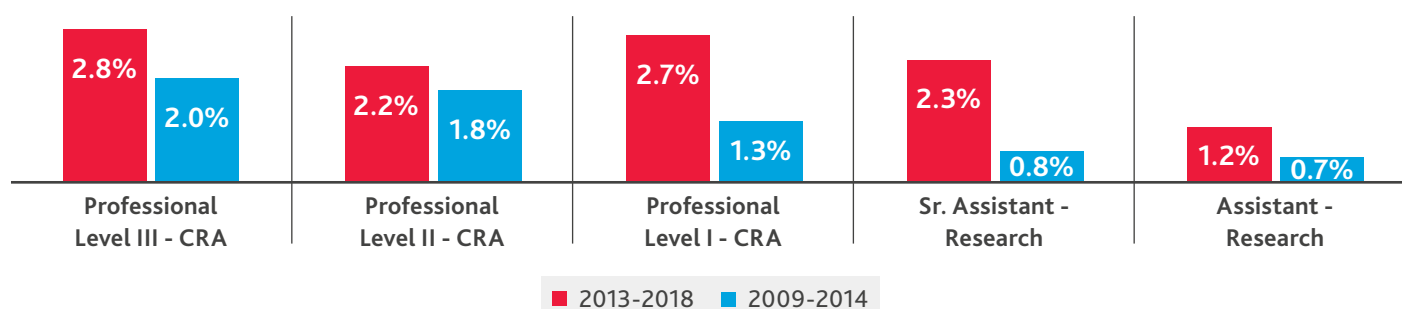
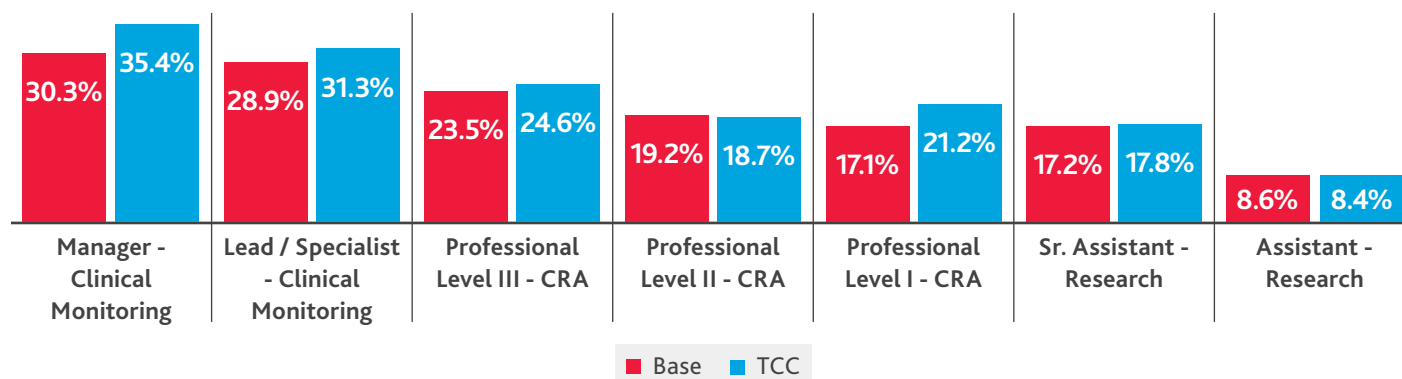


FIGURE 6
TOTAL CHANGE IN PAY 2009 - 2018



One unexpected (and unlikely) development is that pay levels for professional level II CRA employees dropped between 2017 and 2018 (Figure 7), likely impacted by merger and acquisition (M&A) activity.

As noted previously, pay levels have not increased as fast as one would expect given the high industry turnover. The issue may not be actual pay levels, but rather how quickly companies move talent through the pay ranges.

Figure 8 illustrates how 3 percent annual pay increases may not keep up with the learning trajectory of CRAs in the first few years of their careers.

FIGURE 7
2017 TO 2018 CHANGE IN PAY BY POSITION

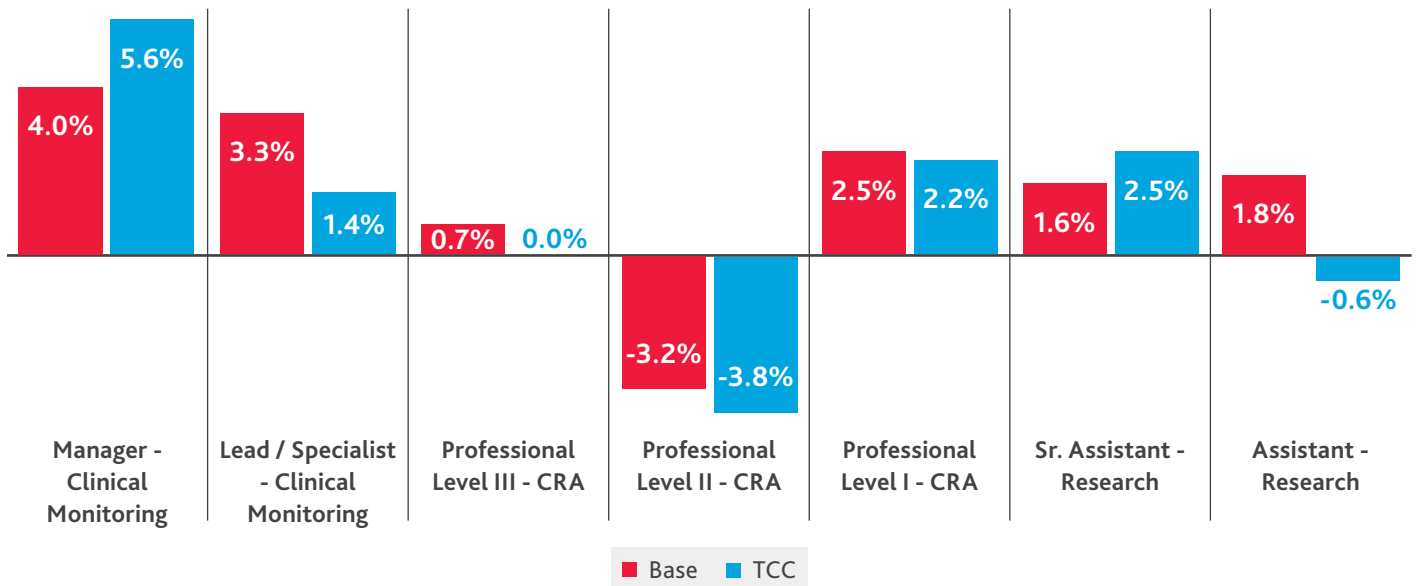
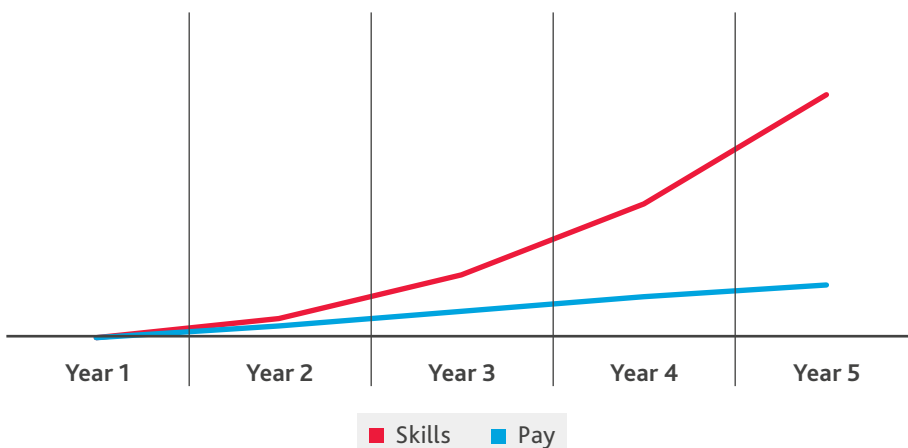


FIGURE 8
GROWTH IN SKILL VS. GROWTH IN PAY



Jobs with high learning trajectories are at risk for turnover.

MIX OF PAY TRENDS

As would be expected, pay packages are more leveraged for the more senior-level CRA positions. Target pay levels seem to offer more leverage than actual, suggesting that bonuses are not paying out in full (Figure 9).

The 2018 pay mix is consistent with the average pay mix for the prior 10-year period (Figure 10).

FIGURE 9
ACTUAL PAY AND TARGET PAY MIXES BY POSITION 2018

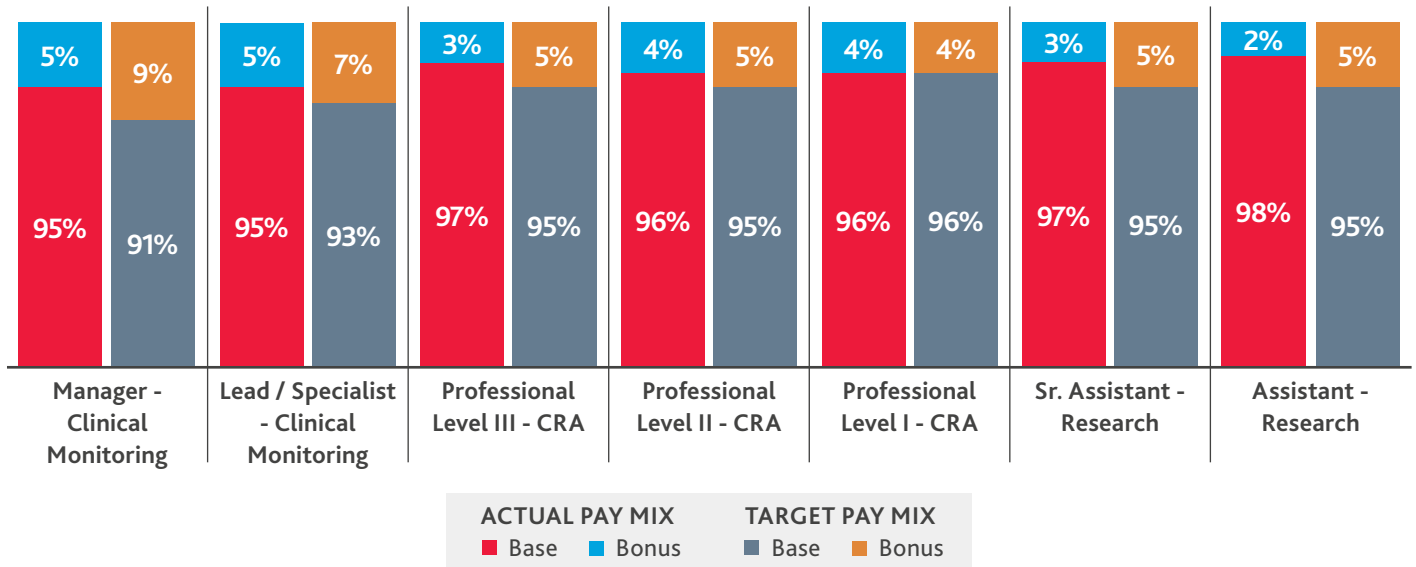
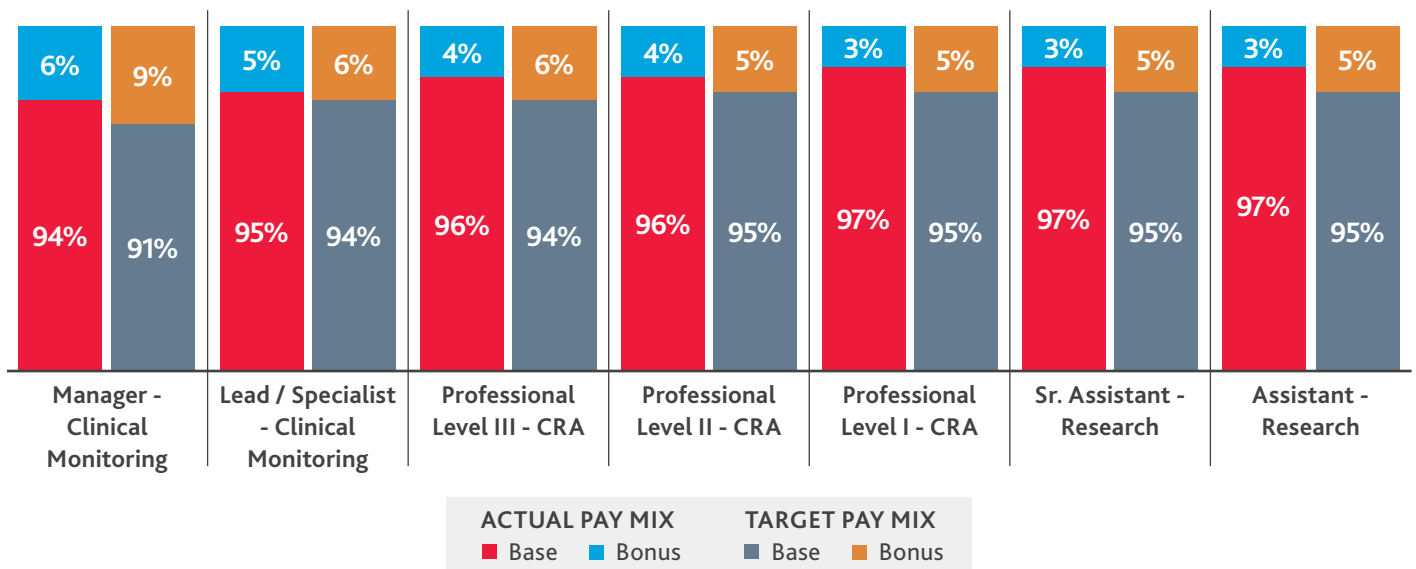


FIGURE 10
AVERAGE ACTUAL AND AVERAGE TARGET PAY MIXES BY POSITION 2009-2018



TURNOVER TRENDS

Overall turnover has been consistently high, with turnover at or above 20 percent for seven of the last 10 years. Voluntary turnover far outpaced involuntary turnover with the gap increasing to nearly triple in the most recent years (Figure 11).

