# DesignIntelligence® Quarterly

Q2 2018

# DesignIntelligence™ Quarterly



*DesignIntelligence Quarterly* is a publication of DesignIntelligence LLC
which is comprised of the Design Futures Council, DI Media and DI Research.

ISSN 1941–7306

# Contents

VOLUME 24, SECOND QUARTER, 2018

## PERSPECTIVES



## GLOBAL INSIGHTS



## 2018 COMPENSATION AND BENEFITS SURVEY

# From the Management and Editors

Though firms face tumult from many directions such as technology, changing roles and relationships in design and delivery, and the economics of real estate, no challenge is so important or vexing as talent.

As economic activity strengthens and backlogs fill, finding top talent is an increasing challenge for professional practices. In such a market, professionals have options, and firms find themselves struggling not only to attract top talent but to retain them once found.

Savvy leaders understand that compensation is not the whole picture, and that their people are inspired to work by a complex mix of intrinsic motivations and extrinsic factors such as culture, community and a sense of purpose. However, a well-founded compensation strategy can be a critical factor of success in a hyper-competitive talent market; and the data in this edition provides essential information for benchmarking.

Even more detailed information can be found in a new, separate report from DI Research that will be available in mid-August. Stay tuned for more information.

A note on our new format: readers will notice that this edition of the *DesignIntelligence Quarterly* follows a larger, square format with a lower number of graphs and charts per page. The new format allows for a clearer presentation of data in a digital format, and allows for an easier reading experience. As always, we will continue to innovate in order to improve the user experience with DI Media and help our readers run more successful organizations.

Peritus PARTNERS

# Helping ensure the digital health of your firm

Peritus Partners (pronounced pe-ree-toos) is Latin for expert. Peritus Partners is a team of experts focused on the three technology challenges most faced by A/E/C firms:

**Securing the cyber assets of the firm**

**Strategically posturing the data generated in and into the firm**

**Optimizing the information technology operations to ensure holistic care and management**

FOR MORE INFORMATION

www.perituspartners.net
833-PERITUS (737-4887)

# BUILDING A BETTER BUSINESS

# Leadership Behaviors–Authentic or Pretense? Part I

This is the first in a series of articles on leadership behaviors.

DAVE GILMORE

David Augsburger wrote a book in the 1970s titled *Caring Enough to Confront* which developed the theme of interpersonal confrontation as being healthy for community and relationship. Yet, when applied to business, the idea of honest, caring confrontation seems fraught with trouble and risk. Confrontation in the workplace can be judged as promoting or allowing a hostile workplace, which is prohibited by labor laws. Worse yet, the political cost of confrontation can possibly yield far more severe penalties to a person's professional career opportunities. As a result, we have, by and large, become a community of passive-aggressive, cloak and dagger players amid the swirl of ineffective professional dysfunction.

Why can't we speak the truth? What restrains an honest calling-out of wrong or poor professional behavior? Are we so afraid of possible blow-back that we compromise our own core sense of right and wrong? We would rather "leak" a story about another person in an effort to expose him or her rather than conduct a personal one-on-one to address the issue. This is the *modus operandi* of politics. Leak a smear, launch some subterfuge and allow the press to pull the trigger that assassinates a pundit's character, but by no means risk honest face-to-face confrontation that might ricochet and strike you! The whole idea of caring is removed from confrontation.

The line of Pretenders in the role of leadership is longer than one can count. The Pretender shirks the role of Caring Confronter as either grossly inconvenient or politically untenable. The idea of actually leading and developing their organization, of which caring confrontation plays a key role, is foreign to the Pretender. In their context, everything is judged viable or not based on them. "How will this promote or diminish me?" "Who are the potential enemies I would seed if I risk caring enough to confront?" "I'm not paid to hold people's hands! Do or die is how I made it, so they should follow the same principle." The stewardship of mentoring, teaching and coming alongside someone in a supportive way is wholly lost on the Pretender. It's simply a waste of time.

The Authentic Leader is marked by their legacy. The litmus test of truly effective leadership is evidenced when the Authentic Leader transitions and there is an audience of new "authentics" to whom the baton passes. But this is only possible through the painstaking, time consuming and inconvenient process of caring confrontation coupled with exemplary action. The perspective of the Authentic vs. the Pretender about the nature of leadership and time is a key differentiator between the two.

The Authentic Leader is best pictured as a herd rider, sometimes out front leading the way, facing risks first. At other times, the Authentic Leader drives the herd from behind with encouragement and confrontation. And other times, the Authentic Leader is in the middle of the herd, bumping elbows and eating dust along with the team. The Authentic Leader sees themselves as an integral part of the organization they're privileged to lead, not set apart from or over it. The Pretender's perspective is quite different. They see their role as over, in-front, in-charge. Rubbing elbows with the rank and file diminishes their personal sense of importance.

And then there's the tyrannical Pretender. You know the type—"It's my way or the highway!" Not usually warm and fuzzy, this flavor of Pretender overwhelms, leaving followers vanquished and unsure about most things other than who's in charge. People do as they're told, the operative word being "do." Personal input and unnecessary thinking are unacceptable.

The tyranny-based Pretender isn't usually a blind fool or foundation-less demagogue but rather, like most of us, someone who keeps doing what has worked before. If management by intimidation works, why change?

The underlying impetus of this Pretender's style is usually uncertainty cloaked in an over-compensated bearing. Uncertainty regarding their own value, relevance and acceptability plagues the tyrannical Pretender. This translates into a form of "professional anger" that can spot the speck in everyone else's eye while avoiding the unsettling confrontation with their own inhibiting obstructions. The anger repels others, keeping the uncertain Pretender safe from having to deal with themselves. Be aware of the falseness of the tyrannical Pretender. It's only a disguise cloaking uncertainty.

"The line of Pretenders in the role of leadership is longer than one can count. ... The Authentic Leader is marked by his or her legacy."

The Authentic Leader possesses a certainty about themselves. They are comfortable with the certainty that they don't know or understand everything. They are certain they need partners to come around them to bear the load of decision making. They are settled about encountering unknowns as long as others are a part of the adventure. Authentics attract rather than repel.

Lest we neglect them, there is an active style I like to call the "Laissez-faire" Pretender. Having coached and mentored senior executives for close to thirty years, I've regularly encountered those whose management style was emphatically *laissez-faire*; hands-off, allowance, let the managers of the various organizational entities do as they please. Their mode of leading is to only react when the proverbial car is going over the cliff. Crisis ensues, and they wake up and show interest in whatever they now sense is important to know. Swayed by the whims of whomever they deem less threatening, they listen to whatever assuages their sense of duty. It is a sad affair altogether. This is not the style tolerated in publicly or corporately owned enterprises; rather, it is more the stuff of private, closely held businesses.

Laissez-faire Pretenders are marked by a distinctive "yawn," but don't be mistaken that such a posture can't react to urgencies. Often such Pretenders react in an extra-tolerant fashion as over-compensation against knee-jerking. They will dumb-down a situation to not appear either overwhelmed or clueless. Frankly, sometimes they simply don't know what to do so they "go out for a cup of coffee," hoping the situation will somehow resolve itself . . . and often it does. When things settle down the Pretender's style is reinforced—that a hands-off posture is the best approach.

The danger of the laissez-faire Pretender is that it literally leaves the company ship with no intentional hand on the rudder. It offers no clear point to sail toward and no framed parameters for how to conduct the voyage. When disaster hits, the laissez-faire Pretender will justifiably blame the loss on the subordinates or employees who chose to take responsibility. When one's hands are off, one's hands are clean. Subordinates beware! Passive leadership doesn't translate into passive acceptance of responsibility. There are far more laissez-faire Pretenders in lead roles today than ever before . . . and they survive simply because they hide beneath the radar, unspottable because they never risk authentic leadership.

The Authentic Leader takes responsibility for their actions and for the actions of those in their organization. Their direction is clear with little doubt about where they are leading. They protect their people rather than toss them under the blame bus. They mentor and encourage and hold their organizations accountable, but they never abandon them in an effort to save their own skin. Turn the last four sentences around and you have the description of the laissez-faire Pretender.

Dave Gilmore is the president & CEO of DesignIntelligence.

# Resilience

Companies in every industry are talking about resilience: how to foster it if they don't have it and how to strengthen it if they do. But why are we hearing more about resilience today—and why does it matter? In a world of unprecedented change, evolving technology and constant disruption, companies must be resilient to survive—and thrive.

JIM KEANE

At Steelcase, where I serve as CEO, we believe awareness and relevance go hand in hand with resilience. We spend a lot of time studying work, workers and the workplace, and employ a global team of sociologists and anthropologists who conduct research about the pain points people are facing in the workplace. This awareness not only informs our next steps strategically, but it makes our customers feel heard and understood. When customers visit, as they do nearly every day, they see us applying those insights to prototypes and see us constantly iterating our space to make it work harder for people. All of these things make us more relevant, and that has allowed us to remain resilient.

In its 105-year history, Steelcase has had to flex that resilience muscle time and again. In fact, we often talk internally about how we're actually a twenty-year-old company reinvented five times. Over and over again, we've had to rethink our focus. We did this during World War II when we made furniture for the war effort, and we've done it several times since then as we've pivoted to expand our product offerings or shift our focus in light of trends and user needs. Staying aware of what our customers want has always helped us remain relevant. But reinvention is no easy feat. And like many industries, those changes are coming faster than ever for us.

When I started in my role, I began to wonder if I could manage the reinvention of our company if the pace continued to accelerate. What would it take to navigate a reinvention cycle of not twenty years, but ten, seven or even five years? The idea was daunting. Was it possible to build a company culture where reinvention would happen organically?

So, I started to dig into these ideas and even took an online class about complexity at the Santa Fe Institute. That's where I learned about a principle called complex adaptive systems. This principle describes the relationships between independent entities that may not be apparent at first, but which affect each other and are connected to the outside environment. When things begin to happen on the outside, we see an emergent characteristic. Complex adaptive systems can be positive or negative, but they all share one thing in common: they're resilient. Let's look at a couple examples.

Bees work together in a very dense ecosystem, and they each have a job to do. They follow simple rules and work independently, yet their interaction with one another results in the construction of a hive—a natural, emergent characteristic. Every day, bees leave the hive, go look for food and observe predators. Then they return to the hive, communicate their findings and adapt if necessary. They might, for example, relocate the hive if they sense danger. Regardless, bees keep coming back, year after year. We get to enjoy their honey while they demonstrate the interconnectedness and intricate nature of their world.

There's also a less enjoyable example. Traffic jams are another emergent behavior that, unfortunately, tend to be quite

resilient. Everyone is trying not to get stuck in traffic jams, but they seem nearly impossible to stop. People stuck on the highway are forced to interact with others when those in front of them begin to slow down and ultimately stop. Some might try to manage the emergent behavior by establishing a long following distance so they can continue to coast without needing to brake suddenly. But invariably, when gaps appear, another driver will cut in and force the stopping and starting to begin again. The interaction between individuals fuels the traffic jam, much in the same way the interaction between bees builds a hive. One is positive, one is negative, but both are resilient.

So how does this relate to our companies?

Many would argue that today's organizations are highly engineered machines. Places like Steelcase and Microsoft and many others have processes in place so that, once quality measures and Lean are in place, for example, we can expect certain outcomes. We want our companies to be linear and predictable. We want to know that if we build structures for A and B, we'll get C and D in return. And while those outcomes are sometimes predictable and true, what we're learning is that kind of approach just isn't very resilient.

I like to use the analogy of a farm and a prairie. A lot of farms started as prairies and were later turned into farms after people realized you can't easily feed a family on a prairie. Farms are more productive and efficient. No matter what you're growing, odds are better that a farm will get it done at a certain density and a certain cost. But prairies are much more resilient. They're much more diverse. And the species that live on the prairie have learned over time how to survive in that particular climate with that particular amount of sunlight and water. If there's a periodic drought or infestation, the prairie is much more likely to rebound than the farm.

Over time, we've gotten better at farming. We use pesticides and fertilizers and install complicated irrigation systems to grow our food. We've also decided rows of plants are better than other methods, so we've developed machines designed to plant acres of them perfectly. We don't stray from that model on farms and essentially, we force the land to produce in ways and at levels that are unnatural. None of this would happen without human intervention.

The question is, are we going about this in the right way? We keep trying to find more ways to squeeze costs, leverage global supply chains and drive quality. But as useful and sometimes necessary as these things are, we must ask whether they're sustainable. In an effort to make our companies more productive, are we also reducing our resilience?

If we're interested in creating great enterprises, we should also care about how resilient the organization is—because *that* will determine how well it could survive a major event. There are disruptive forces everywhere: cyberattacks, start-ups, fundamentally new ways of working, Internet-based technologies. If we can no longer assume every day will be sunny with a predictable amount of rainfall, are over-engineered farms really such a good idea? Should we think differently about our approach?

"We keep trying to find more ways to squeeze costs, leverage global supply chains and drive quality. But as useful and sometimes necessary as these things are, we must ask whether they're sustainable. In an effort to make our companies more productive, are we also reducing our resilience?"

I believe we must. At Steelcase, we began using the metaphor of a garden. Gardens are much more productive than prairies but not as productive as farms. Gardens are also more diverse than farms. But the key here is that a good gardener is involved in their garden. They're down on their hands and knees every day. They get dirty. They notice small changes in how their vegetables are growing and may decide to move a plant blocking sunlight for another—or maybe decide to pull out a plant altogether.

Gardeners are observant. They're far more engaged, far more adaptive and far more reactive than a farmer, because they see what's happening up close. Gardeners may decide to plant beans and strawberries in rows but use a trellis for cucumbers or grapes. They may install cages for their tomatoes or try natural alternatives to pesticides. They prune up close and with exactness. And because their hands are in the dirt, they can sense changes much sooner than a farmer sitting up in a tractor.

Those of us running organizations have to think about getting down from the tractor and spending some time in the garden. That takes humility, and it might mean drastic changes to allow for this level of connectedness. But staying close to what's growing—and what's not—is so important.

About a year after I became CEO, I decided to get down from the tractor by moving our leadership center out of a quiet, fourth floor location down to the main floor crossroads of our Learning and Innovation Center. I knew I couldn't lead effectively without having a pulse on our people, and I couldn't prioritize innovation without being close to the action. This move has meant giving up on some of our privacy as a leadership team. It's busy and it can get noisy. (Luckily, we make solutions for those kinds of problems.)

But the move has also given me countless opportunities to meet and interact with people I didn't know before, because both employees and customers use our space. And guess what happens when impromptu conversations are sprinkled into my day? I listen and I become more *aware*. That awareness helps us take steps to remain relevant. And relevance builds resilience.

Realizing this has profoundly reshaped the way I do my job. I spend less time on the day in, day out running of the operation. We've got lots of principles, rules and processes in place, and we have many people who are good at managing those things. Instead, I spend time listening and being close to the new. I invest my energy on what's emerging—those things for which we have no principles, no rules, no processes.

This is a challenge for us as leaders. If we're not close to the new, we won't feel those subtle shifts in our industry or company culture. Instead, when we are aware, when we're behaving as gardeners in our organizations, we'll know when to take a chance on something, when to give it more resources, when to nurture it or encourage it to grow. And those ideas might be the very beginning of your next reinvention.

Jim Keane is president and CEO of Steelcase Inc.

# TECHNOLOGY

# Robotic Futures in Architecture

Sophia, a social/political robot was first introduced to the world at South by Southwest festival in 2016. A year later, she became the first robot to be granted citizenship by Saudi Arabia.

MAHESH DAAS

Artist Joris Laarman and MX3D couple robotics with a gamut of advanced manufacturing technologies to build "butterflies" out of molten metal and innovative self-building bridges.

Multinational mobility companies and technology startups such as Ford, Tesla, Toyota, Uber and Airbus are investing billions of dollars into autonomous robots, also known as self-driving vehicles and passenger drones that could transport us around cities and around the globe.

There are autonomous bulldozers, excavators and construction vehicles that run themselves … without a human operator.

Researchers at the University of Porto, Portugal, are developing cable-driven spider robots for large-scale construction sites.

North Carolina State University has replaced conventional library stacks with robotic storage and retrieval systems, turning the library into a large, inhabited robot.

All of these technological developments make it clear that we are at the dawn of a new era, one where new life forms of our creation will walk and work among us. They will help to open up unprecedented possibilities, challenge our worldviews, redefine the human condition and, as part of these pervasive transformations, impact architecture. Innovation in robotics is taking place at such a breakneck speed that every day brings new inventions too numerous to track.

Just as computers and computation have become integrated into virtually every discipline, robotics is also being integrated into all fields of knowledge including industrial, space, agricultural, construction, disaster relief, mining, surveillance, security, transportation, medical, domestic and other applications.

Robots are essentially physical, kinetic beings. They have a body, form, size and other physical characteristics. They are embodied in this lifeworld in a very particular way. The three shared characteristics of all robots are sensing their environment, some level of computational intelligence and physical responsiveness. Robots have some type of ability to intelligently operate in the physical world. The *thingness* of robots distinguishes them from virtual agents and unembedded artificial intelligence. Hence, robots are often described under the rubric of embodied intelligence.

Robots, as things, can be found in a variety of places. They can be found in the home, on factory floors, in the sky, in the water, on the road, at the malls, in the hospitals, in outer space, on Mars, in toddlers' play pens, in sports stadiums, in television media and even inside the human body. Robots can be more than consumer products or objects in space. They can be environments such as vehicles, planes, ships and even buildings.

Robotics in an architectural context can be understood through their interactions.

## Interaction Framework: Robot-human-architecture interactions

### A. Architecture

Robot-Architecture:
Robots directly engaging and interacting with buildings or participating in the design and production processes.

### B. People

Robot-Human:
Robots interacting with people in architectural settings, assisting, augmenting and facilitating usability.

### C. Robots

Robot-Robot:
Robots autonomously interacting with other robots in architectural settings. Swarms of self-assembling systems and cellular automata.

### D. All

Robot-Human-Architecture:
Three-way interactions involving robots, people and buildings. Essential frame to consider for robotic buildings.

## The Role of Robotics in Architecture

Unlike automobiles, ships, airplanes and other environments that are made to constantly move, architecture is usually made to resist change. Architecture has been often described as a timeless anchor amid a relentless passage of time. Hence, to speak of robotics in architecture might initially sound like an oxymoron. It is not easy to reconcile agile and dynamic robotic technologies with the static built environment.

Robotics in architecture extends well beyond the design and construction process to engage exploration of many different areas of study:

1. Construction
2. Design process
3. Ethics
4. Interiors and furniture
5. Landscape architecture
6. Manufacturing and production
7. Materials and methods
8. Morphology
9. Mobility, navigation and wayfinding
10. Experience
11. Social and environmental behavior
12. Structural and mechanical systems
13. Translation of architectural knowledge to other fields
14. Urban design

The intersections of robotics and architecture are many and promising. At every stage of architectural design and construction processes, there is a robotic application: pre-design, analysis, data gathering, visualization, documenting existing conditions, conceptual design, schematic design, prototyping, design studies, detail mockups, prefabrication, construction and operation.

Interactions between robots, designers, fabricators, construction crews, users, building operators, first responders, post-occupancy researchers as well as interactions with buildings are foreseeable. There are many research topics and design opportunities that emerge from these multifaceted intersections.

## Process Framework:
## Role of robotics in architecture

### A. Robots for design

Robots used in the design process, to inform the design process, observation and prototyping

### B. Robots for fabrication

Robots used for bespoke or mass-customized manufacturing off-site

### C. Robots for construction

Robots employed in the building construction process working alongside human workers

### D. Robots for operation

Autonomous, teleoperated, or semi-autonomous robots integrated into building operational tasks such as surveillance, maintenance, hazard mitigation, etc.

### Robotic Technologies: Digital Fabrication

Digital fabrication—the use of advanced manufacturing technologies such as CNC mills, 3D printers, laser cutters, waterjet cutters and other digitally-driven making technologies—has been typically framed in servile, instrumentalist, formalist and functionalist terms. Surely, these technologies, together with other advancements in design computation such as BIM and CAM, have transformed how we conceptualize, design, fabricate, assemble and construct large scale architectural artifacts. The technologies themselves have been often described in less romantic terminology than the poetic architectural works that were created by those technologies. In such a context, there is a marked difference between the technologies of making and the artifacts that are made with those technologies. Such a distinction between instrumentality and integration is hard to make with robotic technologies.

In architecture, robotics is often interpreted as digital fabrication 2.0, which turns out to be a limited and limiting perspective that portrays robotics in an instrumental role, something that Heidegger challenged decades ago. There is more to robotics than just digital fabrication and advanced manufacturing as mere means. Robotics appropriates digital fabrication technologies in ways that unveils extraordinary possibilities and experiences. It is important to understand the gamut of phenomena revealed by robotic technologies in order to understand their potential impact on architecture.

### Robotic Buildings

Another vastly under-explored and highly promising area of research is robotic buildings, furniture and interiors. Robotic buildings intentionally integrate robotics for their core functionality, flexibility, aesthetic impact and longevity.

It is true that most buildings, with some exceptions, are designed to provide static spatial configurations within which movements of people and objects could take place. However, architects have dreamed of robotic buildings as famously expressed by Archigram's *Walking City*, Greg Lynn's *Super Aero Robo Spatial Studio*, Pfau Jones' *Tract House* and other similar explorations have been described as kinetic, responsive, dynamic, interactive buildings. We could describe them as pre-robotic, with the potential to become robotic or to be well served by integrating robotic technologies and concepts.

## Robotic Architecture Framework: Buildings become robotic

### A. Robotic surfaces/components

Surfaces such as facades, walls, ceilings, building components become robotic

### B. Robotic systems

Building services and systems become robotic, including electrical, mechanical, lighting, security, public safety and other systems

### C. Robotic structures

Building structure becomes robotic and responsive to major structural parameters such as earthquakes, tornadoes and other major catastrophic or functional considerations

### D. Robotic space

Whole building becomes robotic, including space, volume, acoustics, program, circulation and other major characteristics

The conventional framing of "robotics in architecture" implies a couple of things. First, it implies the knowledge domain of robotics within the field of architecture. Second, it may also imply robots operating inside buildings, separate from the built environment and yet playing a role in changing the functionality of buildings.

There is a disruption of the conventional paradigm underway, one that blurs the distinction between robots and buildings. Work exists that turns buildings into robots for living in—to play off of Le Corbusier's dictum of "Building is a machine for living in," or as I wrote in 2006, "Building is a network for living in." Already, robotic libraries have been gradually replacing large traditional libraries. Newspaper archives, research libraries and even public libraries have begun employing robotic storage, retrieval and access to a variety of materials. Robotic parking garages have also been around, albeit still trying to perfect the mechanisms. Robotic furniture and interiors are also an emerging area for research that spans homes, farms, hospitals, and offices.

How buildings and their underlying order might become more dynamic, parametric, intelligent, autonomous and sentient is a stimulating and anxiety-provoking prospect.

When the human body, AI and the robotic technologies have already begun to fuse, it is not a big leap of faith to imagine a similar fusion between robotics and buildings. The robotic architecture framework helps frame such a fusion and integration. Extending this speculative line of thinking further, perhaps at some point in the future it might be possible to connect humans, robotics and buildings together, giving a new definition for humanistic architecture, cyborgs and robotic architecture.

Excerpted from author's article "Being Thinking Doing Becoming: Framing Robotics in Architecture" in *Toward a Robotic Architecture* edited by Mahesh Daas and Andrew John Wit, San Francisco: AR+D: 12–27.

Dr. Mahesh Daas is dean and ACSA Distinguished Professor, School of Architecture & Design, University of Kansas, Lawrence.

# 8 Mindsets and Skillsets to Cultivate for the Future of Design

Earlier this year Randy Deutsch gave a talk at the DFC Leadership Summit on Design Innovation & Technology 2018 in La Jolla, CA, "Toward an Augmented Architect: Learning from Machine Learning, Embracing and Capitalizing on AI." The heart of the talk, on which this essay is based, were recommendations to firm leaders for making the most of our industry's technology transformation.

RANDY DEUTSCH

Designing in a Moleskine or on yellow trace for many is still *de rigueur*. For others, designing has changed due to the introduction of new computational tools that leverage data, algorithms, and the cloud. But the technology is not what's driving this change; it is risk. On project teams that are taking a design from a state of uncertainty and ambiguity to one of certainty and clarity, architects may be comfortable with ambiguity. However, owners still require certainty.

## Design: data-driven, generative, and predictive

To address the need for certainty, many of the activities designers do today are being transformed into data, and many tasks of the design process are being automated. With data-driven design, we design by manipulating data, not form. With generative design, we design by leveraging algorithms and parametric modeling within predetermined constraints. With predictive design tools—like Autofill—we design anticipating our next move.

Today a growing vocal minority—superusers—speak of scripts and algorithms as integral to their design process. They use visual programming tools to automate and complete work in hours that might otherwise take days. They create cloud-enabled data visualizations as a real-time by-product of the design act, where data not only informs their intuition, but improves it. They design with adaptive parametric smart elements that use rules to govern what the user can do, so when something moves or changes everything moves or changes with it. Indeed, much of our design has already been outsourced—not overseas, or even to people, but to software. Think AI is too long of a time horizon to reasonably address? Just as we can take photographs with apps that will correct and edit them before we've even taken them, AI-enabled design can be informed and improved in predesign by predictive post-occupancy evaluations that take place before the project is even designed.

## Eight recommendations

AI is fast approaching—coming to your home, car, and office—and it's coming too fast to fight off or control. Why wait for a fire you cannot put out when there are things you can be doing today to prepare for the inevitable conflagration of AI? Think of these recommendations as your personal fire truck protecting your firm from, and preparing you and your career for, the impending AI inferno.

**1. Be concerned and vigilant but don't be fearful.**

The concern isn't that "the robots will take over." Warranted or not, the concern for emerging professionals in particular is that they want to develop entry-level skills. They're afraid that, by AI doing this "drudgery work" for them, the

de-skilling of practice that frees them "to work on design and be creative" instead keeps them from developing into well-rounded professionals in their work experience flow. We owe it to ourselves, to our clients, and especially those we serve, to be aware and mindful, but not anxious, panicked, or alarmed. As leaders, we need to talk about AI not in terms of survival, but instead, how we're going to leverage, exploit, embrace, and capitalize on the changes.

**2. Design buildings but also processes and algorithms.**

UNStudio's Ben van Berkel predicts, "In the future all architecture practices will become arch tech firms, but for now we have to pave the way to make this expansion of our knowledge and expertise possible." Professional design service firms today must also be software practices and technology firms, creating apps and other digital tools—even if it's not in their DNA. One reason, beyond increased productivity, is employee retention. A/E/C is undergoing a brain drain, where architecture firms compete for the best people not only with other architecture firms, but also with software developers and startups. In lieu of traditional practice, recent graduates are going into arguably more alluring, lucrative startups and quicker-paced software development companies. How do we keep talented, smart people interested in a field where projects can take 3–6 years or longer to complete?