Turnover for clinical monitoring positions was significantly higher than that for project or database management jobs, with database management being the lowest and least volatile (Figure 12).

FIGURE 11
OVERALL U.S. TURNOVER TRENDS

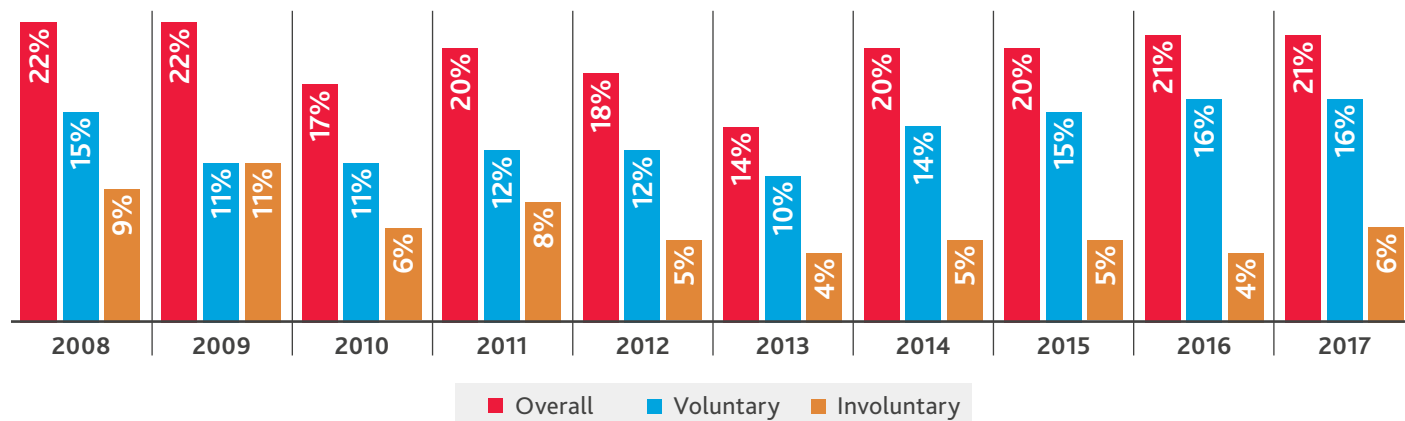
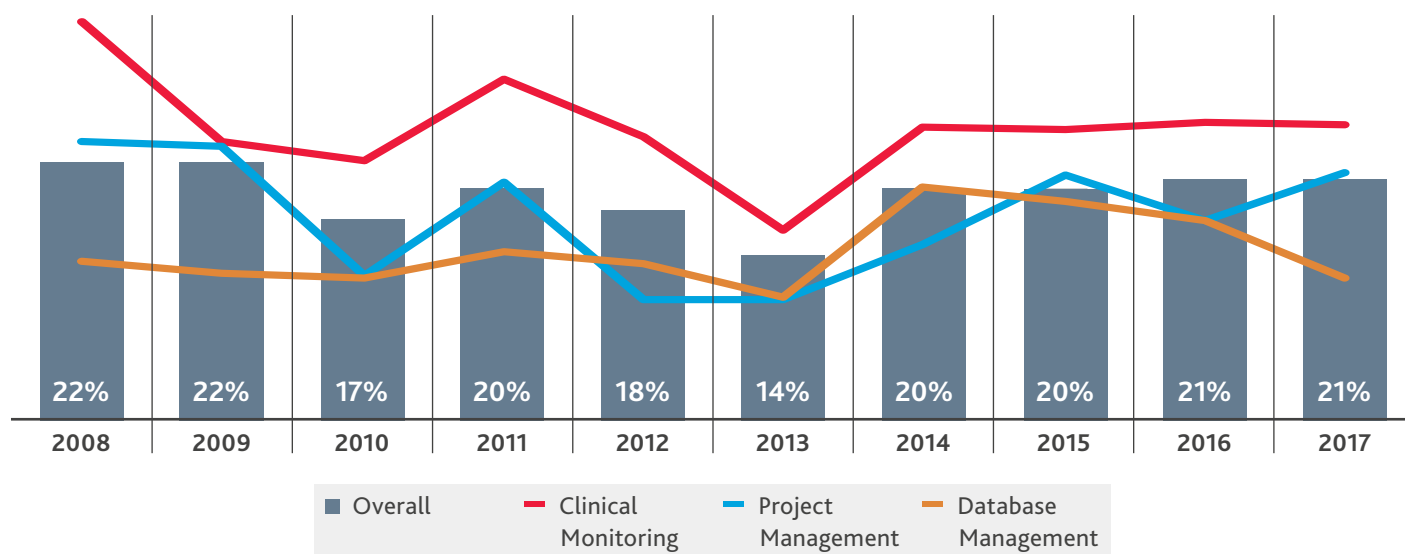


FIGURE 12
10-YEAR U.S. TURNOVER TRENDS BY JOB FAMILY



Clinical monitoring jobs have a consistently high turnover rate, with involuntary turnover far greater than voluntary (Figure 13).

Turnover rates in the U.S. remained consistently high in 2017, with clinical monitoring being the highest;

voluntary turnover far outpaced involuntary turnover (Figure 14).

Turnover in the U.S. continued to outpace overall turnover outside of the U.S. (Figure 15)

FIGURE 13
10-YEAR U.S. TURNOVER TRENDS FOR CLINICAL MONITORING: VOLUNTARY VS. INVOLUNTARY

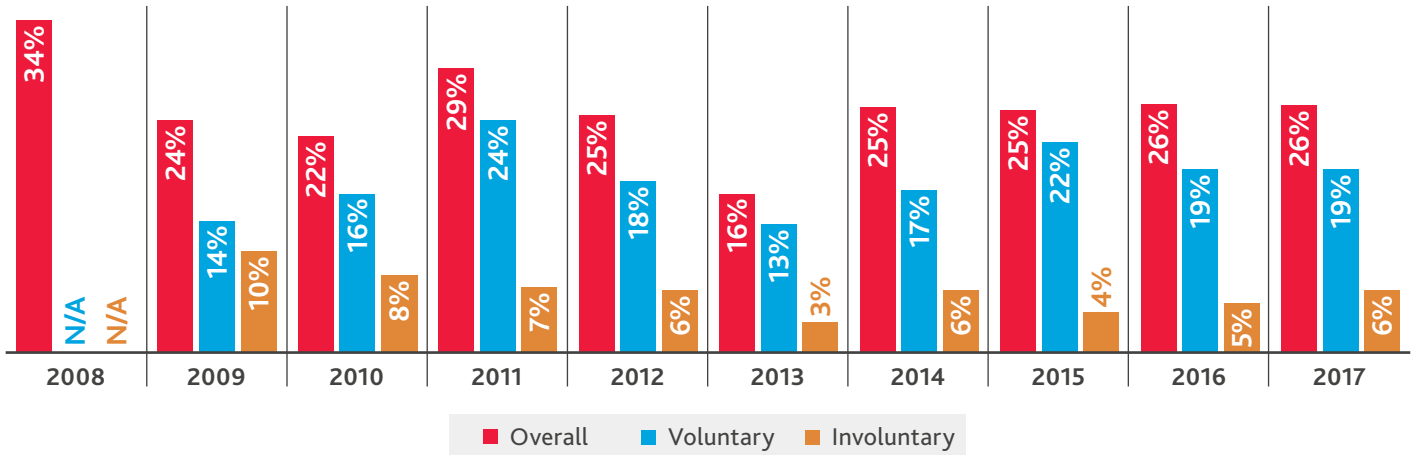


FIGURE 14
2017 U.S. TURNOVER TRENDS

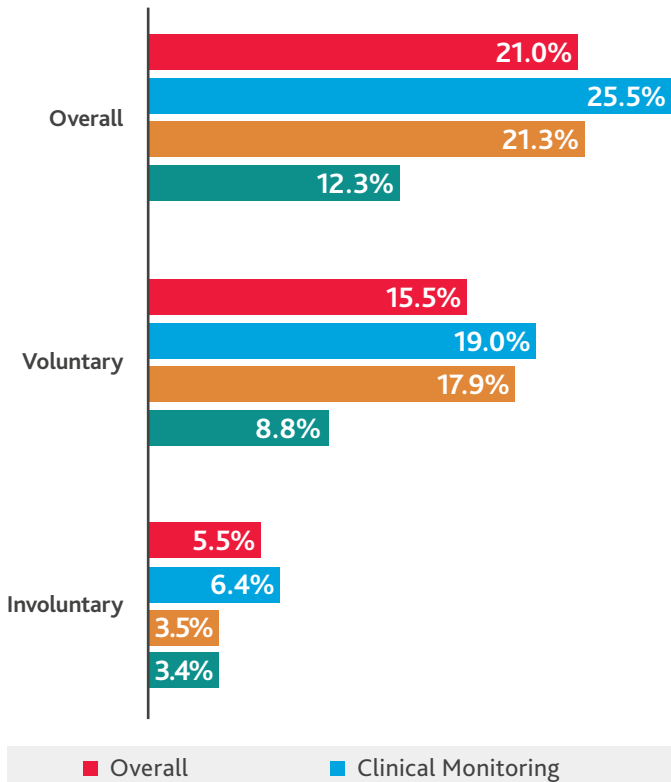
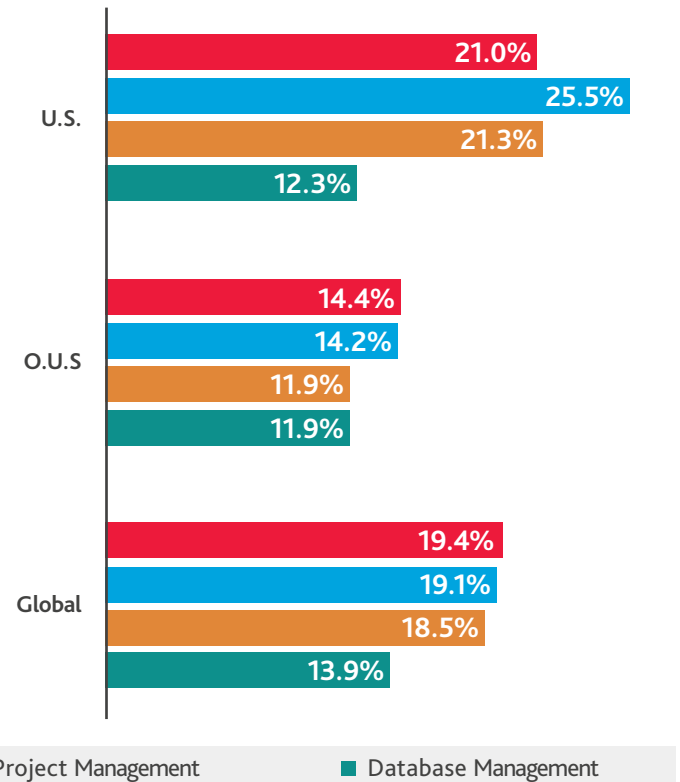


FIGURE 15
2017 GLOBAL TURNOVER COMPARISON



The ten countries with the highest turnover were all above 25 percent, consistent with the prior year. Six of the countries with the highest turnover were also in the top ten the year before (Table 3).

TABLE 3
TEN COUNTRIES WITH THE HIGHEST LEVEL OF TURNOVER

Country	<i>n</i>	2016 Average Total Turnover %
Taiwan	7	42%
China	10	38%
Hong Kong	7	31%
Thailand	6	30%
Malaysia	6	29%
Switzerland	6	29%
Sweden	7	27%
Mexico	5	27%
Singapore	8	25%
Turkey	5	25%

Country	<i>n</i>	2017 Average Total Turnover %
Finland	5	43%
China	9	40%
Hong Kong	9	35%
Taiwan	8	32%
Sweden	8	32%
Ireland	5	32%
Argentina	7	30%
Romania	6	30%
Mexico	7	28%
Turkey	6	28%



TURNOVER RATIONALE

Based on our experience and research, several key drivers contribute to the turnover of CRAs at CROs:

- ▶ Steep learning trajectory
 - CRAs' value increases quickly within the first few years of hands-on experience. Typically, they move within the CRO industry or to a pharmaceutical company.
- ▶ Increased compensation
 - CRAs' value outpaces the 3 percent per year merit increases they are receiving
 - New hire bonuses offer an enticing reason to move elsewhere
- ▶ Growth and development
 - New career opportunities aid in building a CV
- ▶ Burnout from travel
 - Seeking work-life balance
 - Taking advantage of slower schedule during wind-down / ramp-up transitions
- ▶ Easy to change jobs when working from a home office

In our 2016 study on turnover in the CRO industry, the primary reason for leaving was for another position at either a CRO or pharmaceutical company as shown in Table 4. In addition, almost all CROs cited personal reasons (such as furthering education) as a primary reason for CRAs to leave.

TABLE 4
RATIONALE FOR TURNOVER

Rational for Leaving	Total Responses		Rank 1		Rank 2		Rank 3		Rank 4		Rank 5	
		%		%		%		%		%		%
Another CRO	15	100%	14	93%	0	0%	0	0%	0	0%	1	7%
Pharmaceutical company	14	93%	0	0%	13	87%	1	7%	0	0%	0	0%
Personal (furthering education)	14	93%	1	7%	1	7%	10	67%	1	7%	1	7%
University Research Center	8	53%	0	0%	0	0%	2	13%	5	33%	1	7%
Hospital	8	53%	0	0%	0	0%	1	7%	3	20%	4	27%

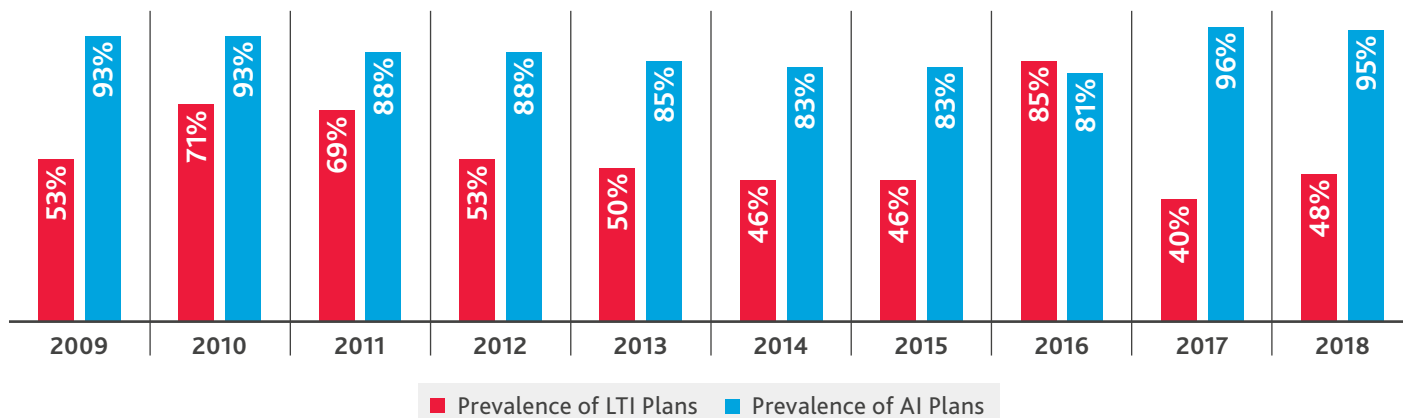


INCENTIVES

Prevalence of Incentive Plans

The prevalence of AI plans has been fairly consistent over the past 10 years, whereas LTI plan prevalence has been more sporadic as companies change, add, or remove plans (Figure 16).

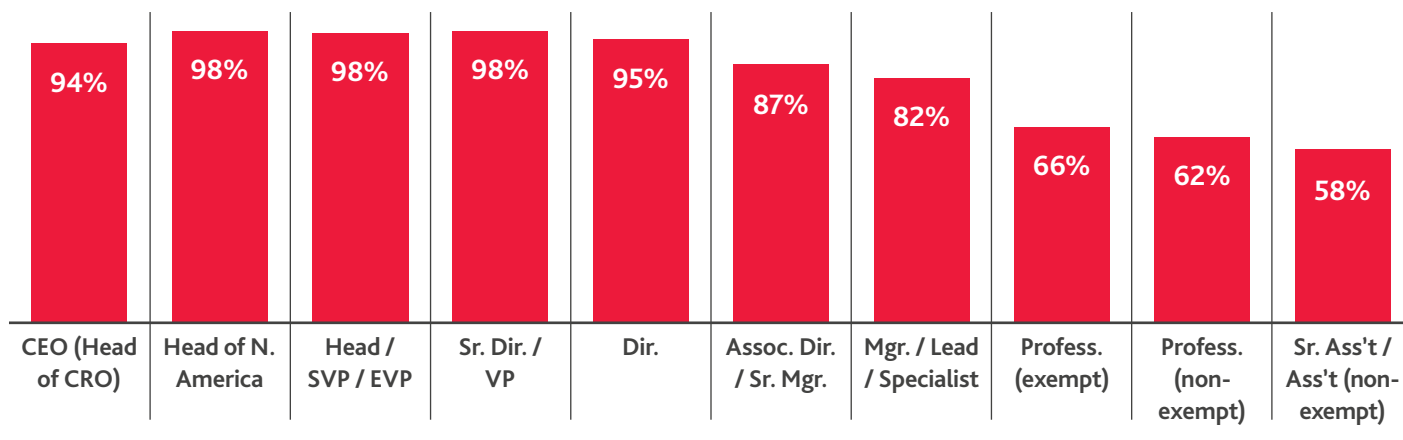
FIGURE 16
PREVALENCE OF INCENTIVE PLANS OVER 10 YEARS



Eligibility by Level—Annual Incentives

Als were highly prevalent during the prior 10 years, as illustrated in Figure 17.

FIGURE 17
ANNUAL INCENTIVE ELIGIBILITY BY LEVEL



Als have been a common part of compensation programs and, while there is no upward trend in eligibility, there is quite a bit of variability from year to year, likely due to ongoing merger activity (Figure 18). In addition, compared to those who received an award, this demonstrates that bonuses in this industry are not guaranteed.

While target percentage levels clearly increase with management levels, there has been little to no change to target levels over the last 10 years (Figures 19 and 20).

Given the high degree of turnover, companies may want to consider increasing their use of incentives. In high turnover situations, incentives can save wage costs, since the incentive may not need to be paid out to employees who leave. Incentives are also a form of a short-term retention with the well-known caveat that employees may still leave after the annual bonus is paid.

Als have been shown to vary with the size of the company. Larger companies are more likely to offer Als, and the incentives tend to be a greater percentage of the salary.

FIGURE 18
ANNUAL INCENTIVE PARTICIPATION 2018

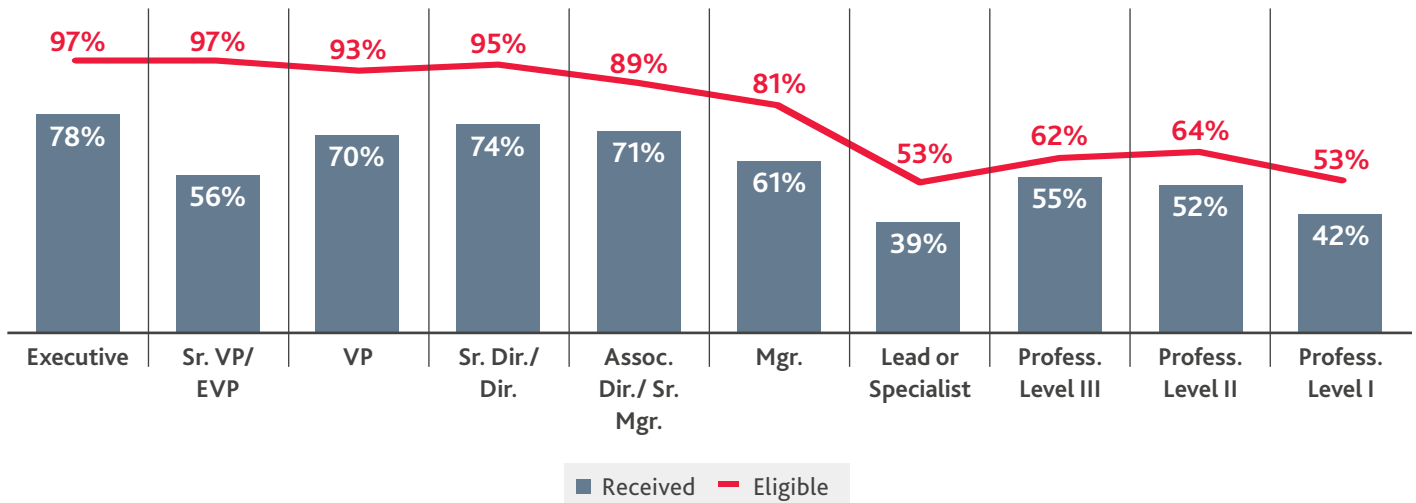


FIGURE 19
TARGET ANNUAL INCENTIVES BY ORGANIZATIONAL LEVEL

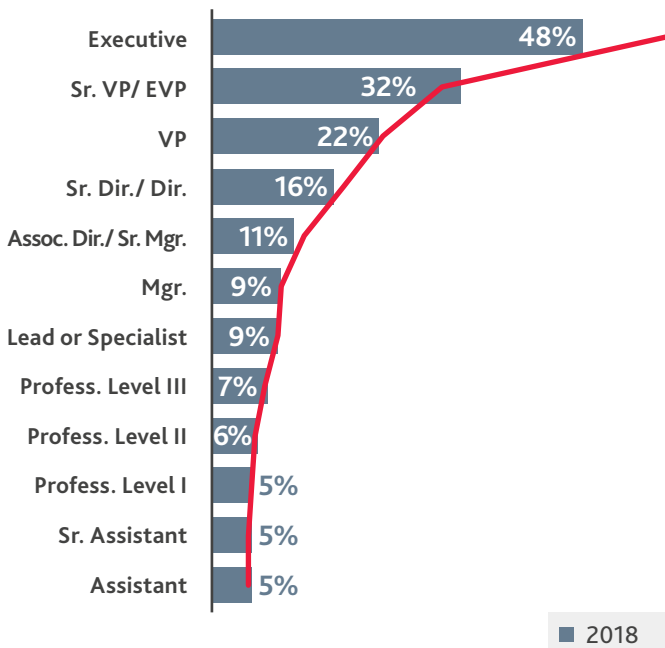
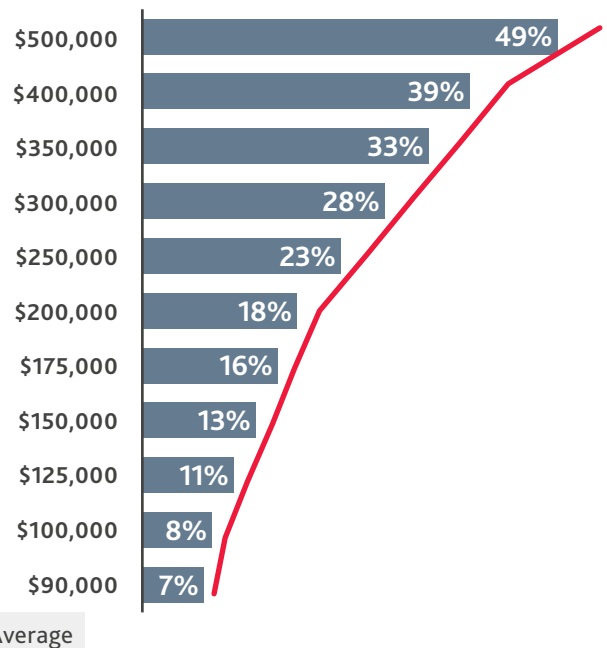