**3. Redefine optimization.**

We make a mistake when we define optimization as infinite reduction. Over-optimization leads us to over-analysis. Machines, learning or otherwise, are not going to understand the entire context and meaning behind what they're doing. We sell ourselves short when we just focus on analysis. Architects are not going to out-compute computers. One responsibility of firm leaders is to redefine optimization from something that only means reduction to something that enhances what we produce. Leaders can focus on addressing complex, intractable, wicked problems; tapping multiple minds on multidisciplinary teams; creative acts that create meaning; using common sense—which computers seem to ignore when spitting out optimal solutions; looking at qualitative variables, including all criteria, then weigh, combine, and synthesize. Play to your strengths and multiple intelligences; bolster them and leave the quantitative for the quants. If you don't like the decision the machine manufactured, then override it. *Human override* is where you still (for now) have the final say concerning the design. Don't rely on the most efficient outcome; instead, define what is optimal for you and your firm.

**4. Identify opportunities for automation; don't just focus on what cannot be automated.**

Why automate? Automation turns a two- to three-day assignment into a twenty-minute step. Firms need to automate what they repetitively generate manually, then look through their standard delivery processes to see how much more they can automate. Today we can automate the manual calculation parts of design, addressing ergonomic standards and legal code requirements for life safety. So automate, but as Ian Keough, the founder of Dynamo suggests: *Architecture isn't what's left over after everything's been automated.*

**5. Collaborate with technology.**

Mentioning *collaborate with technology* often gets eye-rolls, such as this reply-tweet: "Myself along with hammer and table saw built a house. I also need to give a shoutout to lumber, we nailed it." That said, the best chess player in the world recently was neither a chess master nor a computer, but a couple of teenagers with a laptop. So, how will you prepare your firm to address projects in the future? What skills will be valued in this new era? How can architects stay agile and steer their careers through this time of unprecedented change? It's likely to involve working side-by-side with machines. Leveraging man-machine collaboration—letting machines and architects do what they each do best—will achieve new levels of productivity for both.

**6. Help others transition to AI.**

Leading firms in A/E/C are now redesigning their work processes to be faster and more adaptable. To achieve these gains, automating current work processes and tasks won't be enough.

To increase efficiencies, architects will need to transition to working with AI, which will require us to move beyond linear, sequential, and repeatable processes toward employing adaptive project teams (APT) that pair architects with real-time, data-driven AI systems. Leaders must lay the groundwork, identifying differences between their traditional processes and new thinking, and encourage others—especially those not trained as technologists—to get acquainted with the technology.

"Design will continue to change in this time of interdisciplinary collaboration, when project phases are merging, disciplines are blurring, roles are blending, and tools are converging; when architects are moving into means and methods, builders are providing design services, and design, fabrication, and construction are becoming increasingly indistinguishable."

**7. Augment – not replace – architects.**

Teach machines to think like us? We're still working on teaching *us* to think like us. Besides, machines will think any way they want to. Do we even *want* machines to think like us? Instead, let machines do what they do best. We have hybrid cars and hybrid buildings; now we are starting to look at hybrid individuals, including augmented and virtual architects and operators. Architects are going to become augmented architects in the labor force. Architects who view themselves as mixologists see this as an incredibly creative opportunity to mix, play with, and converge technologies for better results. They see architecture as more than a series of interconnected tasks, and architects as more than the sum of their parts. Don't ask: *Will architects be better off if the machine decides this?* Instead, ask: *Will our clients and users be better off if we decide, or if the machine decides? Will our clients be better off if the machine decides this in conjunction, or collaboration, with an architect?*

**8. Think like machines (and everybody else for that matter).**

It's not just the output of machines that we're benefiting from, it's also the way machines learn and think and adjust on their own. We have a lot to learn from them. Thinking like others on project teams makes you a more effective communicator and empathetic team member. By understanding what is important to others—including machines—we can more effectively design and shape our message.

Design will continue to change in this time of interdisciplinary collaboration, when project phases are merging, disciplines are blurring, roles are blending, and tools are converging; when architects are moving into means and methods, builders are providing design services, and design, fabrication, and construction are becoming increasingly indistinguishable. One can soon imagine design no longer serving as a standalone phase, and design technologists become (once again) just technologists. Becoming augmented architects is our best hope as a profession and industry. As I ask my students: *As the next generation of practitioners with next generation solutions, what role do you want to play?*

Randy Deutsch AIA, LEED AP, has written for DesignIntelligence and has been a speaker at Design Futures Council events. He is the author of three books, most recently, *Convergence: The Redesign of Design* (Architectural Design/AD Smart, 2017). His next book is *Superusers: An Architect's Guide to Technology Transformation* (Taylor & Francis/Routledge, 2019). He is associate director for graduate studies at University of Illinois Urbana-Champaign School of Architecture.

# Where the Rubber Meets the Road

In a typical AIA contract, only 15 percent of the fee is devoted to Schematic Design (SD), the creative front end of a project. That is when the conceptual work gets done and the building takes shape. Basic decisions about the program, siting, massing, structure and exterior materials begin to gel.

SCOTT SIMPSON

By the end of SD, the essence of the design and most of the building's basic cost have already been determined. In the subsequent phases of Design Development (DD) and Construction Documentation (CD), the details are worked out. At that point, the building is well defined, but it still only exists as lines on paper (or bits in cyberspace); it's not real yet.

The magic happens during Construction Administration. That's when the architect's vision is translated into three dimensions by a third party—the contractor. It's not until CA that "architecture" actually takes place. Typically, CA consumes 25 percent of the standard design fee—much more than either SD or DD, but well below the 40 percent normally allocated for CDs. It's also where the mistakes start to show up, so constant attention is needed to make sure that the design intent is faithfully carried out.

In a sense, the architect is only the composer—the person responsible for putting the lines on paper (or the notes on the score). It's up to the contractor (the conductor) and the subcontractors (the musicians) to bring to life what the architect has in mind. It's not until CA that the true value of the architect's services is made manifest. Ironically, this is when the architect has the least control over what's going on.

CA is problematic for many firms. Dimensional errors, coordination issues, substitutions and change orders are common and require ongoing attention. One of the biggest bugaboos is shop drawings, which are created by subcontractors and suppliers, but only reviewed by architects for "consistency with design intent." (That seemingly innocent phrase has spawned many a legal dispute.) Because 75 percent of the fee has already been spent by the time CA begins, there is little, if any, margin of error to recover if things go wrong. That is why CA has ruined the profitability of so many promising projects.

If CA is so critical, why is it so problematic? The answer lies in the process. More often than not, CA is handled by less experienced staff, and is often relegated to recently hired graduates who are just at the beginning of the learning curve. Principals may keep an eye on things from a distance and respond to problems when they arise, but they are generally not regular attendees at weekly job site meetings. Also, CA is often burdened with excess bureaucracy (starting with Requests for Information, or RFIs). Often more time is spent following protocol than actually solving problems. Requests for more time or money, or the prospect of a claim, keep everyone on edge. In CA, "playing defense" is a way of life.

There must be a better way. Actually, there is. The key lies in using technology on the job site to make sure that the responsible parties are fully informed about what's going on so that corrective action can be taken as soon as possible. Unfortunately, the A/E/C industry is well behind the curve when it comes to adopting innovative new ways of doing things, but there are some notable exceptions.

One good example is Suffolk Construction, a national construction management firm with annual sales of $2.9 billion. Suffolk has recently gone live with its new Smart Lab, which is on prominent display just off the main lobby at its corporate headquarters in Boston. The walls of the Smart Lab are lined with a dazzling array of high-definition touch screens, ganged together to produce a collage of large-scale images and information that cover all aspects of a project under construction. The "data wall" can display key performance indicators from all active projects in the company (there are hundreds at any given time). The status of any project can be reviewed in detail on the "huddle wall," from the BIM model to the budget to the schedule to compliance with safety protocols. Video feeds from each construction site can be scanned to check current conditions. There is also a walk-in "BIM Cave" where the building can be simulated in 3-D and 4-D format. Real time project team meetings can be facilitated by Skype, connecting the home office and job site with input from the architects, engineers and consultants as required. This enables problems to be addressed in minutes rather than days or weeks. The technology is managed by a team of data scientists, led by a PhD from MIT, and the whole array resembles Captain Kirk's command bridge on the Starship Enterprise.

The Smart Lab enables much of normal CA process to be done remotely, without the need for steel-toed boots or hard hats. Relevant information is easily accessible at the click of a mouse. When issues arise, the team can respond before questions become problems. It's easy to see how providing remote oversight of the CA process can enhance productivity on the job site. With the prospect of robotic construction techniques becoming ever more real, it's not too much of a leap to imagine CA morphing into a real-life, full-scale video game, one that could be played 24/7.

Automating certain aspects of CA will not only improve outcomes in the field, it should also reduce the percentage of fee necessary to do the job properly. In turn, these fees could be shifted up front to SD, where they will do the most good. Instead of 15 percent for SD and 25 percent for CA, why not the reverse? By allocating the design fees to where the value is actually created, everyone benefits.

The technology that drives the Smart Lab is already commercially available. While it is not inexpensive, it is cost effective, which is to say that the productivity gains outweigh the initial installation and start-up costs. If the entire A/E/C industry were to embrace the concept of technology-assisted CA, it would be a big step in reversing the long-term trend toward declining productivity. Here's one way to think of it: The A/E/C industry accounts for about $1 trillion in GDP in the U.S. each year. If process innovations such as the Smart Lab could generate just five percent in productivity gains, the resulting savings would be $50 billion—more than the total fees paid to architects to design buildings in the first place.

"It's not until Construction Administration that the true value of the architect's services is made manifest."

This is just one example of how innovation is reshaping the ways in which buildings are designed, documented and delivered. The point is that clients are not particularly interested in paying for lines on paper, or even for bits in cyberspace. Plans and specifications in and of themselves are only a means to an end. Standard contract terms that focus primarily on "instruments of service" as the measure of value overlook what clients really want—not pretty pictures, but actual results. They desire high quality design delivered on time and within budget—as promised. However, today's A/E/C industry falls well short of this simple goal, with 30 percent of all projects either coming in late or costing more than originally planned.

If architects are willing to re-think the basic value proposition of design and how it can be best delivered, everyone benefits. CA would be a good place to start innovating. After all, it's where the rubber meets the road.

Scott Simpson is the editor-at-large of DesignIntelligence and a Senior Fellow of the Design Futures Council.

# TALENT

# The Global Talent Challenge: An Interview with Charlotte Sword and Laggi Diamandi of Foster + Partners

With projects and offices across the planet, Foster + Partners is a truly global enterprise that deals with an equally global talent pool. As HR leaders who are intimately involved with attracting, developing, retaining, and transitioning Foster's talent pool, Charlotte Sword (Partner, Head of Human Resources) and Laggi Diamandi (Associate Partner, Learning and Development Manager) have a unique perspective on the global talent picture. DesignIntelligence recently spoke to Charlotte and Laggi about the state of global talent and how the firm is responding to change.



**DesignIntelligence (DI):** One of the most common talent issues firms face is the multi-generational workplace. What generational dynamics are you experiencing, and what are you doing in response?

**Charlotte Sword (CS):** The feedback we're getting from our partners now is that young architects and young professional engineers coming in want more communication. They want it immediately, and they want it enabled by technology. Laggi has been working on some projects in learning and performance development, how we enable that through our mobile technology and how we use our learning management systems to make access to knowledge and feedback more immediate. That's a journey that we're on at the moment.

**Laggi Diamandi (LD):** We try not to discriminate between generations, but the reality is that we do have generational differences within the organization. So, a lot of the things that we offer through learning are available in many, many guises. That means that I use a plethora of methods to reach different colleagues: face-to-face, online, mobile gamification, badges, you name it. We're doing it for everyone, because I don't want to say to younger staff that a course is available online, and to the older colleagues that they can only attend face-to-face training. We are actively promoting all aspects of learning.

**CS:** We've been doing mentoring for a while, but now we're looking at doing reverse mentoring, which has gone down incredibly well. So instead of senior people mentoring youngsters in the business, some of our senior partners have taken a very sort of pragmatic view, and said, "I don't understand (everything) I'm having to deliver for my clients. What I need is a young person (who can help me understand new approaches to challenges)." So, we're now teaming up partners with junior architects or junior engineers. (The partners) stop to challenge their own way of thinking, which I think is really interesting.

## Foster + Partners by the Numbers

**1,300+**
Global staff

**1,000**
Staff based in London campus

**2/3**
Approximate proportion of staff from outside the U.K.

**70+**
Languages spoken in the firm

**65%** men **35%** women

**26** Offices

**6 of 7**
Number of continents on which Foster + Partners have worked

**19–83**
Age range of employees (including Lord Foster)

**0.5%**
Percentage of architecture applicants who are hired

**DI:** Is your approach to mentoring formal, or is it largely informal?

**LD:** It's a bit of both, actually. We have three types. We have the formal program in which a mentee applies for a mentor: we do a matching process, there is a formal application, there is contractual agreement between mentor and mentee, and then they go off and do their thing.

We have another mentoring program that is engineering and architecture specific. Engineers are required to have mentors as part of their qualification for chartered membership—as does an architect—in the UK. When they are completing their final qualification to become a registered architect in the UK, they must have a mentor sign off something called a PEDR, or Professional Experience and Development Record.

Finally, we have the informal mentoring approach. Although we don't know how much goes on informally, we certainly have very experienced and high-level individuals within the organization who naturally assume the roles of mentors. Let's take Lord Foster as an example. I think he is a mentor for many, many people.