FIGURE 20
TARGET ANNUAL INCENTIVES BY SALARY LEVEL



Long-Term Incentives

LTI plans are much less prevalent than AI plans and are generally only offered to senior and middle management. This is partially due to the fact that most CROs are not publicly traded companies and, thus, do not have access to equity as a long-term incentive. In some cases, private companies do offer long-term bonuses or phantom stock. To be competitive, CROs should consider offering LTIs, especially when competing against pharmaceutical companies for talent. 2018 LTI eligibility vs. those in receipt of an award, shows that some of the newer LTI plans have not yet paid out (the first performance period

has not yet ended) resulting in a widening gap between those eligible and those who received an award (Figure 21).

As anticipated, LTI target levels increase with management level, which is a practice consistent with other industries.

The survey also found that target levels expressed as a percent of salary were higher in 2018 than what was typical for the last 10 years—potentially due to strengthening the pay-for-performance relationship and the implementation of new LTI plans (Figures 22 and 23).

FIGURE 21
LONG-TERM INCENTIVE PARTICIPATION 2018

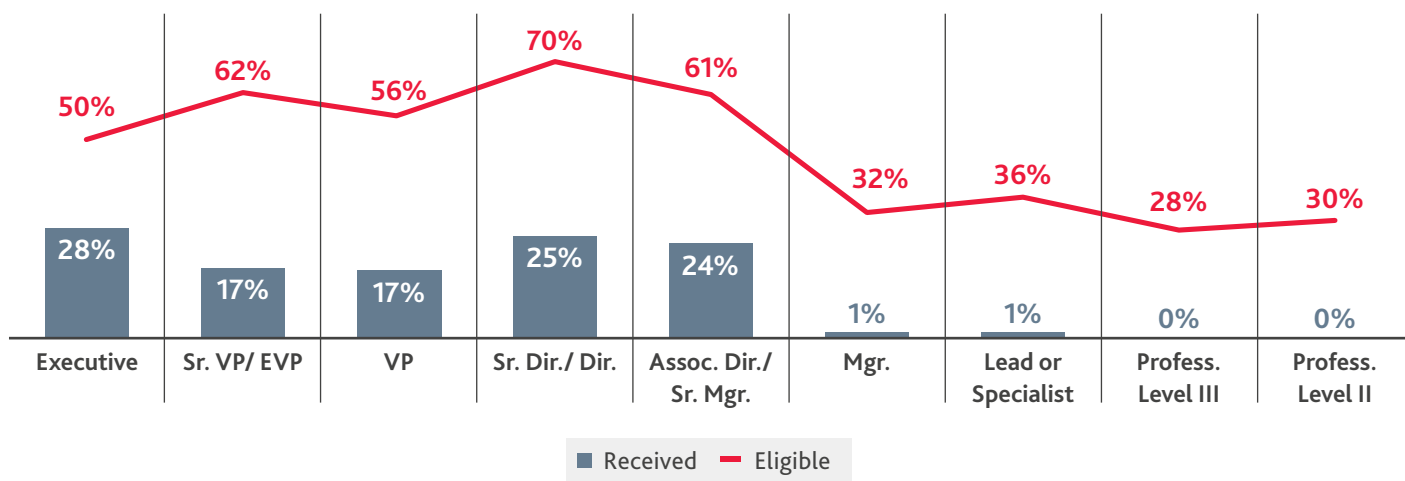


FIGURE 22
TARGET LONG-TERM INCENTIVE BY ORGANIZATIONAL LEVEL

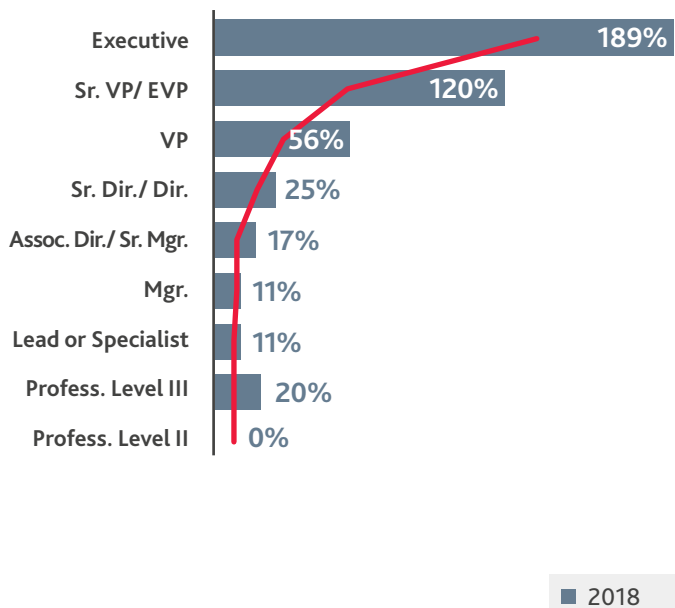
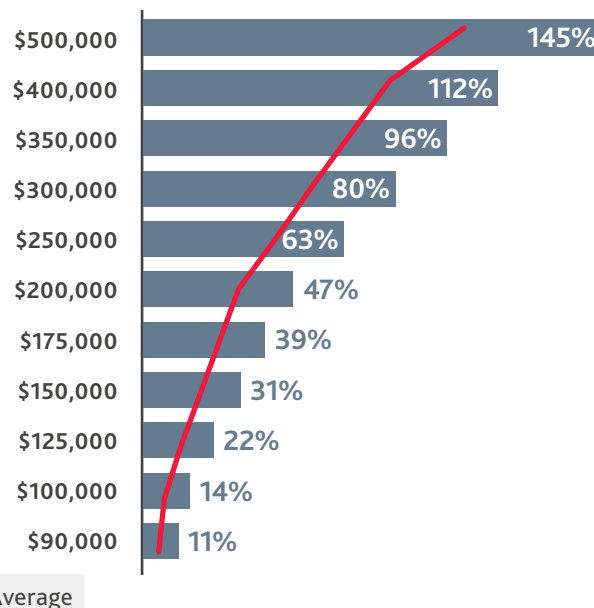


FIGURE 23
TARGET LONG-TERM INCENTIVES BY SALARY LEVEL



Performance Measures

The four most prevalent financial measures used in AI plans were earnings before interest, tax, depreciation, and amortization (EBITDA); business unit performance; revenue; and net income / profit (Figure 24).

EBITDA has steadily increased over the past 10 years; however, the other three metrics have steadily decreased over the same time period (Figure 25, a, b, c, d).

FIGURE 24
PREVALENCE OF AI PERFORMANCE METRICS 2018

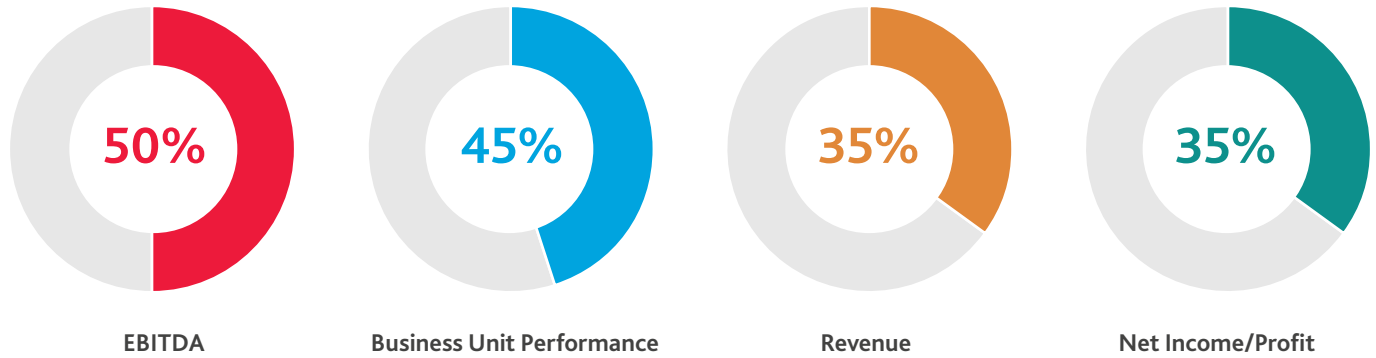
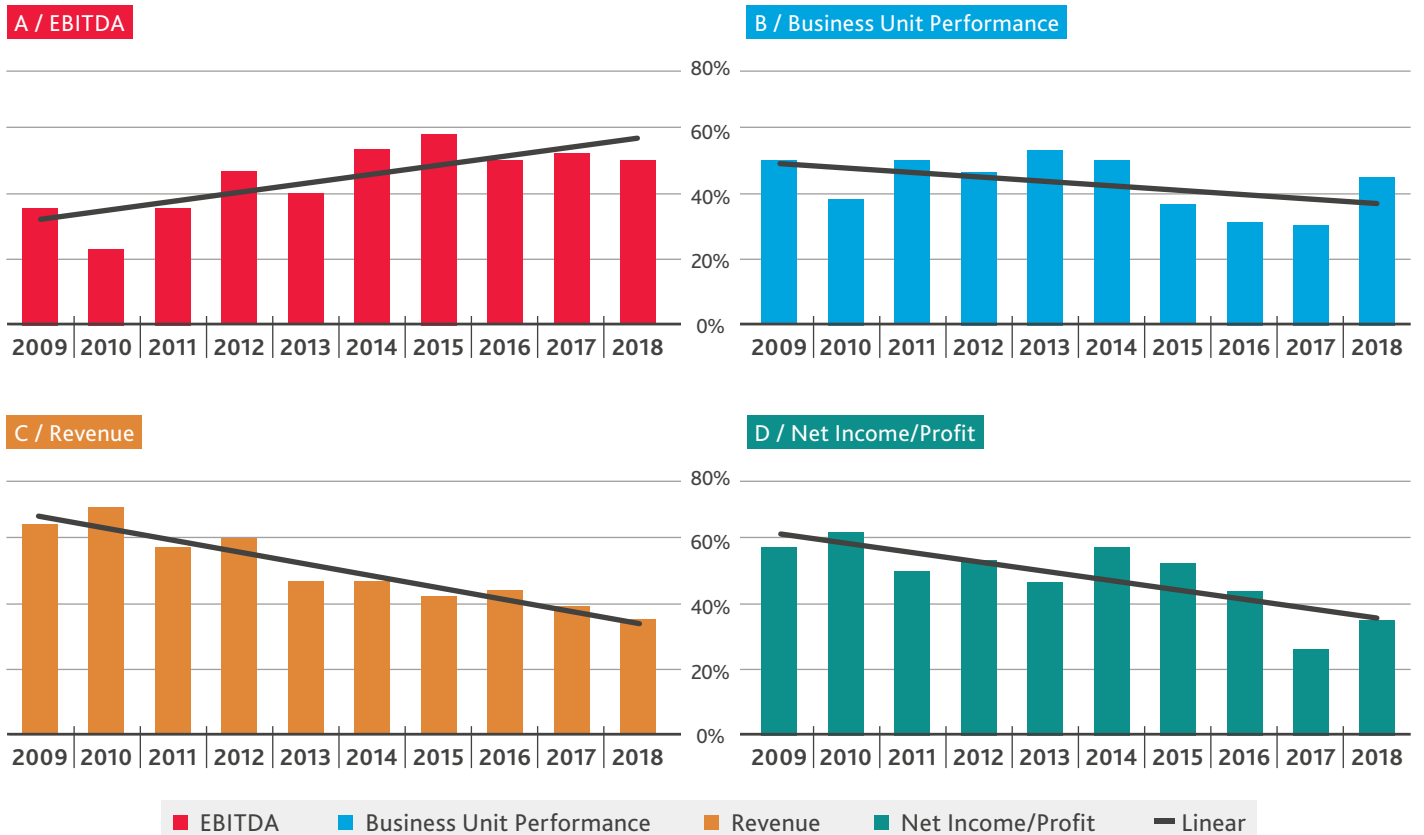


FIGURE 25
FINANCIAL MEASURES FOR AI PLANS OVER 10 YEARS



ATTRACTION AND RETENTION BONUSES

Our survey showed that, in the prior 10-year period, awards for attraction far outweigh those for retention. While this may be necessary for recruiting talent, it does not help retain talent (Figure 26).