**CS:** It might be through (events like) the CPDs (Continuous Professional Development) and announcing all the mentors, all the mentees, where we enable people to start to connect. We found that sometimes people will want a mentor for a specific reason, and we didn't want to over-formalize those conversations; we wanted to enable them. So, we try to create as many contact events as we possibly can. Now, whether those are through using WebEx technology, with our CPDs we enable (participants) to actually see them in real time as well as record them, so people can pick them up and watch them on the train on the way home or listen in their cars.

**DI:** Are you offering training to help experienced people to become better mentors?

**CS:** Yes. On the formal program, they need to go through some training so that they can really understand what they need to be doing individually, and what those key requirements are. That's for some of the statutory sign-off (the mentors) are doing. They are

also given self-awareness training and some psychometric (testing) so that they know themselves, they know what they're good at and they know how to communicate.

So, it is interesting how we capture the mentoring and the knowledge sharing and the formal training, and I think this is where Laggi has been instrumental since he's joined the organization, in bringing that blended learning approach that uses a medium that best suits the individual.

**DI:** How would you describe the culture at Foster + Partners?

**CS:** As we say in London, we're on a campus. It's a university, and it's continuous learning. People have a voice, and we start every project with a blank sheet of paper. We try to understand the problems that people need to solve, and we help them do that by giving them options.

"We [HR] are down on the shop floor with our brothers and sisters, feeling the pain, dealing with the issues, coming up with solutions. We're immersed in the business fully."

The culture is one where we question ourselves a lot, and then we do something, and then we do it again, and then we do it again, and then we do it again. That's what makes us different. We are constantly reviewing and innovating and changing and improving. That comes down from Lord Foster. He's always striving for something new and innovative; something that is really and tangibly going to make humanity and life better.

Foster + Partners is very much an end-to-end design practice—whether it be from the interiors, the furniture, the door handles, the toilets. Whatever that might be, we will go through the whole piece. And that makes life very, very interesting.

**DI:** How is it to perform a business function like HR within such a design-driven organization?

**CS:** One of the things that this practice really pushes back on me, which is difficult being in the HR role, is not being corporate. We don't want it to be corporate. But, how do you have those policies and consistencies of practice without being too corporate? It's a challenge.

**DI:** It's an excellent question. How do you balance it?

**CS:** We have the laws and the processes that we have, but how do we take those from being policy documents to making them more principles-based? How do we provide people with guidance, and then how do we communicate it (effectively)?

Everybody gets policies and processes, sticks them on the Internet, and nobody ever looks at them unless they have a problem. Without having all of those different laws in all the different geographies that people operate in, that makes it even bigger. So, what we're trying to do is [communicate our] principled best practices and what we stand for. That's our first phase, when we're dealing with all of our people, no matter where they are.

Also, that comes out from some of the fundamental principles that we have in the UK, where we're signed up to things like badges and the London living wage. We don't do minimum wage; we want to do something that enables people to live and feel comfortable. Then they can obviously start really thinking about the work at hand.

(Helping people focus on their work) goes through to how we approach sending people on international assignments, and the support that we give them around global mobility. We need those individuals to be focused on projects, and not worried about issues like: Am I going to get my child into a school? Where am I going live? How do I get to the supermarket? How can I open a bank account? Those are the things that distract, and actually make those assignments fail. Since I've been here in the last four and half years, we have not had a failed assignment.

**DI:** Certainly, something you are doing is working well.

**LD:** I think so. The way I see it, one of the main reasons that we're not corporate is because we're not segregated from the rest of the business. This is very relevant, because we are down on the shop floor with our brothers and sisters, feeling the pain, dealing with the issues, coming up with solutions. And, immersing ourselves as—I suppose—proper business partners. I think the business has embraced that. Because we're not in a room, quoting policies, printing them, then sending people off. We're immersed in the business fully, and we have a very, very good understanding of the business, its objectives, its vision, and the KPI (key performance indicators).

**CS:** Part of the vision, here, is to turn (HR) into an enabling function. How can we enable the business to do what they need to do, and enable our people to achieve what the business needs to achieve?

If we are setting up for projects overseas and time allows, then we'll pull the (project) team together, and we'll do exercises to try to get them gelled together very quickly. We're pulling together high-performing teams, and we can help take down some of the barriers. We also do things like cultural awareness training for people when they're going overseas so they are sensitive to their surroundings.

**DI:** How else does HR integrate with the rest of the firm?

**CS:** (One way is that we serve) on boards. We're on the overseas licensing management board, and I'm on the management board. We know what the business is doing. We get an indication of where we think the next location will be, and we start planning with the business ahead of that.

Learning and development have also been very good in terms of understanding the bidding process and what the marketing team and the bidding team will need. Also, we have become more refined in [the cost models] when we're moving people around. We can really help our colleagues understand that [component] when they're putting their cost projections forward.

So, I think for us, it was about how you become more immersed within the business and make it truly commercially focused. One of the [most rewarding] moments for me is when we get some of the partners or the senior partners saying, "I've got a big bid going, can someone from your team come along and explain this, because this will help us win x." And that's pretty good, when you get HR to that stage, when you're invited into specific business and client meetings.

**DI:** Even in very sophisticated firms there can be a bit of tension between the designers and the business-oriented functions of the business. How have you been able to escape that?

**CS:** I don't know whether we've escaped it, and I actually think the conflict is quite healthy, as long as it's constructive. We each challenge the other pretty well. I wouldn't say we always get our way with how we want things to be within the business, and I don't think they do either. But I think we're quite mindful that this is an architecture and design-led business, and we need to enable that business to do what it needs to do. However, if we feel that something isn't right, then we call it out. And vice versa. It's part of that culture of being open to [constructive questioning], and then debating and challenging that.

**DI:** Charlotte, what is the primary difference between doing your type of work in the architecture and design industry versus other industries you've served?

**CS:** I worked for Vodafone, the big telecom company, which was very forward thinking in its HR practices, and then went into financial services, banking and insurance. Now banking and insurance are very much based on the bottom line. Whereas professional services and in architecture [remind me of] the R&D-type models, where you're more mindful that you need to keep the innovation and the creativity and the debate and the conversation alive.

**DI:** What is your sense of the current state of the global talent market, in terms of availability of the type of talent that you need and the quality of people that you see coming through?

**CS:** I think we've seen, if we're looking at talent coming into the UK, which is where our main design hub is, I think we're

seeing a slowdown. We're not seeing the slowdown in terms of talent coming directly from the universities, which is where we do a lot of our recruitment, but experienced talent coming into the UK has definitely slowed. [It] causes some frustration and some issues because we see ourselves as a global business [in need of] a global talent base that reflects our client base. That's an interesting one for us, and it's still evolving.

Brexit may have huge implications or [it] may not. It [creates] more uncertainty, and I think people are warier of moving because of that uncertainty.

The other problem we have is talent based here in London may have visas—their indefinite leave to remain status—and they feel secure. When projects come over—because 85 percent of our projects are overseas and not based in London—we need those people to go and do a great job and see [those projects] be built. And we look at people not from their nationalities, but by who is the right person to deliver the project and realize the vision. Now, the restrictions on them coming back in London [makes it] more difficult.

I think we've seen differences with other countries around the world. The U.S. is another example. People are maybe not being so outwardly looking and welcoming, [but perhaps more] restrictive and insular. This is the Foster family, and our American colleagues have exactly the same status as our British colleagues as our French or our Spanish or Colombian colleagues. Wherever they come from, it's Foster family. We need the ability to move the right people around the world for those particular roles, regardless of nationality. That's a worry for us.

We have [very strongly] communicated internally that we do not intend to change our talent strategy, because that would definitely be wrong for our business.

We've recruited more into the local offices recently. But what we are now finding is those individuals want to come to London, or they want to go on a project somewhere else. They are always wanting to move around; that's why they join us. I'm not finding that applications are down, but I am finding people want more reassurance that the organization is going to support them if they join us.

**DI:** What about the quality of people you have coming to you? Have you seen any change?

**CS:** No, I haven't seen any change, really, I think mainly because Foster's does recruit a lot at the junior level coming out of university. The talent strategy is we bring [people] in at [the beginning of their careers]. We tend to design again, design again, design again. It doesn't matter how many times you do it, as long as it gets to the right answer. And sometimes that can frustrate people that haven't grown up in that curious and challenging environment.

[In] architecture you've got quite a lot of graduates coming out. Getting really good, high-quality engineers out of the universities is trickier, because there aren't as many of them.

**DI:** As you look at how the world is changing, and how Foster's business will continue to evolve, what will change in the type of talent you look for? Will you be looking for different skills or disciplines, or perhaps different types of people?

"Young architects and young engineers want more communication. They want it immediately, and they want it enabled by technology."

**CS:** That's really interesting, because we've actually [been doing quite a bit of thinking] on that at the moment. I'm chair of what they call the trailblazer group in London. We're looking at how we change the educational system here so that we get students into the practice from a variety of different backgrounds. Because social mobility is a problem in this particular sector. [Architecture] tends to be an upper-middle class profession. You have to go through university for seven years, and you have to have money to do that. So, how do we encourage talents from other parts of the social sphere, from around the world?

That's one project, which is progressing quite rapidly. We are hoping to launch something later this year on the apprenticeship side.

The other thing that we're looking at is how technology is going to change the design world. Do we need different compositions of students or individuals that have computer design drawing skills? And maybe other people that are more conceptual? And then how do we bring in other technology?

We absolutely know that things will change, things will become faster, technology will enable us to do things more quickly. But we think we will still need people who can draw, who can really see what things are going to look like. We still think there's going to be that human element.

Our debates are around how architecture affects the mood, how people work, their motivation and how they interact with their environment. There's going to be that whole well-being space—how you bring people together. Where we're starting to get to what you are talking about is the psychological connection between the environment, building and space with the individual. We're starting to look at people who think differently in some of those different areas. It's a really exciting time to be in this kind of design business.

"We do have generational differences within the organization. [We] use a plethora of methods to reach different colleagues: face-to-face, online, mobile gamification, badges. We are actively promoting all aspects of learning."

**LD:** We've already started doing this in the way we diversify our workforce. We don't just look for architects, engineers and support functions. [For example,] we have an anthropologist who works for us. You think, why do you need an anthropologist in an architectural design practice? Well, there are probably 250 reasons why you need one.

So, what does the future of talent look like? The future of talent [reflects] the needs of the client. We won't try and pigeonhole architecture. What we will do is find the skillsets to create something unique and different. That's part of our culture anyway, and that's part of what we've been doing for a lot of our clients over the last fifty years.

**CS:** One of the things we talk about a lot here is what we call the orchestra. We are an architecture-led practice, but [you also have your] engineers. You have your sustainability people. You have your research people. You have your materials people. You have your model makers. You've got your filmmakers that are going to bring it to life, your artists who visualize it, all the way through to economists who are looking at the local environment.

If there's something we feel that will add to our thought process and to the creative process, [we incorporate it]. So it's an orchestra. And it's how we play the song that paints the picture that brings [it all] into reality.

**DI:** What other elements of the talent picture are important to Foster + Partners?

**LD:** I think that we're doing okay finding talent but retaining them is a challenge for our organization. Though the things that we do [are not simply] to keep talent, [we believe it is] important to look after our people and help them grow within their roles.

One example of that is we offer language courses. We [do so] for two reasons: first, 85 percent of our business is outside the UK, as Charlotte said. We sometimes bring in local people that speak the language, but sometimes we need to up-skill existing expertise within the office. [Second,] 65 percent of our practitioners in London are non-British. We want to support them, in terms of their self-esteem, their confidence. [We want them] to be able to speak and write

and communicate more effectively using the English language—so we have English language programs [as well].

We also have life drawing and life painting classes every six weeks, because we want people to feel relaxed [and have] the opportunity to exercise some of their other skills. Everyone is welcome to attend those. We have onsite yoga three times a week, because we want people to be part of something. We have sailing clubs, we have ski clubs…you name it, we've got tons of social clubs.

It's not just about the jobs that they do, [or] about giving them training and mentoring and leadership. We are creating a community.

**CS:** And I don't think we've got it all right, yet, absolutely not. There's still a lot of work that we can do. People here work very hard. And one of the other challenges I think we have is, how do we encourage diversity while valuing the individual? And that's an interesting conundrum for me, because we're very diverse from a nationality perspective. I think everyone is dealing with the gender issues at the moment. And then how we value all cultures. It's very difficult.

You can start to see the political systems changing around the world, we can all see it. And things are coming back down to people wanting to go back into their safe zones and their own boxes. So how do we maintain that diversity while valuing individuals? [How do we] maintain that diversity in a world that is contracting in on itself? Personally, I think it's really important because everybody has value. But I think it is a worry, and I think it's happening all over the world. I don't think it's just the UK or the U.S. or maybe some other countries that we operate in. There [are certainly] some pretty big things happening out there at the moment.

Charlotte Sword is partner, global head of HR for Foster + Partners.

Laggi Diamandi is associate partner, learning and development manager at Foster + Partners.

# Post Traumatic Growth: Cultivating Resilience to Lead Through Setbacks

Along the path of life, something will happen that will rock you to your core. Resilience is what determines whether that traumatic event will leave you shaken and helpless or a stronger leader. The event will be different for everybody, but that is the great thing about resilience; its principles and concepts transcend circumstance.

DAVID LAU

The principles of good leadership are similar in that they are universal, whether they are practiced by a stay-at-home parent, a school principal or a battlefield leader. When circumstances are in chaos, everyone looks to leaders to be a center of calm. They can't provide that grounding sense of peace without resilience.

Many professions spend the majority of their training time on *toolset* and *skillset*. The ability to use a tool such as a computer or a drafting pencil to great effect is a skill. It's what universities, law enforcement and military academies tend to spend a great deal of time teaching. But what lies beneath toolset and skillset? What makes up our core, as people? *Mindset* and *heartset*. They are elemental, basic to who we are, yet few organizations invest in developing them. It's not a quantifiable metric, so they are reluctant to put time and resources where they can't get a measured outcome.