The number of sign-on bonuses (Figure 27) offered in any one year tends to be more than retention bonuses:

- ▶ The average number of sign-on bonuses offered in any one year ranged from a low of 68 to a high of 163.
- ▶ The average number of retention bonuses ranged from a meager two to a high of 104.

There is no specific trend indicating an increase or decrease in use of these bonuses.

FIGURE 26
PREVALENCE OF ATTRACTION AND RETENTION BONUSES

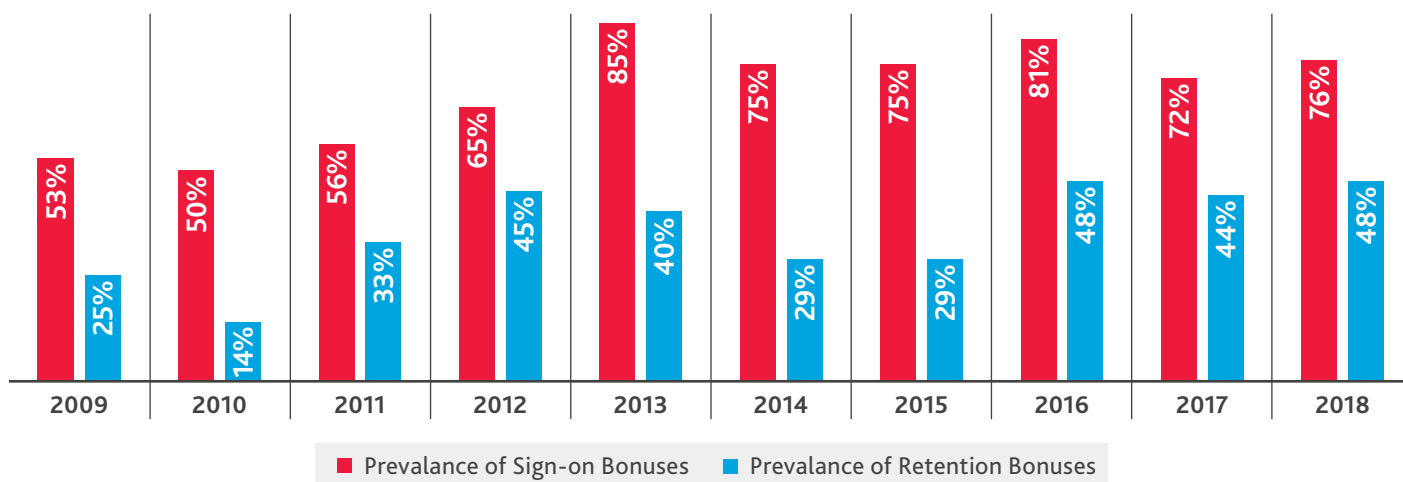
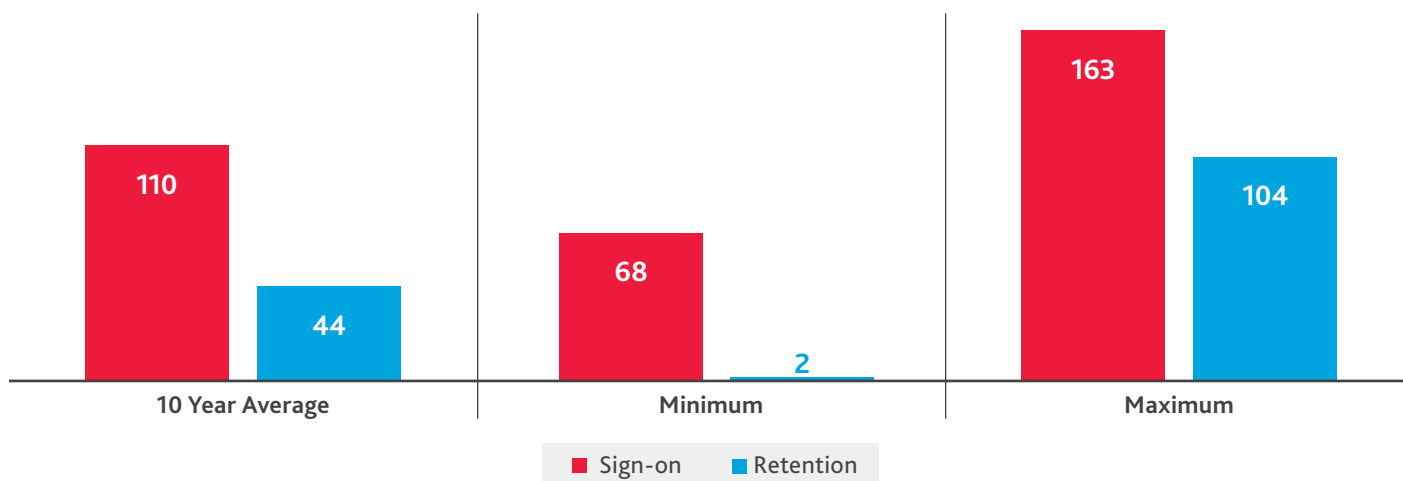
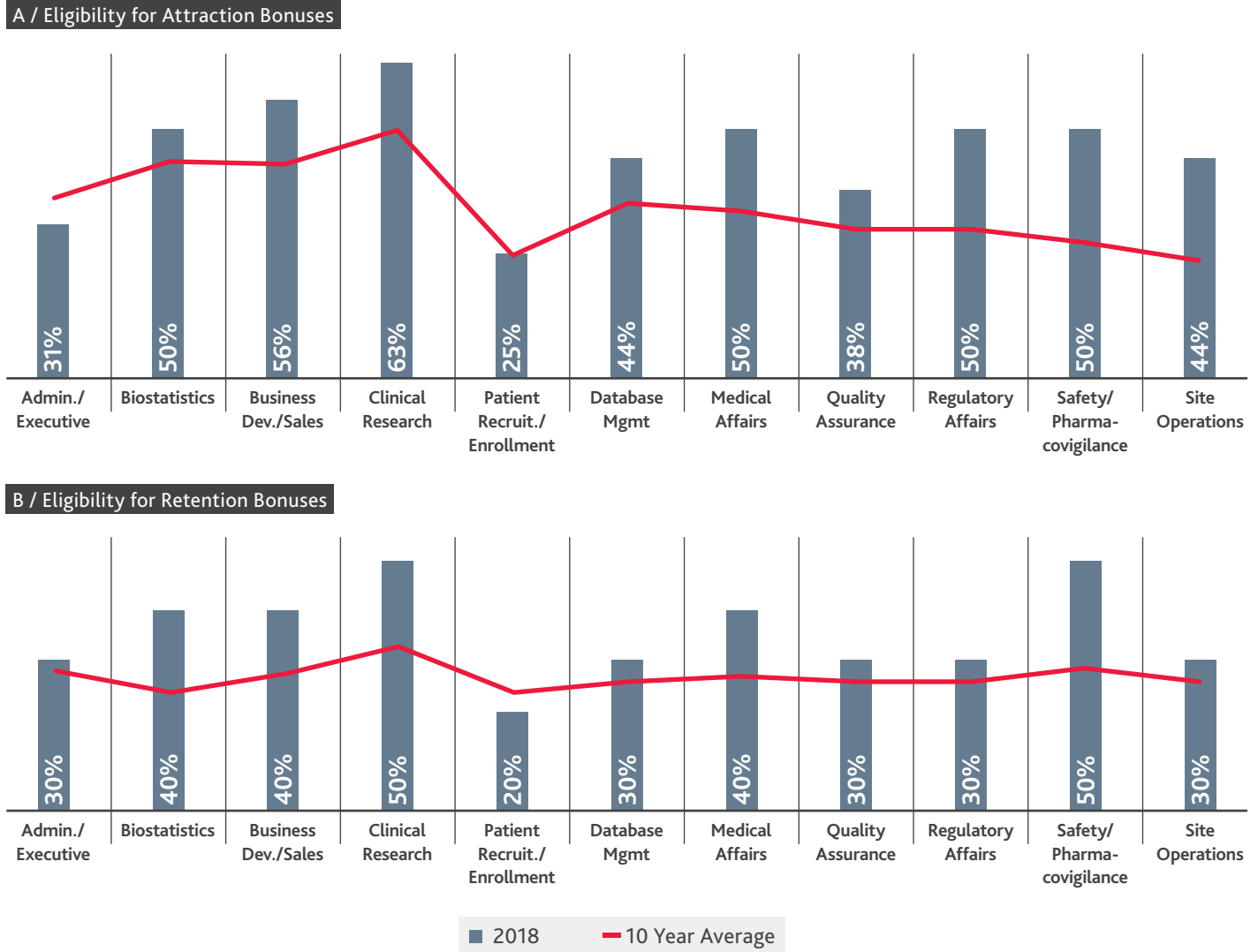


FIGURE 27
AWARDS OF ATTRACTION & RETENTION BONUSES - NUMBER OFFERED



As expected, attraction and retention bonuses (Figure 28, a, b) are most frequently used for clinical research positions, though bonuses are being used with a fair amount of regularity in most key areas of the companies.

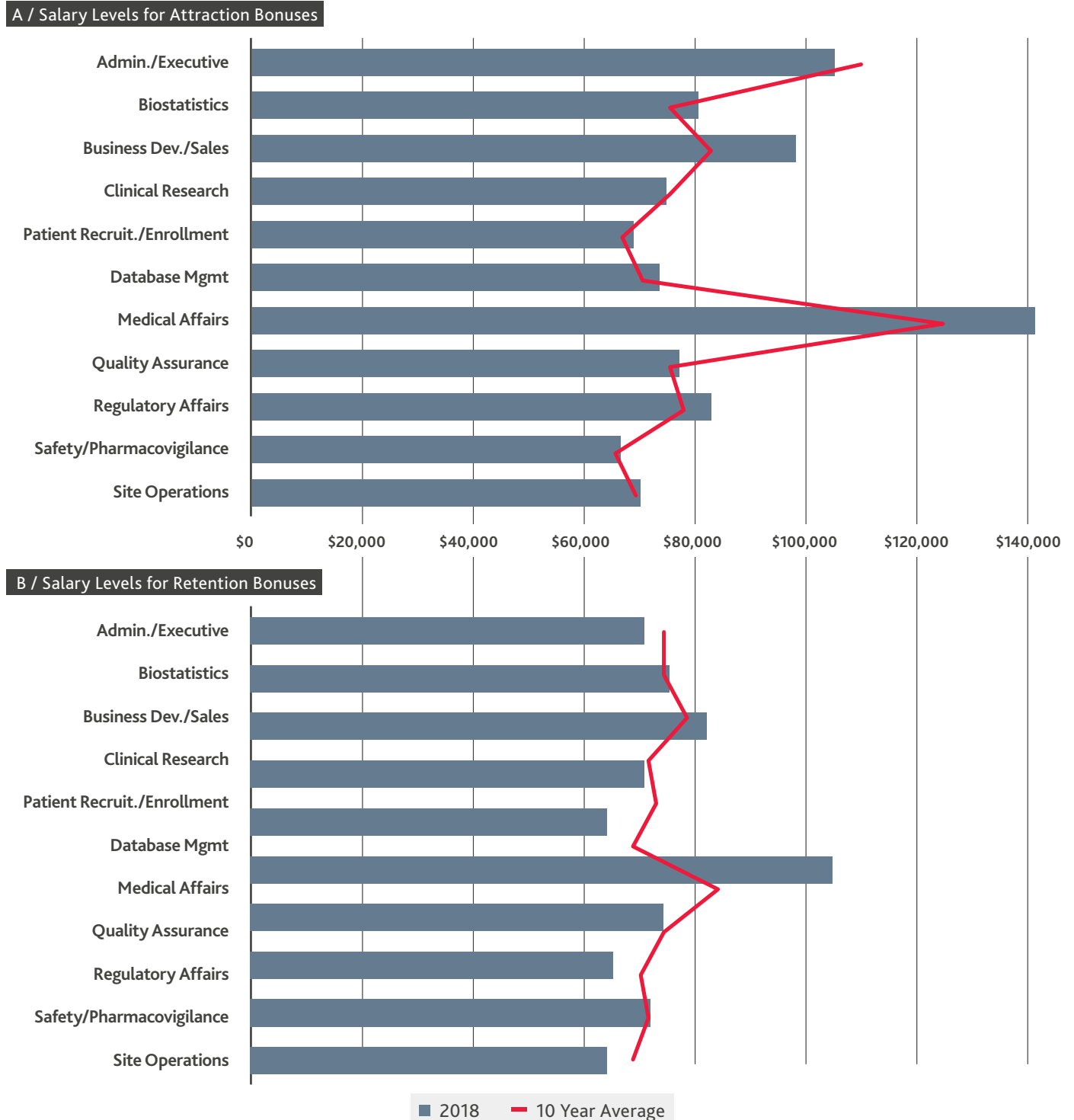
FIGURE 28
ELIGIBILITY FOR BONUSES: ATTRACTION AND RETENTION



For clinical research:

- ▶ The lowest salary for which an attraction bonus was offered is only slightly higher than the lowest salary for which a retention bonus was offered.
- ▶ Minimum salary levels have stayed consistent over the last 10 years (Figure 29, a, b).

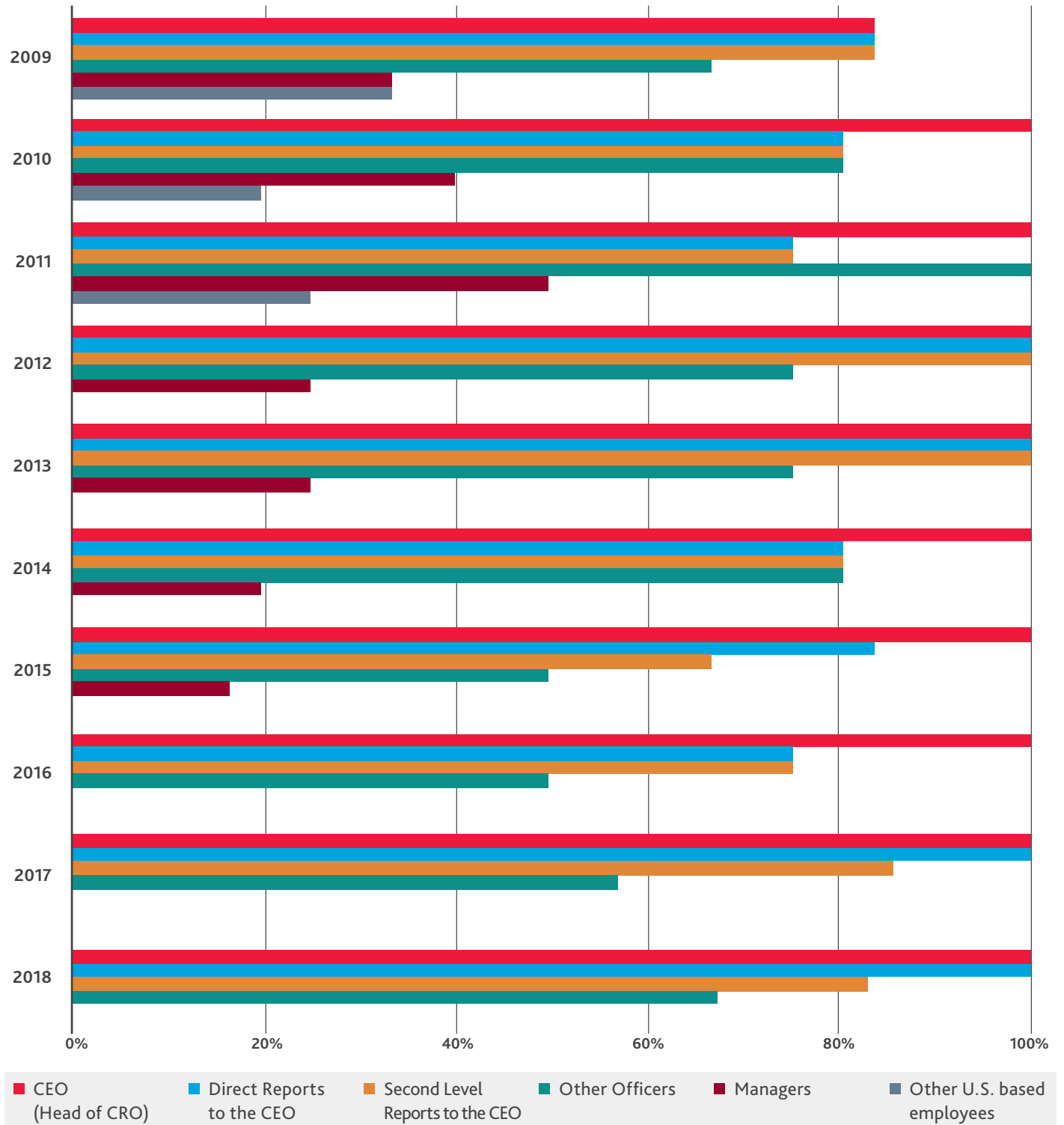
FIGURE 29
SALARY LEVELS RELATED TO ATTRACTION AND RETENTION BONUSES



DEFERRED COMPENSATION

Eligibility for deferred compensation has been in decline for lower level positions over the last 10 years (Figure 30).

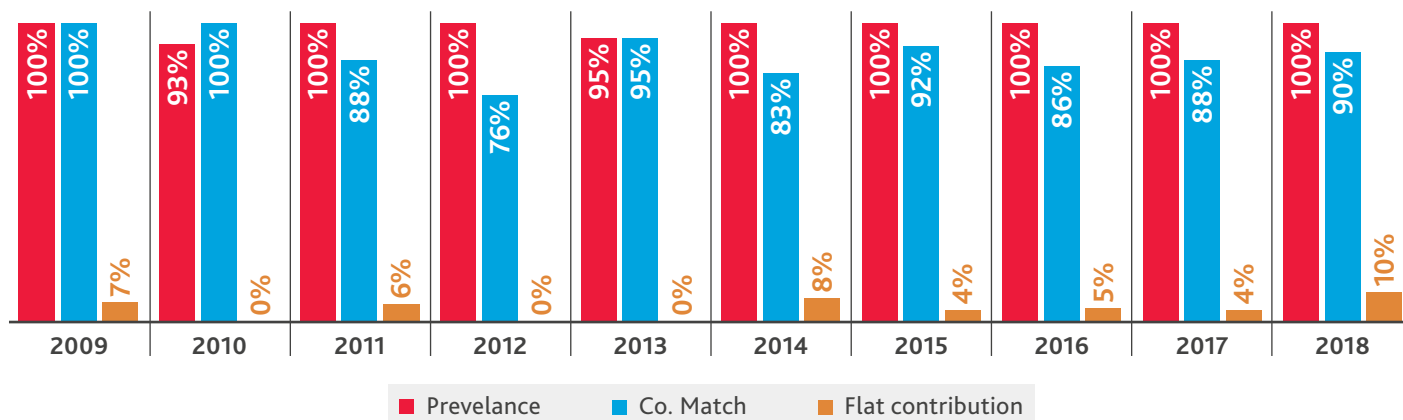
FIGURE 30
DEFERRED COMPENSATION ELIGIBILITY BY POSITION



DEFINED CONTRIBUTION PLANS

The prevalence of defined contribution plans was consistent over the last 10 years, with nearly 100 percent of participants offering plans and over 80 percent offering a matching contribution (Figure 31). Only a few companies offered a flat contribution.

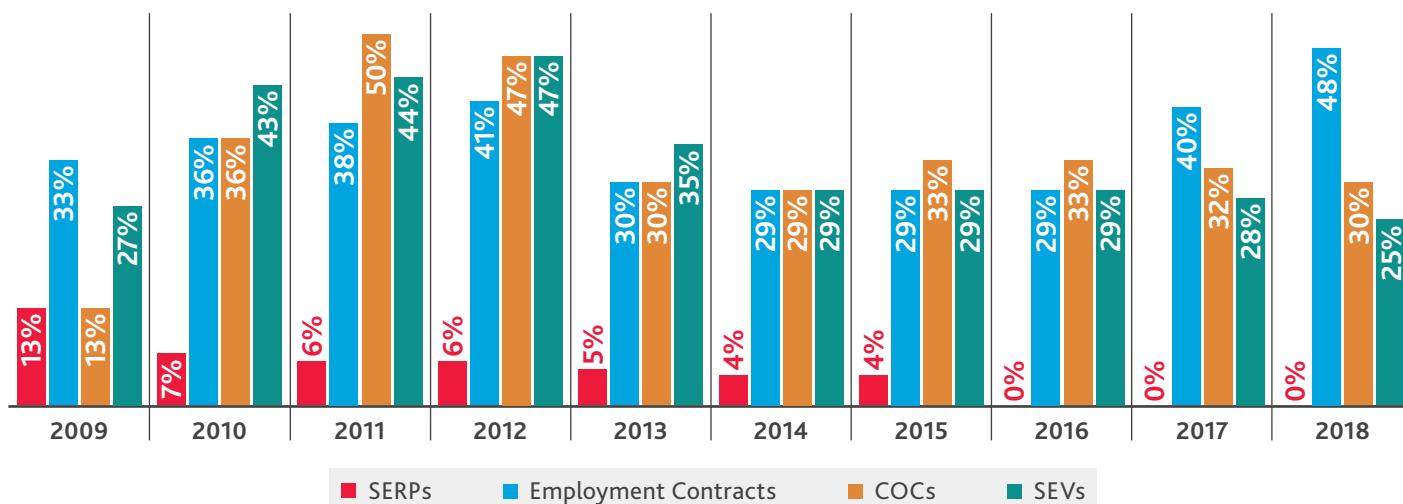
FIGURE 31
DEFINED CONTRIBUTION PLANS



SERPS, EMPLOYMENT CONTRACTS, CHANGE OF CONTROL, AND SEVERANCE AGREEMENTS

Supplemental executive retirement plans (SERPs) have been phased out in most CROs (Figure 32). While employment contracts, change of control agreements (COCs), and severance agreements (SEVs) experienced growth between 2009 and 2012, the use of COC and SEVs seems to have leveled off with a recent rise in employment contracts.