To explore mindset, we need to define resilience; the most generally accepted definition is "the ability to bounce back." I believe resilience can be front-loaded by pre-programming our neural pathways in anticipation of the destructive event we know is on the horizon. This allows resilience to become a natural part of our mental process. Heartset has two facets; they are purpose and living for something greater than self. It's finding the inner drive to get off the couch when everything around you has crumbled into bits.

I discovered how elemental heartset and mindset are when I was the lead non-commissioned officer in charge as part of an embedded counter-insurgency advisor team in the northern provinces of Afghanistan. We were not living on a base, and we were each partnered with an Afghan brother to advise and mentor so they could stand on their own whenever we left that country.

The Taliban had tried several times to attack us with small arms and bombs, but to no effect. Then we got intel that they brought in three suicide bombers to target the American advisors and our Afghan counterparts. In our city, three Afghan intelligence service station chiefs were lost to suicide bombers. That was the reality. We knew the threat level had increased, and we discussed how to mitigate it. There was no way to eliminate all the risk; the only option would have been to leave the country immediately, totally throw away all the work that we had done, and abandon our Afghan partners.

We tried to mitigate the risk as best as we could, which was difficult because to be effective in counter-insurgency, you have to be accessible to the people. You want the people to be able to talk to you, to give you information, to tell you about Taliban activity, for example. But with this openness comes the risk that a suicide bomber could approach you under the guise of a civilian who wants to talk to you, and then they would detonate. We chose to accept the risk and keep working.

On April 4, 2012, I was on a patrol coming out of a park. I had about ten Afghans and a handful of Americans with me when suddenly there was an explosion and the lights went out. A suicide bomber had walked into our patrol and detonated.

I woke up on my face. The bomb had detonated behind me, and it threw me across the street. I was nauseous, and I knew I wasn't breathing, so I made myself take a breath. Then I flipped myself over and assessed myself. My right leg was inside out. When I looked at it, toolset and skillset kicked in right away. My first thought was to stop the blood from spurting out of me, because I had double femoral artery and brachial artery bleeding. I began applying my tool, a tourniquet. Every man and woman on the patrol has to carry a minimum of four tourniquets, and they have to be able to put them on by themselves. That's the skill. I put two tourniquets on myself. If I didn't have them or I couldn't put them on when I was half-dead, I wouldn't be here today. The toolset and skillset were elemental, but I needed more.

I began to get extremely sleepy and thirsty due to blood loss. This is where heartset came into play; something greater than self to live for, a sense of purpose, a reason for being. You may not be lying on a street in northern Afghanistan fighting to stay alive. You could be fighting for your organization. A bout of depression could have you fighting for a reason to get up, get out of bed, shower and put your shoes on again. In all cases, you must have something to hold onto.

For me, it was a promise I had made. When I left for Afghanistan, my wife was understandably emotional. She asked me to promise that I would come home. I told her I could not promise that in good faith; I had been to too many funerals of men who were stronger and better than me. But I did promise her that if something happened, I would fight through anything to make it home. I would not stop, as long as I had breath in my lungs. I would not stop.

I remember when I was lying there, I kept alternating between twisting the tourniquet and passing out. I was tempted to lay my head back and take a short nap, and if my eyes never opened up again in this world, then so be it. But then my mind took me back in time to that exact moment sitting in our Subaru Impreza when I made my wife that promise, and I got angry. The enemy did not have a right to take me away from my family. I was going to keep my promise, or I was going to die trying.

We were medevacked by locals to a different part of Afghanistan, which was a result of our unit's mindset to be intellectually curious and show respect. This would not have happened in other parts of the country where units did not treat the population like they were genuine human beings. We did, at risk to ourselves. We lived with them. We spent all our time with them. We treated them like our brothers and invested in them, so that when we got hurt, they came to our aid.

> "When circumstances are in chaos, everyone looks to leaders to be a center of calm. [Leaders] can't provide that grounding sense of peace without resilience."

Everybody in the patrol was either killed or hurt. There were five Afghans and three Americans killed. My Afghan brother, Ghulam, who was right next to me, was killed. Eleven civilians were killed on the scene, and more died later due to wounds and infections. There's nothing special about me, but if I didn't have the resilience to take care of myself, I would have been an empty well when my wounded brothers needed me. Because people invested in me and I developed resilience, I was able to be strong for others. That's the job of a leader, and it doesn't have to be on a battlefield.

We develop personal resilience as a whole-person concept—mentally, spiritually, physically and emotionally—because the body is synergistic. We pre-program neural pathways to speed up the OODA loop. OODA is the decision-making process that every human goes through, either at a tactical or strategic level; observe, orient, decide and act. In an organization, there could be forecasts of an economic down-

turn or layoffs to think through. How are those conversations going to go? Could something be put in place right now to mitigate those events?

Post-traumatic growth is real and can take the place of post-traumatic stress, but sometimes you have to speak it into life. It doesn't mean there's not loss, but out of that trauma, there comes gain; it serves as a springboard to a richer existence. My trauma was a thirteen-year-old male wearing a 25-pound suicide vest. Yours could be an issue within your organization or the loss of a loved one, but something will certainly happen that will rock you to your very core.

In your profession, tools and skills will take you from pre-event to just over the other side of the explosion. Mindset and heartset are what you can use right now to navigate all the way through that event to the abundant growth on the other side.

David H. Lau retired from the U.S. Army in 2014 with 21 years of service. He is active as a volunteer with local combat wounded veterans, serving as the Georgia Chapter President of Wind Sports for Wounded Warriors—a 501(c)(3) non-profit that focuses on the physical and emotional health of combat veterans. David also works as a trainer for the Department of Homeland Security.

# FROM SUSTAINABLE,
# TO RESILIENT,
# TO REGENERATIVE DESIGN

# Design Thinking for a Better World

DesignIntelligence talked with Mitchell Joachim, co-founder of Terreform ONE, about living in balance with nature, how the design industry can become more relevant and influential as citizens of the planet, and how design can lead to solutions to the world's problems.

DESIGNINTELLIGENCE

**DesignIntelligence (DI):** In many ways, Terreform ONE is in the vanguard of experimental design and environmental work, looking at things in a new and different light. What are you seeing from the front?

**Mitchell Joachim (MJ):** We began as an architecture group, but we realized that design itself is even bigger than architecture. The power of the human imagination is a phenomenal instrument. It is an extraordinary tool that we can use in all different sectors and disciplines to come up with solutions to our world's problems. We work on problems that are genuinely difficult and that bleed through many different spheres of interest. We're also restless—we want to do more. As architects, we have this incredible love for the field, and we want to have a broader reach. We want to be more relevant and influential as citizens of this planet and have a conversation that makes sense to ever-increasing numbers of people.

It's not that architects aren't relevant; we are. We just don't expose ourselves as much as we could in a way that shows how powerful design thinking really is. When we make that link, that connection with a broader audience, and we build consensus around relevancy, it has incredible meaning.

**DI:** So there's a precarious balance to strike when you're doing work that is very experimental, but at the same time having broad relevance and reach with a wider audience. How do you navigate that divide?

**MJ:** Quite simply, it is the issues. For example, climate change is an all-encompassing problem that bleeds through many different industries. What people may not understand about architects is that we are trained at the general physics of almost anything. So when we tackle an issue like climate change and begin to produce stories or design ideations that people can relate to, then we as architects are actually on the forefront of change on issues like these.

**DI:** But isn't generating ideas and creating solutions only half of the battle? What about communication?

**MJ:** Yes, communication is important. Generating ideas and solutions is just the first step. There is more hard work that has to be done, like moving through regulations and policy, getting political will, obtaining financing and more. But the idea and the possible solutions to a problem is the first principle. If we don't have that first principle in mind, the rest will not fall into place. We don't execute a non-idea. So the upfront messaging and communication, as well as the clarity around the idea's purpose and intention, is where people get excited and get involved.

**DI:** When we work with firms and organizations, we talk a lot about their ideal state. We use it as an exercise to get them to imagine their best possible future. What is your version of an ideal state for how we can live in balance with the natural world?

**MJ:** I agree with the ideal state model. We deploy the same criteria when we approach a project. We outline the best case and maximal conditions, and then we're able to formally articulate that scenario.

When we talk about dwelling in balance with nature, one of the most intractable problems is our ever-growing, ever-expanding population. The Earth is crowded. It is full. And we are extracting more and more resources from it each year; somehow, we need to stop that. Most of the solutions I've seen have been on some level of mitigation, a slowing down, in our use of and extraction of resources.

"The power of the human imagination is a phenomenal instrument. It is an extraordinary tool that we can use in all different sectors and disciplines to come up with solutions to our world's problems."

I have two viewpoints about the state of our environment today—one is completely pessimistic, and the other is optimistic. The pessimistic viewpoint is that we're waiting for an enormous crisis—something like five times the size of Hurricane Sandy—to hit us. When that happens, people will become very concerned about nature. They will be more willing to change policy, incorporate technology and make lifestyle choices. They will be more interested in a renewable or circular economy. All of this concern and interest will coalesce into a library of ideas to actually make the world a better place. But we don't want to do things like that right now. The crisis factor, I believe, will bring the right amount of energy it takes to move us into Civilization 2.0.

The optimistic viewpoint is that technology will save us. This is the techno-topic version. The idea is that we have a lot of smart people who are working on solutions. Life will continue as we know it as scientists and designers work together to solve all these problems in stealthy fashion. The "logic" goes that all of this is happening behind the scenes, without us really noticing or caring, and suddenly we'll get out of these problems through an immense amount of innovation.

**DI:** How does Terreform ONE set priorities and choose which investigations and projects to focus on?

**MJ:** For us, every year is about finding something that is more meaningful than the previous project or idea. Lately, we've been focused on caring for and saving the lives of other species.

So in this field of living architecture or living design, we are designing with different forms of biological life. Everything that's in our portfolio now must be or involve a living organism. We're asking the question of how can the millions of living things on our planet help us overcome our problems?

For example, we are working with the caddisfly, training them to clean our freshwater ways of micro-plastics. They build their larval cases out of the micro-plastics, making it easier to harvest the plastics before they go into the ocean. That's just one example of how we're using life to solve problems in life.

**DI:** Many of the problems and issues Terreform ONE tackles are massive and complex. What about the scale of application?

**MJ:** In design, scale happens in very succinct increments and measures. It has a known, quantifiable system whether you're working at the scale of nuts and bolts, the scale of furniture, regional scale, atomic scale, whatever. If you've ever seen the movie *Powers of Ten*—which was about scale—the concept was that things flow freely from all points of scale and we have to be accountable for the consequences. For example, if a designer is designing a bicycle, he is accountable for how the bicycle works on the road, how the chain and brake systems are designed, the material choices and how they were created, and more. Every part of that design shifts scale but it happens simultaneously. We can think in just those moments, but they are temporary.

We need to understand scale as a phenomenon, not as a distinct increment. It is much more permeable as many shades of effect, and we must train ourselves to think in all different levels and depths of scale.

**DI:** Let's talk a little about influence and the arena you're in now. The federal government is backing away from agreements and regulations regarding the environment, but mayors are standing up and saying that their cities will still abide by those agreements that were previously held at the national level. So in this arena where there's a shift away from environmental agreements, have you noticed anything different—either positive or negative—in the support you receive for the kind of work you do?

"Climate change is an all-encompassing problem that bleeds through many different industries. What people may not understand about architects is that we are trained at the general physics of almost anything. So when we tackle an issue like climate change and begin to produce stories or design ideations that people can relate to, then we as architects are actually on the forefront of change on issues like these."

**MJ:** I think that general hierarchies and more traditional structures of power are becoming flatter. Connectivity is more accessible and available to people. For example, when our president tweets, everyone knows his immediate thoughts in real time. We all have the same access to the same information. This flattening of hierarchies and systems has been valuable for us because now, the work we're doing is more visible. It has a larger presence and a wider reach.

**DI:** What do you see is the potential influence that the architecture and design community could have? Are any barriers to our influence self-imposed?

**MJ:** In general, we can have influence in many different sectors and disciplines, but clients and developers may be pushing us in certain directions. We tend to listen to them. If we unified as an entire body and decided that we wouldn't design or build anything unless certain standards are met—and those standards would get more stringent as time goes on—then our role as influencers would grow.

Today, we have standards as options and possibilities, but they're not necessarily mandatory. It's difficult to pass regulations and legislation sometimes because it becomes associated with a monopoly system. Instead, we can use standards as performance criteria, which may negate the association with direct products and direct industries. If we did more self-regulation internally as an industry, we would also increase our influence.

**DI:** Do you think that individuals from the A/E/C community should become more directly involved in politics and advocacy groups?

**MJ:** There are examples of architects in government; not as many as we should have, though. We are trained in public speaking and communication, and we are trained in the art of representing an idea to a large audience and then defending it. As a part of our field, we do have the capacity to be leaders, but in general we're not necessarily of the politic class.

But we are good at what we do. And by working together both as designers and as citizens of the Earth, we can take our influence and leadership to another level.

Mitchell Joachim is the co-founder of Terreform ONE and an associate professor of practice at NYU. Terreform ONE is a nonprofit architecture and urban design research group that promotes smart design in cities. Working as a unique laboratory of specialists, Terreform ONE explores and advances the larger framework of socio-ecological design.