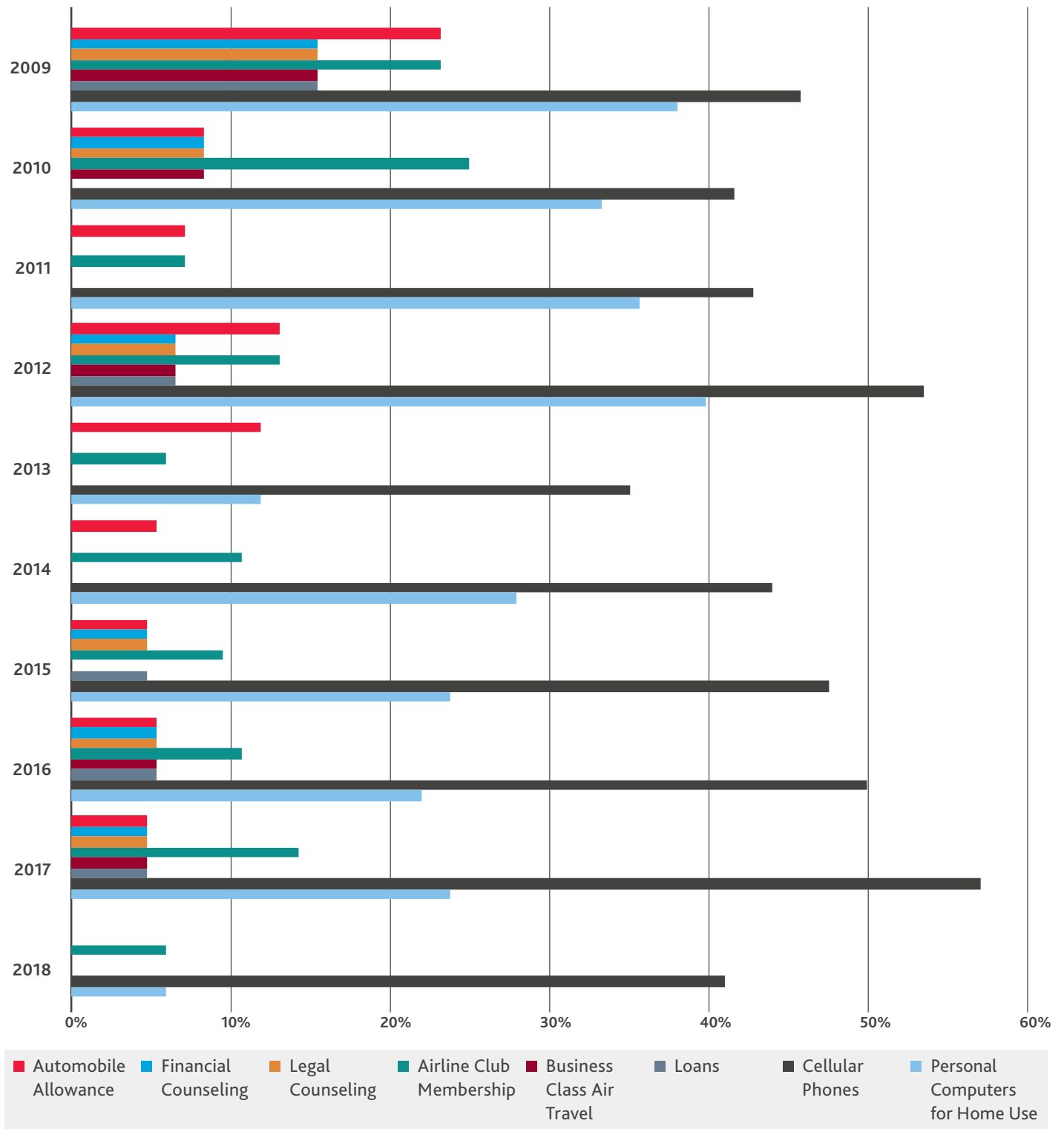
FIGURE 32
SERPS, EMPLOYMENT CONTRACTS, CHANGE OF CONTROL, AND SEVERANCE AGREEMENTS



PERQUISITES

Of the eight most consistently reported perquisites, only cellular phones and personal computers for home use have remained active through the 10-year period of this survey; and their use has recently declined (Figure 33).

FIGURE 33
PERQUISITES



A Way Forward

As a trusted partner to line leadership in the CRO industry, HR faces the important task of developing programs to attract and retain the talent necessary for conducting clinical trials for drugs and devices that may save lives.

Tackling the issue of turnover and compensation has challenged HR professionals at CROs for years...even decades. As one HR professional expressed, the question is “...*how to retain folks in an unconnected, disengaged, work-independently environment.*”

Turnover for CRAs remains high and compensation programs have undergone little innovation. So, how will the industry address these issues?

First and foremost, companies need to define the problem, including determining:

- ▶ Cost associated with turnover
 - According to our *CRO Turnover Hot Topic Survey* conducted in 2016, only one CRO had calculated the cost of turnover
- ▶ An ideal level of turnover – focus on fixing undesirable turnover
- ▶ Resources available to solve the problem

Secondly, look to other industries for ideas and consider creative solutions, for instance:

- ▶ Be proactive rather than reactive; one solution could be to offer retention bonuses instead of new hire bonuses.
- ▶ Define accelerated time frames for raises and training opportunities. Take a page from the healthcare industry; tenure is often a factor in the raises that nurses receive.
- ▶ Link retention initiatives to performance hurdles, such as linking new-hire and retention bonuses to a key project milestone or other benchmark.
- ▶ Define clear career paths that include training and cross-training curricula.
- ▶ Identify trendy perks with a business sense implementation, such as paying off student debt over time, which may appeal to millennials.

Finally, ask yourself, can we get more out of the standard compensation initiatives, such as annual incentives, long-term incentives, benefits and perquisites? Based on the years of data researched, there is little evidence that companies are making any significant changes.

About the Annual Survey

The annual *CRO Industry Global Compensation and Turnover Survey* collects compensation and turnover data for 217 benchmark positions in the U.S. and 55 countries outside of the U.S. (O.U.S.). The *2018/2019 Trends Report* is based on the last 10 years of data from the annual survey, which gathered responses from 48 participating CRO organizations.

The purpose of the annual survey is to provide participants with comprehensive data covering:

- ▶ Compensation levels, including:
 - Base salaries
 - Annual and long-term incentives
 - Early-stage vs. late-stage pay levels
 - Geographically based pay levels
- ▶ Turnover rates—both domestic and global
- ▶ Annual incentive (AI) plan design and prevalence
- ▶ Long-term incentive (LTI) plan design and prevalence
- ▶ Benefit plan design and prevalence
- ▶ Plan design and prevalence of other compensation arrangements, such as:
 - Perquisites
 - Deferred compensation
 - Employment contracts
- ▶ Allowances, time off, and additional months' pay (for countries outside of the U.S.)

In addition, we conduct an annual *CRO Global Salary Planning Survey*, which is published in October, and periodically publish hot topic surveys.



SURVEY OVERVIEW

- ▶ Most recent publication date: September 2018
- ▶ Number of CROs in 2018 survey: 24
- ▶ Number of positions covered: 217
 - Job descriptions reflect the unique variances among CROs (pharmaceutical companies are not eligible to participate)
- ▶ Countries covered: U.S. and 55 countries O.U.S.
- ▶ Pay elements included:
 - Base pay
 - Commissions / sales bonuses for business development roles
 - Corporate incentives
 - Actual and target annual incentives
 - Long-term incentive levels
 - Total direct compensation (salary, AIs, and LTIs)
 - Additional months of pay and allowances for countries O.U.S.
- ▶ Regional pay differences included:
 - All U.S. areas combined
 - Northeast
 - Southeast
 - Midwest
 - North Central
 - Southwest
 - Mountain
 - Pacific
- Select Metropolitan Statistical Areas (MSA):
 - Metro California
 - North Carolina
 - Chicago-Naperville-Elgin, IL-IN-WI
 - Atlanta-Sandy Springs-Roswell, GA
 - Boston-Cambridge-Newton, MA
 - Southern CT; NY; NJ; Philadelphia, PA; DE
- ▶ Early-stage vs. late-stage pay levels
- ▶ Detailed turnover data:
 - In the U.S. survey, U.S., O.U.S. and global turnover data was collected covering four organizational areas - biostatistics, clinical monitoring, project management, and database management
 - In the O.U.S. survey, turnover is reported by country
- ▶ Extensive coverage of CRO compensation, plan design, benefits, and perquisites. Specifically:
 - AI plan design and prevalence
 - LTI plan design and prevalence
 - Benefit plan design and prevalence
 - Perquisite prevalence
 - Prevalence of other compensation arrangements, such as deferred compensation, employment contracts, change-in-control, and severance agreements
 - Special analyses of pay and incentive practices for business developers



SURVEY REPORT

The annual *CRO Industry Global Compensation & Turnover Survey* contains two modules:

1. A U.S. survey that focuses on pay levels, policies and practices, and turnover in the U.S. only.
2. A global module that focuses on pay, benefits, allowances, and turnover for countries O.U.S.

The survey reports (formatted for printing) are presented in an Excel workbook. Included in the report workbook are position descriptions, policy and practice data, special analyses, summary compensation worksheets (Table 5), and other key information.

TABLE 5
EXAMPLE OUTPUTS FOR PROFESSIONAL LEVEL III PROGRAMMERS (BIOSTATISTICS)

Geo Area Description	Base Salary – \$						AI Eligibility		Annual Incentive – Actual \$			
	# of Firms	# of Incumbents	75th %ile	Average	50th %ile	25th %ile	# of Incumbents Eligible	% Eligible Received	75th %ile	Average	50th %ile	25th %ile
All U.S Areas Combined	13	535	106,491	102,520	103,700	98,288	58%	92%	7,349	5,515	4,893	2,766
Northeast	9	150	107,164	103,196	105,123	98,581	52%	95%	8,299	5,561	5,616	2,767
Southern	8	198	106,637	104,044	105,715	99,258	59%	91%	10,204	6,240	4,752	3,183
Midwestern	7	48	105,346	101,531	102,808	100,000	60%	93%	7,880	4,866	5,816	1,378
North Central	7	50	111,435	109,315	111,405	104,906	76%	87%	7,562	4,494	3,597	2,324

Within the survey results report, turnover data are provided for the U.S., O.U.S., globally and by country (by country statistics are reported in the O.U.S. survey report). Below is a sample of what the U.S. survey results provide (Table 6).

In addition to biostatistics, turnover data are collected and reported for clinical monitoring, project management, and database management.

TABLE 6
EXAMPLE OF TURNOVER DATA REPORTED

Region	# Resp.	Organizational Area					
		All Job Families Combined			Biostatistics		
		Overall	Voluntary	Involuntary	Overall	Voluntary	Involuntary
Global (All Countries)	# Resp.	15	15	15	11	11	11
	Avg.	19.4%	14.6%	4.7%	17.9%	15.3%	2.6%
	25th P	14.9%	11.9%	3.1%	9.3%	7.7%	0.4%
	75th P	24.1%	17.6%	5.8%	26.0%	21.2%	3.9%

Note: in addition to Global data, breakouts for the U.S. and outside the U.S. are also reported in the U.S. survey.

JOBS COVERED BY THE SURVEY

The positions studied in this survey are organized by job family and by organizational level. For senior level positions, span of control is also defined. To facilitate consistency in job matching, the organizational level titles are standardized and represent a similar level across all job families.

Organizational Levels

- ▶ Executive
- ▶ Top / Sr. VP / Executive VP
- ▶ Vice President
- ▶ Sr. Director / Director
- ▶ Associate Director / Sr. Manager
- ▶ Manager
- ▶ Lead or Specialist
- ▶ Professional Level III
- ▶ Professional Level II
- ▶ Professional Level I
- ▶ Senior Assistant
- ▶ Assistant

Span of Control

Table 7 shows the span of control areas of activity by level.