# PERSPECTIVES

# A Lifetime of Achievement

On November 13, 2017, legendary architect Robert A.M. Stern was presented the Design Futures Council (DFC) Lifetime Achievement Award for 2017. Only three other architects had previously been recognized with the award: Art Gensler, founder of Gensler; Gene Kohn, cofounder of KPF; and Norman Foster, founder of Foster + Partners. The award was conferred at the DFC's Leadership Summit on the Business of Design, which was held at the Harvard Club of New York.

Rather than give an acceptance speech, Bob Stern elected to sit down with DesignIntelligence to discuss lessons he learned through a lifetime in professional practice and education.

DESIGNINTELLIGENCE

**DesignIntelligence (DI):** You've had a long and extremely distinguished career, and you've seen a lot of changes in the profession over that time. What are some of the bigger changes you've seen, and what do you foresee happening in the years to come?

**Robert Stern (RS):** I steadfastly avoid predicting the future, because the future is always so different from what we imagine at any given moment. When I was an architecture student in the early 1960s, Paul Rudolph was the design chairman of the architecture program at Yale. He was already a star at the time, but he would meet with us informally, and he would talk about practice, because we were all interested in it. And he said, "You know, the ideal office is 30 to 35 people. Just perfect—you can control everything."

By the end of his longish life, I'm sure he came to regret that decision because nobody gave anybody who had a 35-person office any work of a substantial large-scale nature. Although I do think that could change, maybe it is changing because of technology where you can associate with architects elsewhere and maintain a kind of "boutique" practice. We maintain a "boutique" practice of about 265 people.

In my early days in private practice, I thought that I would do little nice houses in New Canaan or if I wasn't that lucky, houses in Weston or someplace like that. And maybe a little library, maybe a little school, a K through eight, or whatever. That's not the way practice was by the time I left school. We went to New York. I was in a totally different environment, designing the world. I'd been waiting for that opportunity to come by the second time, but we were totally unprepared for it. In other words, architecture, in the late 1950s and early 1960s was all about little suburban houses.

**DI:** Your first commission was a house, wasn't it?

**RS:** I still do houses. They're not little, and they're not suburban, but they are still houses. And houses are wonderful, but really the thrust of our work is the larger scale projects, internationally. Who would imagine a little boy from Yale doing buildings in China and Europe and everywhere?

And there was Norman Foster, who was a post-professional student with Richard Rogers at Yale for a year at a strategic moment. We were all amazed by Norman. He was so good.

He was so articulate. He led his whole class. When he and Rogers had projects, Foster made the presentations.

But even then, who would imagine that he would be building these huge projects? So, the world has changed dramatically, and the future could never have been predicted the way it has come out based on what we knew in 1965, the year I graduated.

**DI:** What are some of the challenges the profession has overcome—problems we've solved—and things that you think we still need to address?

**RS:** Well, the profession has largely overcome Walter Gropius. That was the first thing, and his lack of interest in history, in his dogged pursuit of what he called "functionalism," which was really not so functional. It really crippled American architects for a very long time. He produced brilliant designers: Philip Johnson, Eliot Noyes, and more. But they all rebelled against him, and it's okay to rebel against your teachers.

Gropius talked about collaboration. I give him credit for that. It took a long time until that really became part of the architectural DNA. We have a much more collaborative environment now. I think you'll find that faculty are encouraging collaboration and students are demanding to know how to go about it.

We could bring up the computer, which has changed the way we produce technical documents. I still think the discipline of the right angle and the discipline of what we would call classical training is very, very important. I think the discipline of urbanism is important. Many new buildings are very interesting shapes if you're interested in that. But they're terrible on the street, where pedestrians walk.

We were introduced to the idea of urbanism back in Paul Rudolph's time. Rudolph had spent a year traveling all through Europe on a Wheelwright Fellowship from Harvard. It was mind-blowing for him. I don't think our students today have the patience—or their parents won't let them—to spend a year, just going around, drawing, taking photographs, sitting in cafes, watching people on the street ...

Rudoph and a lot of his generation did that, and I think they were better urbanists in many ways than many of the younger architects are today.

**DI:** When you think back to the Frank Lloyd Wright exhibit at MOMA, and the incredible, evocative power of those drawings and their ability to express subtleties, do you think the computer gets in the way of that?

"I steadfastly avoid predicting the future, because the future is always so different from what we imagine at any given moment."

**RS:** For many students, it does get in the way. At Yale we try to emphasize hand drawing. We've been very lucky to have donors who have endowed a whole summer in Rome, just to do drawings. They pay for the airfare, put them up in student accommodations, and give them a spending stipend. All that is asked of these students is that they put their cameras to the side and draw these buildings. Lou Kahn, Ed Stone—any architect of the generation I admire—they did that as well.

A lot of the young architects around the country don't do that. Architects should give money to their schools to make sure students go abroad, not to do a project they could do back at home, but to go and look around under the guidance of brilliant teachers.

In our office we have a gallery where we have three exhibitions a year. They are based on freehand drawings that people in the office have made either in connection with their work as designers on projects, or just going out around the city or wherever they go.

And the other side of it ... When I began to teach at Yale, as at Columbia where I'd been before, professional practice was optional. Can you imagine that? Crazy. So, I said to Phil Bernstein, "You have to teach this as a required class."

Many people thought it was the end of the school and that the artistic side was going down the toilet, but we got over that. But now, students love professional practice maybe too much. They call it "pro-pac," and they're very interested.

**DI:** How have clients changed over the course of your career?

**RS:** I think clients are smarter.

**DI:** Are they?

**RS:** I really do. The Zeckendorf family were smart clients, and they still are. But there weren't many developers who had an enlightened view about the buildings in the city. But today if you work with Steve Ross of Related, he knows what he has to do. I worked for a long time with The Walt Disney Company, which was a major developer in the '80s. They understood what their obligations were to the public. Other developers here in New York, or Gerald Hines out of Houston, are amazing. Those people didn't exist in 1965—so that's a dramatic change.

"I think today, because practice is so complicated, younger architects really should work for big firms. They have to know when either to see that they're rising in the firm, and being given and taking responsibility, or to try to do something else."

**DI:** But now enhancing the public realm is assumed to be part of the job.

**RS:** You have to do public things. Not only just a few artworks on the wall; you have to have significant public space. It has to be programmed. You have to build it in, bringing in certain kinds of events over the calendar year. When I was a student the developer was not the client. It was the corporation. You worked for IBM or Connecticut General Life Insurance or General Motors. The developer is our current client. What will happen in the future? I don't know.

**DI:** As the Dean at Yale, your job was to prepare the next generation design leaders to take their place and advance the profession. What are some of the leadership qualities that you try to instill in that next generation that would enable them to be really great designers?

**RS:** I don't know that we can help them become great designers. Only God can do that.

It has been a long tradition at Yale—and I was only carrying it forward—to bring great practicing architects into the studios. When I became the dean, the school was quite sleepy—I'll admit to that, and they'd admit to it as well. So, who were my first significant hires? Philip Johnson and Peter Eisenman.

All of the people who are teaching in studios should have a foot deep into practice, so they bring the professional experience of the office to the school. But they have to have something else. They can't just run their studios as though they were telling people what to do in the office.

Frankly, I think too many offices run without much reference to an academic model. I have to some degree organized my office on the model of an architecture school. We have a gallery of drawings. We have studios. If you come to our office, there are only two private offices, one of which belongs to the CFO because he manages the books, and a COO who runs the place. But everything else is completely open.

**DI:** If you could give a gift to the next generation of design thinkers, what would you give them or tell them or show them?

**RS:** I didn't do anything I tell students now to do. I didn't start out working for an established architecture firm, which is how I advise students to start today. Philip Johnson said, "You have to do something for the Architectural League of New York." I said, "Philip, shouldn't I work for an office?" He said, "What do you want to do that for? I never did that."

But I think today, because practice is so complicated, younger architects really should work for big firms. They have to know when either to see that they're rising in the firm, and being given and taking responsibility, or to try to do something else.

I think that that's a big problem of many young architects today. They set up their own practices and they don't really have much of an idea of how to run an office. They don't know how to talk to a client. You have to talk to clients. You have to not only market a job, you have to know how to keep it.

**DI:** Is it fair to say that as you look forward, you're fundamentally an optimist about where we are headed as a profession?

**RS:** If you're an architect, and you're not an optimist, give up. You have to be an optimist. You have to assume that tomorrow, when you go to your office, there will still be clients and better still, a new client.

**DI:** If you could choose your next client, and your next project, anything in your imagination, what would you do?

**RS:** I have no idea. I've been pretty lucky. I've had a pretty good run of different kinds of clients. But if somebody wants to ask me to do a building of a type that I've already done, I'm interested in doing it. I like to do buildings. That's what I do. And when I get up in the morning, I think of buildings. When I have sleepless nights, which is often, I think of buildings. Some people play golf. I think about buildings.

**DI:** I think Philip Johnson was once asked a similar question: what is your favorite project? And he always said, "The next one."

**RS:** And Philip Johnson was asked once, "What's your definition of a great building?" He said, "One that makes you say 'Wow!'"

Robert A.M. Stern is the founding partner of Robert A.M. Stern Architects.

# GLOBAL INSIGHTS

# Documenting Value Creation Enhances Business for Danish Architects

How does architecture create value? What kinds of value? How much and for whom?

PETER ANDREAS SATTRUP

These are the questions we have asked ourselves over the past three years at the Danish Association of Architectural Firms. They are the basis for our current project "Architecture Creates Value." Having delved into the intricacies of value creation for some time now, we have discovered that the answers have surprisingly powerful implications, and we want to share those insights with a wider audience.

The Danish Association of Architectural Firms is a business organization representing the business, political and legal interests of 650 architects' offices working in or from Denmark. Obviously, the value of architects' work is a fundamental issue to us.

Danish architects are very internationalized, and work with partnering architects' offices abroad and at home. International turnover has doubled in recent years, and as a novelty, offices like Henning Larsen, SHL, SLA and 3XN are developing collaborations and projects in the U.S.—spearheaded, of course, by the breakthrough of BIG. To Danish architects, Scandinavia is a home market. Many have projects around the EU, and a handful of offices have global projects. That's not bad for a workforce of 5,000 employees in a nation of 5.5 million people.

Yet, architects in Denmark (as elsewhere) face many challenges these days, not the least is competition from other and more economically powerful actors in the construction value chain who compete with architects for influence with clients. Touting the misconceptions that architecture is a nice-to-have add-on to real estate and construction, as well as the prejudice that architects are more interested in art than in the functionality of their buildings, seem to be tricks of the trade to weaken the influence of architects. A recent full-page advertisement in the finance magazine *Børsen* for the largest real estate agent in Denmark hit it home by asking rhetorically, "When the architect wants grass on the roof, who has the 'can-it-be-sold hat' on?"—illustrated by a computer rendering of a whacky, cantilevered building with a green roof and no apparent functionality. There's the challenge in a nut-shell: Architects need to be very precise and factual about the value they contribute to clients and society.

## What Is Value?

At one end, value is a question of what is good, what makes sense and what has meaning and relevance—or what does not. Value is based on perceptions, which are again based on cultural ideas and philosophy. Values are ethical virtues and aspirations. At the other end, value is about describing things and phenomena with precision, be it conceptually or numerically. Valuing is about describing characteristics and qualities, some of which can be described or measured using numerical values.

Economic value is, in a certain sense, the attempt to translate the attractiveness of things, exchanges of power, services and resources. It can be described (as Richard Saxon does) as the relation between what you give and what you take. Or, it can be described more simply as the relation between costs and benefits.

Using the Brundtland definition of social, economic and environmental sustainability as a simple way to describe different basic dimensions of value and capital is particularly relevant for the built environment. We use natural and environmental capital to fabricate our buildings and cities. The built environment's basic function is to protect people from the adverse effects of the climate, and serve social cohesion, health and well-being. If successful, the perceived social benefits and attractiveness of buildings and urban environments may create economic value.

"Architects need to be very precise and factual about the value they contribute to clients and society."

### What Is It Worth? Documenting Architects' Value Creation

Clearly, architects have a communication challenge and need to explain the worth of their work in terms that make sense to decision makers—in particular those who finance it, but also to the general public. If architects can't explain the value they contribute to their clients, the users of buildings and public spaces or society, they risk having less credibility and diminishing control over their own design processes, as well as a poor business case.

We decided to research how architecture creates value more specifically, through case studies of buildings and public spaces that have been in use for some time. We focused on finding evidence and facts of value created by architectural design and planning that would supplement the compelling visuals and story-telling that architects are good at already. Each case had to be qualified by research results, qualitative or quantitative evaluations or analysis and/or relevant and credible testimonies by stakeholders. But it turned out to be difficult to find the documentation.

At first, we thought it would be rather easy, but it took twice the time to produce half the case studies we had expected. Almost no one in the construction sector—clients, architects, engineers or contractors—systematically go back to the scene to understand the built environment in use. There is some research on how the built environment affects people, but not very much, which is surprising since construction is five percent of the GDP and the value of real estate accounts for more than two thirds of the national fortune. As it turned out, many of the interesting cases were documented by the user organizations for their own purposes, and only came to our attention as we were actively looking for the data.

Currently we have more than 75 case studies of buildings and urban spaces, and more are being added. The projects are very diverse, and so are the values they create. Health, well-being, social cohesion, productivity and learning, climate mitigation, resource optimization, buildability and economy are among the themes that are addressed in the cases. Below are some examples.

### Value Creation: Healing Architecture

It is well known that architecture may have an impact on health and recovery of patients, but how much?

In recent years, major public investments have been made in upgrading health care institutions around Denmark, among them the psychiatric hospitals. Though the style of the various projects differs a lot, the architectural design principles behind them don't. Access to daylight, views of nature, good orientation and layouts that stimulate physical movement and exercise are part of the evidence-based design principles known as "healing architecture."