TABLE 7
SPAN OF CONTROL BY LEVEL

Organizational Level	Global	Multiple Countries or Region	Single Country
Executive	X	X	X
Top/SVP/EVP	X	X	X
Vice President		X	X
Other Levels			X

Job Families

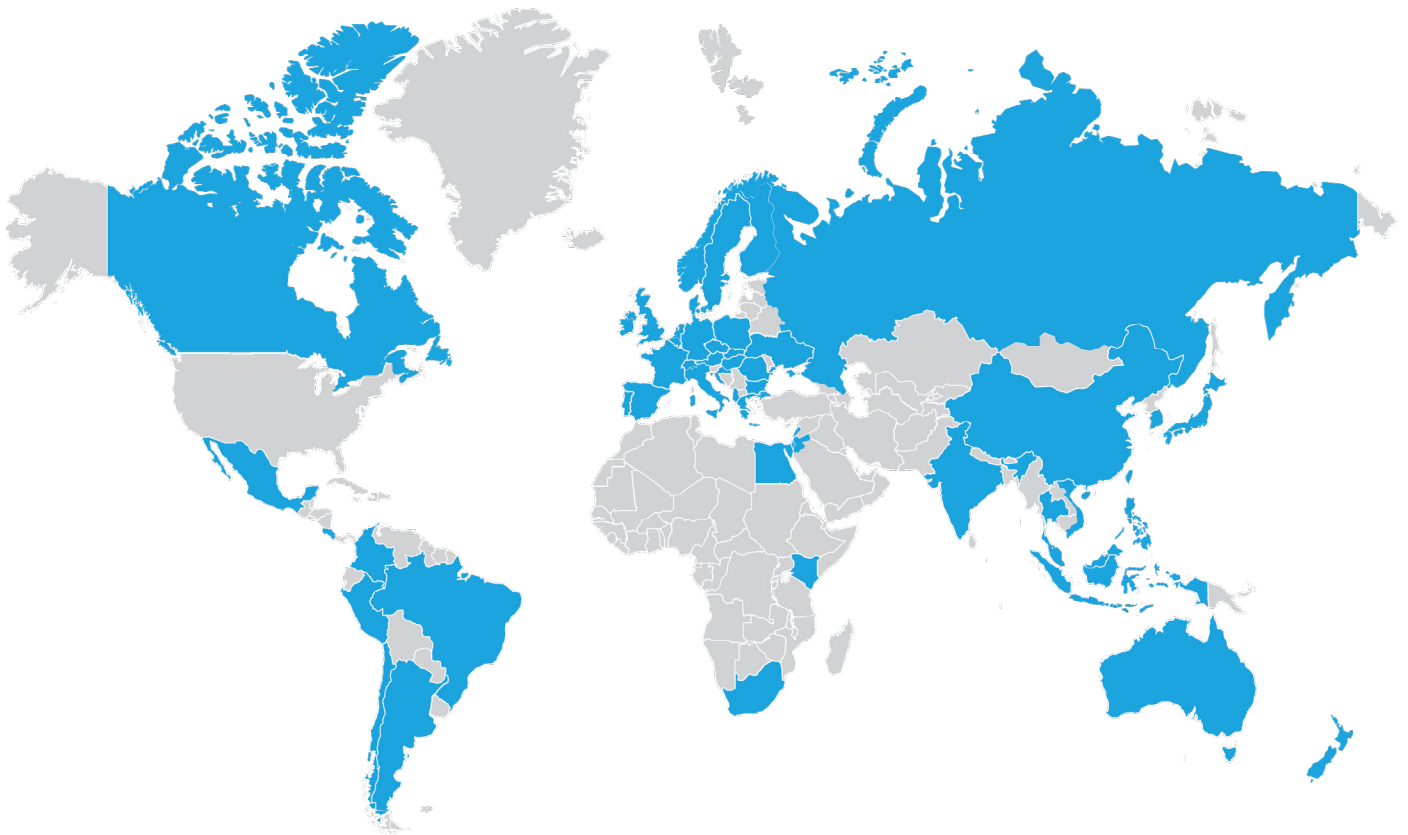
Survey job families cover the major offerings of CROs. Each job family is described in detail in the survey report.

- ▶ Executive
- ▶ Biostatistics
- ▶ Biostatistics (Programming)
- ▶ Business Development (Sales)
- ▶ Business Development (Strategic Account Management)
- ▶ Business Development (Contract Management)
- ▶ Business Development (Proposal Writing)
- ▶ Business Development (Project Budget Analysis)
- ▶ Clinical Research
- ▶ Clinical Research (Clinical Monitoring)
- ▶ Clinical Research (Project Management)
- ▶ Clinical Research (In-House Clinical Monitoring)
- ▶ Database Management
- ▶ Clinical / Medical Coding
- ▶ Medical Affairs (Pharmacovigilance, QA, and Regulatory)
- ▶ Medical Affairs
- ▶ Medical Writing
- ▶ Pathology
- ▶ Patient Recruitment / Enrollment
- ▶ Quality Assurance (Clinical)
- ▶ Regulatory
- ▶ Safety / Pharmacovigilance
- ▶ Site Start-Up
- ▶ Site Operations
- ▶ Nursing
- ▶ Technicians
- ▶ Site Operations (Study Coordinators)
- ▶ Site / Study Contract Management
- ▶ Clinical Pharmacy
- ▶ Toxicology

COUNTRIES COVERED IN THE SURVEY

In addition to data obtained for U.S. CROs, the survey covers compensation levels and turnover data from CROs in 55 countries.

- ▶ Argentina
- ▶ Australia
- ▶ Austria
- ▶ Belgium
- ▶ Brazil
- ▶ Bulgaria
- ▶ Canada
- ▶ Chile
- ▶ China
- ▶ Colombia
- ▶ Costa Rica
- ▶ Croatia
- ▶ Czech Republic
- ▶ Denmark
- ▶ Egypt
- ▶ Finland
- ▶ France
- ▶ Germany
- ▶ Greece
- ▶ Hong Kong (China)
- ▶ Hungary
- ▶ India
- ▶ Indonesia
- ▶ Ireland
- ▶ Israel
- ▶ Italy
- ▶ Japan
- ▶ Jordan
- ▶ Kenya
- ▶ Lebanon
- ▶ Malaysia
- ▶ Mexico
- ▶ Netherlands
- ▶ New Zealand
- ▶ Norway
- ▶ Peru
- ▶ Philippines
- ▶ Poland
- ▶ Portugal
- ▶ Romania
- ▶ Russia
- ▶ Serbia
- ▶ Singapore
- ▶ Slovakia
- ▶ South Africa
- ▶ South Korea
- ▶ Spain
- ▶ Sweden
- ▶ Switzerland
- ▶ Taiwan
- ▶ Thailand
- ▶ Turkey
- ▶ Ukraine
- ▶ United Kingdom
- ▶ Vietnam



2018 PARTICIPANT PROFILE

In 2018, 24 companies participated in the survey overall; 21 participated in the U.S. survey and 20 participated in the O.U.S. survey. Companies ranged in size and scope from tens of thousands of employees across the globe to niche organizations with a few hundred employees (Table 8). The common thread among these organizations was that they compete from the same pool of talent.

TABLE 8
PROFILE OF PARTICIPATING COMPANIES

Stats	2017 Global		2017 United States				
	CRO Revenues	CRO Full Time Employees	CRO Revenues	CRO Full Time Employees	CRO Exempt Employees	CRO Non-Exempt Employees	CRO Contract Employees
n	16	18	16	21	20	19	12
%	76%	86%	76%	100%	95%	90%	57%
25th	\$204,675,000	945	\$75,750,000	364	320	64	69
50th	\$528,017,500	2,808	\$290,650,000	1,036	1,013	267	101
Average	\$1,869,138,125	9,464	\$650,210,313	3,158	2,630	825	186
75th	\$2,335,375,000	14,997	\$866,150,000	4,349	3,519	1,000	143



Survey Definitions

Clinical Research Associates (CRA): The CRA performs and coordinates all aspects of the clinical monitoring process in accordance with Good Clinical Practice (GCPs) and global standard operating procedures (SOPs) to assess the safety and efficacy of investigational products and/or medical devices.

- ▶ Conducts site visits to determine protocol and regulatory compliance, and prepares required documentation.
- ▶ Represents the company in the global medical research community and develops collaborative relationships with investigative sites and client company personnel.
- ▶ Oversees execution of contracts and the progress of clinical projects.
- ▶ Accountable and responsible for quality of clinical work.
- ▶ Responsible for working with project managers to ensure quality, cost effectiveness, and timeliness of clinical trials.
- ▶ May act as a liaison with other departments to revise/create, implement and monitor SOPs.
- ▶ May ensure that professional activities of the department meet Federal Regulations (Title 21 CFR) and FDA guidelines.
- ▶ May coordinate investigator meetings, interact with investigators, oversee project order changes, update study guidelines, and complete quality control reports.
- ▶ May track and approve clinical trial budgets, investigator payments, and coordination of studies.

STATISTICAL DEFINITIONS

Average: The sum of the reported data is divided by the number of companies reporting. Each company's data counts once in calculating the average (provided only when there are four or more data points).

Percentiles: Each company's data counts once in calculating percentiles. The data is then arrayed from high to low.

The 25th percentile, or first quartile of the data, is the value in an array below which lies 25 percent of the sample and above which lies 75 percent of the sample (provided only when there are 6 or more data points/companies).

Base Salary: Actual or average base salary as of March 1.

Annual Incentive (AI): The incentive earned based on performance over one year. Statistics are calculated based on incumbents that received an annual incentive.

Total Cash Compensation (TCC): Base salary plus annual incentive.

Long-Term Incentives (LTI): The projected value of the units, shares, or target level of an incentive that is based on more than one year of performance. (Does not include profit sharing or other plans that are designed as retirement vehicles.) All plans are valued to predict a target level - a description of the valuation methodology can be found below. Statistics are calculated based on incumbents that actually received a long-term incentive grant/award.

Total Direct Compensation (TDC): Total cash compensation + the projected value of the long-term incentives.

The 50th percentile, or median, is the value in an array below which lies 50 percent of the sample and above which lies 50 percent of the sample (provided only when there are 4 or more data points/companies).

The 75th percentile, or third quartile of the data, is the value in an array below which lies 75 percent of the sample and above which lies 25 percent of the sample (provided only when there are 6 or more data points/companies).

CLINICAL RESEARCH STAGES

Early Stage: Preclinical Research and Phase I

Preclinical research: Safety testing of a drug conducted in vitro (in the test tube or laboratory) and in vivo (in animals), which must occur before a drug can be tested on humans in preclinical studies; animal studies that support Phase I safety and tolerance studies and must comply with Good Laboratory Practice (GLP). Note: Data about a drug's activities and effects in animals help establish boundaries for safe use of the drug in subsequent human testing (clinical studies or trials).

Phase I: The initial introduction of an investigational new drug into humans. The primary purpose of Phase I is to test the safety of the drug in question. The drug is tested on 30 to 100 healthy volunteers and must be deemed safe before its effectiveness can be tested in patients who have the disease. Phase I studies are typically closely monitored and may be conducted in patients or normal volunteer subjects. These studies are designed to determine the metabolism and pharmacologic actions of the drug in humans, the side effects associated with increasing doses, and, if possible, to gain early evidence on effectiveness. During Phase I, sufficient information about the drug's pharmacokinetics and pharmacological effects should be obtained to permit the design of well-controlled, scientifically valid, Phase II studies.

Late stage: Phase II through Phase V

Phase II: Testing (using controlled clinical studies) to determine whether the drug shows some efficacy against the disease, learn of possible side-effects, and determine the drug's most promising dose and dosing regimen. Phase II studies are typically well controlled, closely monitored, and conducted in a relatively small number of patients (volunteer research participants who have the disease), usually involving no more than several hundred subjects.

Phase III: The third and last round of testing before application for marketing of a drug. The new drug is tested on many affected patients – an average of 3,000, but up to 10,000 for some drugs – to establish the safety and effectiveness of the drug in a large and varied population. These studies usually compare the new drug with standard therapy for the relevant disease. Studies are expanded controlled and uncontrolled trials. They are intended to gather the additional information about effectiveness and safety that is needed to confirm efficacy and evaluate the overall benefit-risk relationship of the drug and to provide an adequate basis for physician labeling (provide the information included in the drug's package insert and labeling).

Phase III-b: A subcategory of Phase III trials done near the time of approval to elicit additional findings. Dossier review may continue while associated Phase III-b trials are conducted. These trials may be required as a condition of regulatory authority approval.

Phase IV: Post-marketing. After a drug has been approved for marketing by the FDA, Phase IV studies may be conducted to compare the drug to a competitor's product, explore additional patient populations, or refine the safety profile of the drug (delineate additional information about the drug's risks, benefits, and optimal use that may be requested by regulatory authorities in conjunction with marketing approval). These studies could include, but would not be limited to, studying different doses or schedules of administration than were used in Phase II studies, use of the drug in other patient populations or other stages of the disease, or use of the drug over a longer period of time.

Phase V: Post-marketing surveillance is sometimes referred to as Phase V. Also referred to as outcomes research.

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The Global Employer Services practice of BDO consists of an experienced and dedicated team of professionals who are committed to assisting leadership and boards in developing strategies and compensation programs designed to attract, retain, and reward employee teams. Our services include designing and benchmarking compensation programs, including cash- and equity-based programs, board remuneration, compensation committee development, nonqualified and deferred compensation plans, advice on tax and accounting issues, and other related services.

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