But the surprise came as institutions moved into their new facilities and could report a considerable drop in the use of force when treating mentally ill patients. The psychiatric hospital in Esbjerg—designed by Arkitema Architects—found a 69 percent decrease in the use of force and a 61 percent decrease in the use of tranquilizers. The doctors pointed to the architecture as an important part of the explanation of the results.

The Aabenraa hospital—designed by White Architects—reported that the reduced use of force meant that work accidents decreased close to 30 percent. These results were, of course, not created by the architectural design, but the

architecture clearly enabled and supported new behaviors, social patterns and activities that enhanced the health and well-being of patients and staff.

We don't know the exact economic implications of these improvements in well-being and productivity, but it is thought provoking that the benefits that design helps to foster may clearly have a sizeable economic impact over time.

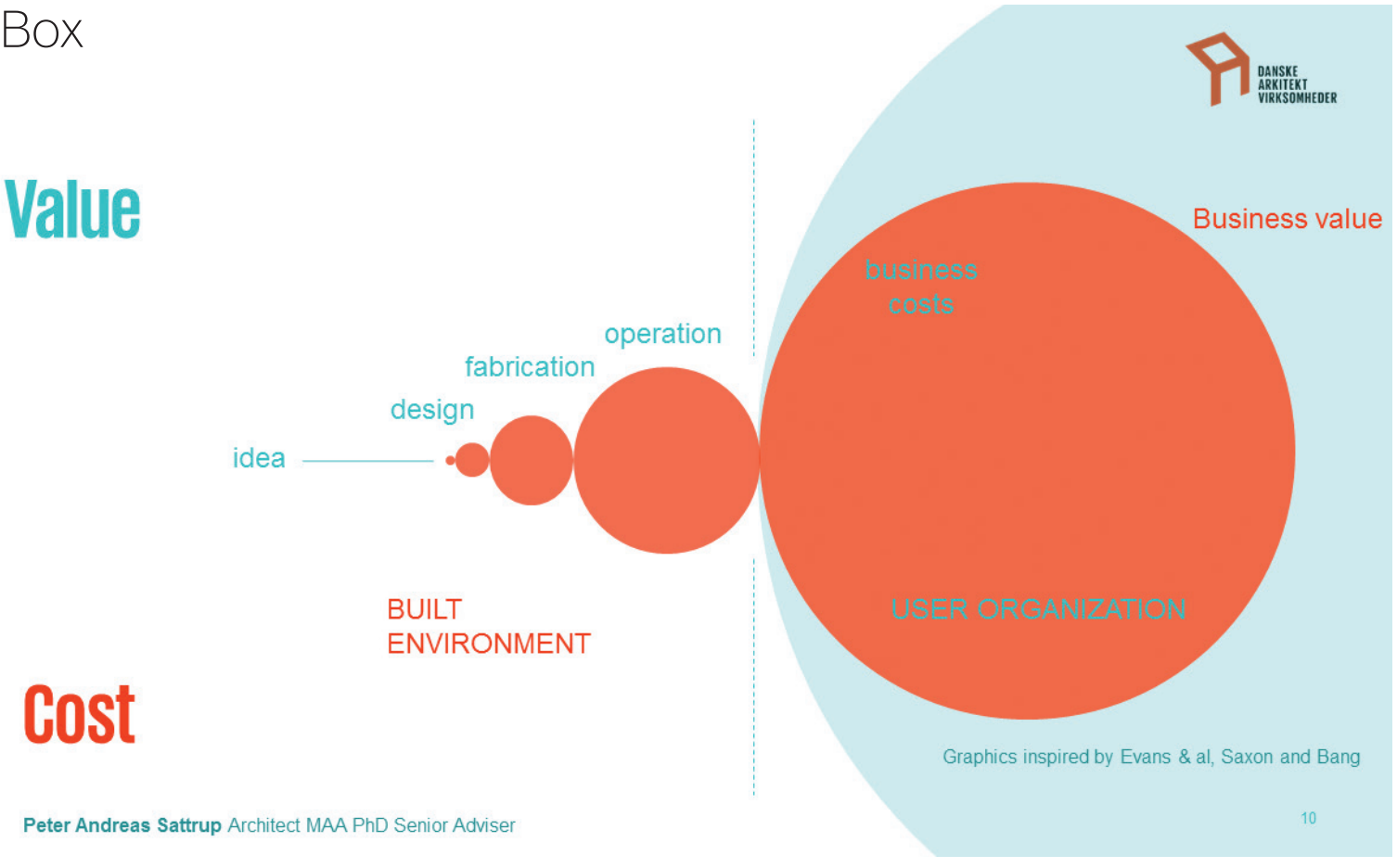
### Value Creation: Educational Success Boosted by Design

Recent research has shown that schools' environmental qualities affect children's learning considerably, and is equally as important as the quality of teaching. Surveying more than one hundred classrooms in England, a study by the University of Salford found that the best spaces could improve pupils' progress by almost a year compared to the worst (Barrett, 2015).

Haderslev VUC, which was designed by AART Architects, is an adult education center located in a small town in Southern Jutland. One of the main purposes of the institution is to help low skilled and typically unemployed people into professional or university education as a first step to qualify for a job. The key idea of the client's design brief was that the building should look nothing like a school, since many of the students had a hard time at school.

AART's design offers a generous building which doubles as a public space for the wider community of Haderslev. There are no class rooms, no back rows where a student can hide from view. The students and teachers can find diverse spaces and environments that support their different educational needs, whether it is for concentrated individual work or knowledge sharing and discussions in larger groups.

## Gear Box



Curious to see how the building was used by students and staff, AART allied themselves with an anthropological research institute to survey how the environmental qualities of the building were perceived. Both students and staff reported very high satisfaction levels, explaining that the building created an environment that motivated the students. That is a good outcome, of course, but even more interesting is the statistics showed that the new facilities attracted more students, and the exam completion rate improved significantly. The number of students who went on to find a job doubled and increased by 400 students a year.

Connecting this boost to productivity with Danish economic statistics provides a thought-provoking hypothesis: The Danish state supports the unemployed with an average of 100.000 DKK yearly, roughly equivalent to 17.000 USD, while the average taxpayer pays a similar amount in taxes. The net benefit to society of an unemployed person getting a job is thus 200.000 DKK or 34.000 USD.

Now, if we hypothesize that the students at Haderslev VUC that continue their education actually end up with a job, and we attribute a third of the effect to the qualities of the building supporting the students' progress, the sheer volume of new taxpayers created would pay back the building in three years.

### The Gear Box–Value Creation Starts with Clients' and Architects' Programming and Design

Value creation in the built environment follows an intriguing pattern.

Evans, Haryott, Haste and Jones' presented the notion that in the long term, the cost of construction, cost of ownership and cost of employees in an office building would follow a rough ratio of 1:5:200 over a life cycle of 20 years. Though the premises, assumptions and precision of the ratio have subsequently been debated, the general idea persists—especially in the green building certification community, where a general business case is that the improved, certified environmental quality of the building will lead to increased well-being, higher productivity and possibly fewer sick-days among employees. The developer's increased investment in higher construction quality and costs pays off, as the tenant has a credible case for lower operational costs and higher gains—and is therefore willing to pay a slightly higher rent.

But if we add the client's and designer's role in creating value to the equation, as does Henrik Bang of the Danish Association of Construction Clients, we can liken the process to a great gear box of value creation over the life cycle of the built environment. Imagine a row of wheels growing in size from tiny to huge, creating and delivering value in terms of costs and benefits in the built environment. The tiny wheels are the programming and design processes that are only a fraction of the construction cost; the bigger wheels are construction and operation, while the huge wheels are the costs and benefits of running a business in the building. Value is created in the planning and design stage at very little cost, relative to the benefits and savings that materialize over time, when a building is in use.

> "Architects have a communication challenge and need to explain the worth of their work in terms that make sense to decision makers."

Our case studies confirm that successful design can reduce costs and increase benefits to user organizations and the surrounding society significantly. The difficulty for designing architects is that the real value is created at the very beginning of the design process. Many hours are put into it, but the risk is incredibly high that you may not win the job or the project gets cancelled tomorrow. It's a difficult business model.

Now we can find ways to finance design and construction that are truer to the roles taken in creating it, and with a long-term perspective. That requires architects to document their value creation in terms that make sense to the decision makers they work for, somehow supplementing the empirical but often tacit knowledge architects possess, and

translating social environmental and cultural qualities that are at the heart of the architect's design sensitivities as other dimensions of value.

That is what we are aiming for now, where we are working with input from economists, anthropologists and engineers to develop a toolbox for value creation.

### Learning as a Profession Leads to New Commercial Opportunities

Having experienced that it was often quite difficult to document the cases, it is nevertheless evident that some architects are already very good at it, and have implemented tools and research-based processes with that in mind. Generally, architects working with a performance-based approach to sustainability are good at documenting cases methodically. Many architects team up with research institutions and sponsor research inquiries into various aspects of practice, supplementing architectural research with cross-disciplinary research teams including anthropologists, psychologists, engineers, economists and programmers. Although the results are eye-opening, we are nevertheless far from it being a mainstream phenomenon. Smaller practices with less money for research may find it challenging to keep up.

There's clearly a market for an improved understanding of the effects of the built environment on people and the way our cities and societies work. In fact, much of the documentation we found was not done by architects but by their clients. The philanthropical foundations that support experimental projects or projects with a strong social or cultural profile are very keen on and good at documenting the value created through their investments. Some public clients, particularly Copenhagen Municipality, are also very interested in understanding the effects of public spending on urban development, the livability of urban spaces, and on citizens' health and quality of life. Pension funds are eager to figure out what defines successful long-term investments in the built environment, some of them working with an impact investment philosophy. Housing associations are eager to find ways to increase social cohesion on a tight budget.

Offices that invest in research, technology and new competences are thriving, and are developing new services targeting underdeveloped areas in the construction value chain—particularly strategic consultancy, user involvement and programming at the very beginning of the process. Value delivery monitoring design performance and resource optimization during design and construction and perhaps, most significantly, post occupancy evaluation and operations monitoring when buildings are in use. If anything, we have clearly understood that the value of the built environment materializes in its use and in the social behaviors and patterns it enables and stimulates.

Architects that are clear and credible about the values they create are poised for creative and commercial success.

**Dr. Peter Andreas Sattrup, Senior Adviser, Architect MAA, is with the Danish Association of Architectural Firms.**

# Industry Interrupted: Build-to-Rent. Embracing Market Disruptions.

The future is near and architects need to assist the construction industry and regulators to overcome their resistance to change so that innovative housing models, such as build-to-rent and co-living, can succeed in Australia.

NIGEL HOBART

While successful build-to-rent projects have been happening in the United States for more than thirty years, their arrival in Australia has raised eyebrows among the local construction industry and regulatory bodies, which are not known for their propensity to innovate.

According to a recently published construction industry productivity report by the McKinsey Global Institute, the global construction industry barely increased productivity during the past 50 years, compared to the agriculture, manufacturing and retail sectors which recorded up to 1,500 per cent growth in productivity for the same period.

McKinsey valued that lack of opportunity for change within the construction industry at about US$1.6 trillion, which is a massive pent-up opportunity for industry disruption.

Build-to-rent, whereby developers and investors build housing with the intent of retaining the building long-term and renting it out to semi-permanent residents, can be part of that disruption. It is relevant to our industry because it is new in Australia, it is gaining momentum, it will require adjustment and its implications on design are far reaching.

Solid understanding of the forces that make such models appealing is critical to the success of any designer attempting to facilitate change and broker non-standard design solutions with authorities.

The maturation of the social generation and subsequent normalisation of the sharing economy (via enterprises such as Uber and AirBnB), housing affordability issues, and widespread adoption of automation are the primary drivers making build-to-rent an appropriate solution for now.

When you think about the social generation, millennials are really the first demographic to have emerged with social media as the norm. Relationships on social media tend to be stylised and based outside of reality. Surely there is a link between the experience of those who've been raised on "relationships-lite" and their desire to live in a more integrated way.

What they seek, perhaps more so than any previous generation, is authenticity and connection in the way they live. This has contributed to the rise of a sharing economy in which co-living and build-to-rent belong.

However, of the aforementioned forces that are driving build-to-rent in Australia, housing affordability is perhaps the most critical. That said, on its own, it has not been enough to force the change. It is the combined amplification of these forces that has led to industry heavyweights pushing hard to make build-to-rent a mainstream offering.

Historically, residential property has produced net yields of around three per cent, which has been too low to attract institutional investment. However, with the weight of capital

now causing yield compression on old-school investment grade assets to the point where shopping centres and office buildings return between five and seven per cent, the delta between residential and commercial is slimmer than it has ever been.

Add to that the propensity to quickly create large-scale build-to-rent portfolios as well as the universally accepted belief that residential property is lower risk than commercial, and the appeal of build-to-rent as a potential destination for institutional investment becomes apparent.

But it's not all rainbows and butterflies, as two major barriers stand in the way. The first barrier is tax structures (particularly land tax, which paints an ugly picture for institutional investors) and the second, The Hon. Scott Morrison MP's recent announcement that managed investment trusts should be forbidden from investing in residential property unless it is affordable housing.

These are massive constraints on the Australian superannuation industry in particular; an industry that represents the largest pool of capital in our nation by a country mile. The fact that this kind of funding is unavailable for investment in institutional scale build-to-rent represents a massive missed opportunity that if unaddressed, will help to sustain existing affordability issues. Private developer-investors building 50 apartments at a time will not be enough to propel the build-to-rent offering into the mainstream.

If allowed to flourish, the impact of market disruptors such as build-to-rent and co-living on the construction industry will be felt as profoundly as automation's impact on the car manufacturing industry.

The transformation of personalised transport is a barometer for the rate of change upon us in modern western society. With some 35 separate manufacturers already advanced enough to have public road access for automated vehicle testing in the U.S. state of California alone, it is clear that we are in the middle of a significant period of change, not at the beginning. Some say we may be even experiencing the change of an era, not just an era of change.

This is but one example of automation; another being The Boring Company and Virgin Hyperloop One's testing of technologies that could reduce travel time from Sydney to Melbourne to a 53-minute personalised journey. This would have a direct correlation to lifting density along transport corridors by providing accessibility to suburbs that were once considered rural or uninhabitable due to lack of infrastructure.

The cornerstone of all this change, including expected disruption to our local construction industry, is timing. Many household names in the Australian property industry are seriously invested in creating sustainable build-to-rent solutions and if we embrace the change now, we could go a long way to solving housing affordability issues within the next decade.

This scale and rate of change is unprecedented and is likely to be met with resistance. Expect resistance from banks and financial institutions, who coincidentally are some of the more conservative members of our business community. Expect resistance from town planning authorities, who presently dictate that co-living—a niche version of build-to-rent—must occur on land that is zoned as mixed use, despite such zoning accounting for only around one per cent of urban land in Australia.

Regardless of resistance, consumers have asked for new and innovative housing solutions, and consumers generally win in the end.

Architects have a vital role to play in ensuring that future generations can live collectively and affordably in Australian cities. By harnessing their understanding of the confluence of driving forces that have led to the rise of build-to-rent and co-living models, architects can work creatively to broker innovative non-standard design solutions with authorities and encourage change.

For some time now, Rothelowman has been presenting progressive yet considered solutions to authorities and it is important that architecture and design practices such as our own continue to lead the way by encouraging the broader industry to participate and enjoy the ride.

Nigel Hobart is managing director, Rothelowman.

# Is the War on Gender Disparity Counterproductive to Achieving Diversity?

With many programs aimed at creating welcoming workplaces for women in A/E/C, you would be forgiven for assuming we have come further than the reality amongst us. Recent feedback highlights how far away we are from truly achieving gender parity; however, the pathway forward to achieving these goals is counterintuitive.

ALEXIA LIDAS

Women working within A/E/C report an indictment on our industry. DesignIntelligence recently conducted research to understand the Australian context of gender parity in the A/E/C industry. Women overwhelmingly feel that industry initiatives have not achieved the desired outcomes. With the moral and business case strongly supporting gender diversity, we must ask the hard questions as to what is happening and how we can turn this around.

Yet looking at the hard questions isn't easy. This is a very complex issue, and responses to a survey need to be unpacked in the same nature that they were provided. There is, however, a lot that can be learnt from headline results.

Survey respondents were asked to report on their top three issues.

1) 70 percent felt they are assumed to be lacking skills
2) 46 percent do not feel included within the workplace
3) 46 percent feel negatively impacted by a gender-based pay gap

The first issue has a domino effect, which is evident within the remaining results. If women feel that their boss or colleagues assume they are lacking skills, rather than being judged on their output, we are creating workplaces where women may intentionally or subconsciously be excluded and unfairly remunerated.

Previous studies regarding gender parity have given notable commentary regarding a hesitance from women to put themselves forward for promotions, highlight their achievements and negotiate tougher on salaries; suggesting that when presented with the same opportunities, men will raise their hand and confidently represent themselves.

Of course, these are generalisations that do not strictly apply to all; however, generally speaking, if this is true, there is nothing shocking about the avoidance of a seemingly uphill battle.

- 54 percent enjoy and seek further initiatives for women in the A/E/C industry

- 42 percent feel that KPIs are required for change, while 32 percent are unsure of their impact

While there is an adverse effect on productivity and cohesive working for teams that lack a sense of belonging, the answer will not be found within more initiatives for women in construction. Attaining a workplace where the real talent of high-achieving women can be acknowledged is counterintuitive. We need to do more than just focus on women. Paradoxically, this approach will always position women as "the other," feeding the existing unconscious bias in all of us. We need to create a truly diverse workforce to cut through that bias.

Irrespective of the impact to the plight of women, it is unconscionable to ignore the other segments of exclusion in the workplace. For example, Australian leaders are up to 68 percent less likely to interview applicants with non-Anglo Saxon names. There other segments of exclusion in the workplace deserving of our attention.

Strangely, in our high tech, hyper-connected world, we continue to select leaders based on survival on the savannah, such as height. Yes, height is a predictor of gaining leadership roles. While there's no silver bullet to solving all of this, there is a better pathway to success.

"While there is an adverse effect on productivity and cohesive working for teams that lack a sense of belonging, the answer will not be found within more initiatives for women in construction. Attaining a workplace where the real talent of high-achieving women can be acknowledged is counterintuitive."

Inviting people with a range of cultural and linguistic backgrounds, people with disabilities, LGBTI people and others into our organisations is key. We then may find that for women, getting that next promotion in a mix such as this is not so radical. It can be a win/win, also increasing the feeling of belonging within the workplace for all.

- Organisations in the top quartile for cultural diversity were 35 percent more likely to have financial returns above the industry mean. (2015 McKinsey)
- With diversity and inclusion, individuals report 57 percent increased performance against goals, 24 percent greater retention, 21 percent more emotional commitment to colleagues, 11 percent lift in discretionary effort (CEB, Global Labor Market Survey, 2012).

We are living in a VUCA (which means volatility, uncertainty, complexity and ambiguity) world, with discontinuous disruption affecting entire industries. The urgency around this issue is greater than the direct impact to our workplaces, but because diverse workplaces will also provide the agility and innovation to solve the complex challenges of today, tomorrow and the future.

### Tips for organisations progressing on diversity:

- Broaden the inspiration behind diversity programs–look for model programs outside of A/E/C.
- Don't focus on women–bring other groups into these strategies; strive toward equality for all.
- Empower all of your staff to meaningfully contribute to the diversity aspirations of the company.
- Ask yourself what markets are you moving into, what supply chain and distribution channels could you engage with better, what consumer base are you seeking to represent, and more. This can create a meaningful link to the low-hanging fruit of your business strategy and your diversity goals. Make it meaningful.

Recently, DesignIntelligence conducted research to determine the context of gender parity in the A/E/C industry in Australia. Participants were given the opportunity to share thoughts and feedback. The following is a collection of their responses.

### Women and the Future of the Industry

"Requirement to improving attitudes not just toward women but to all."

"Women should focus on getting technically savvy as the future of every industry is tech. Vertical integration of the industry will mean that the ability that women have to synthesise diverse inputs into strategy will be more valuable in the future. The industry is moving from brawn to brains."

"If old white men in Australian built environment firms do not figure out how to make their workplaces more flexible and female friendly, they are going to miss out."

"I prefer to work for companies where women are currently in leadership roles. If [I am] ever looking to move in to a new role, this is one of the key indicators as to if I am interested to move. Hence for me, the future of the industry relies on seeing more women in senior management positions. That being said, the climb up to a senior role is a long and hard process, but if I see women in this role I know it can be done."

### Workplace Exclusion

"It will get better with generations."

"Try to meet with one person in your team and one person in your business each week. See how you can help them, not just yourself. It would be amazing if more women didn't just look for a hand up but extended the hand to other women 'beneath' them."

"When it looks unfair it probably is. Don't be overlooked–raise your voice and promote yourself."

"Seek common ground and strive to engage. Eventually someone will 'get it.'"

### Workplace Inclusion

"Open and inclusive workplaces for all are essential in ensuring the longevity of every organisation within the A/E/C industry. Only with diversity around the table can truly innovative and equitable ideas and design outcomes be realised. It makes sense on every front, from a social to a commercial perspective. If you do not facilitate open and inclusive workplaces for all, it is just a matter of time before the rest of the industry calls you out for it … or soon enough you could see your own face on the hit blog 'Congrats, you have an all-male panel.' "

"Diverse thinking leads to better, more profitable outcomes. So don't fill the room with people like yourself! Appoint sponsors for a diverse range of people with potential, to assist them to bring out their best."

Alexia Lidas is director of DesignIntelligence Australia.

**“I know we should be winning way more than we have been. The clients keep picking firms that are far less qualified than we are.”**

“So how do we convince them?”

For when you need help identifying and
communicating what makes you the best choice.

di/strategic advisors℠

whenstrategymatters.com
678.785.3359

# 2018 COMPENSATION AND BENEFITS SURVEY

## Compensation

When an employer hires a new employee, there is an agreement between them about a "compensation package." The employer agrees to compensate the employee; the employee agrees to do the work he or she was hired to do. It is a social exchange, of sorts, where the employee gives his or her expertise, effort and engagement to earn that compensation, which is typically in the form of a paycheck or cash. Some employers offer cash bonuses as part of a performance plan or as a surprise based on the employer's discretion

Most employers also offer other types of compensation as part of an employment package. These benefits typically include an assortment of health, dental, vision, disability and life insurance, as well as paid time off—vacation, personal and sick days, and holidays. Often, employers provide "perks," which can run the gamut in variety as well as value. The list of perks is a journey of the imagination as employers try to appeal to new employee candidates and retain existing ones. And many of today's workers are more interested in a tailored benefits package—one that provides the benefits that they need vs. a one-size-fits-all package.

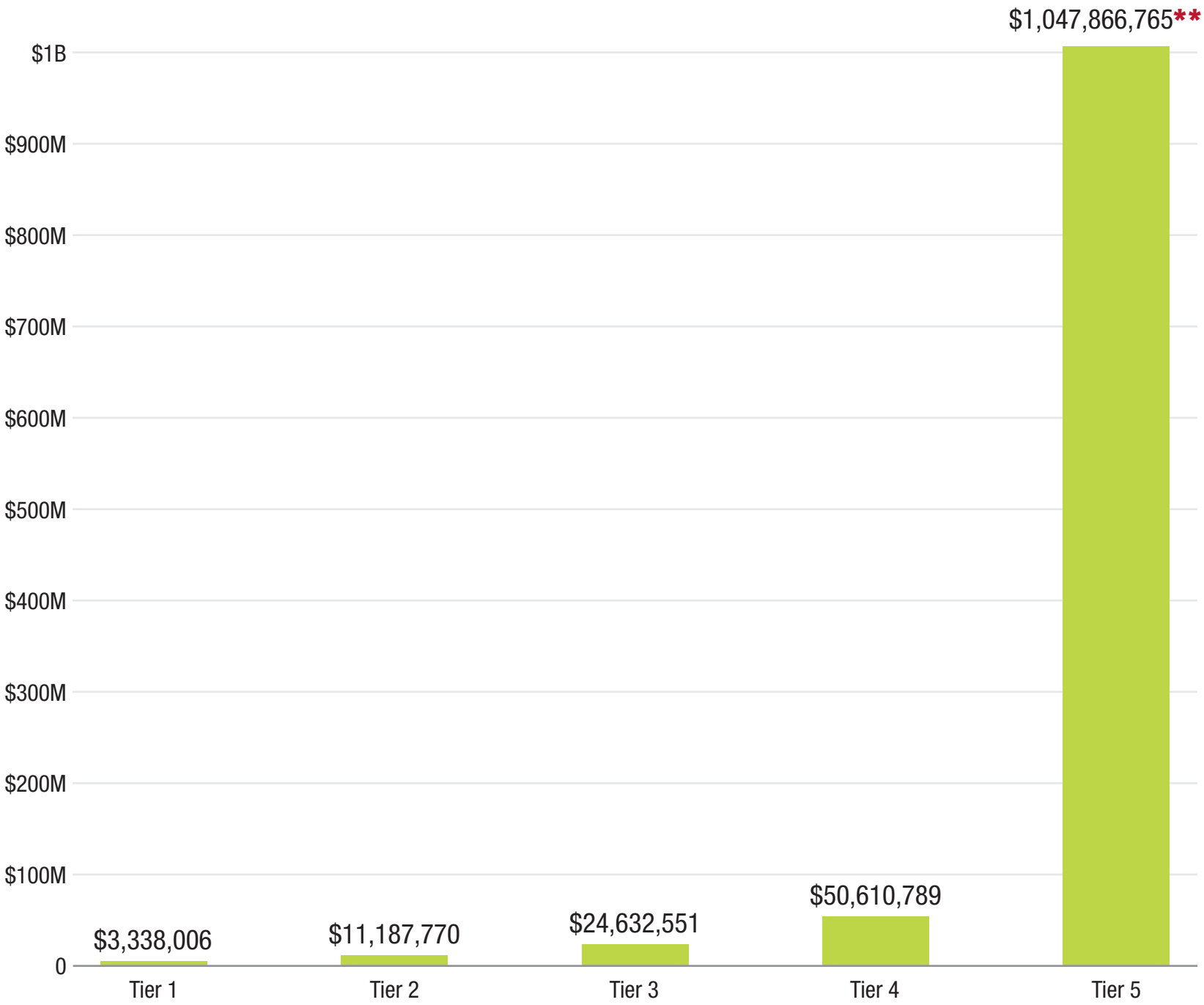
Compensation is used to recruit, retain and reward. It is used to build loyalty, boost performance and morale, and increase job satisfaction. It is used as a standard by employees and potential employees to understand how they are valued, as workers and as human beings.

Non-monetary compensation is important and yet, it is misunderstood. Employers create cultural, community and relational values for the benefit of all employees. In fact, most employee behavior is driven by these values (or the lack thereof). It is the setting of and interaction in the workplace that makes or breaks employee commitment and engagement.

In this issue of *DesignIntelligence Quarterly*, we are reporting our research on how compensation is being handled across the U.S. design profession.

# General Information

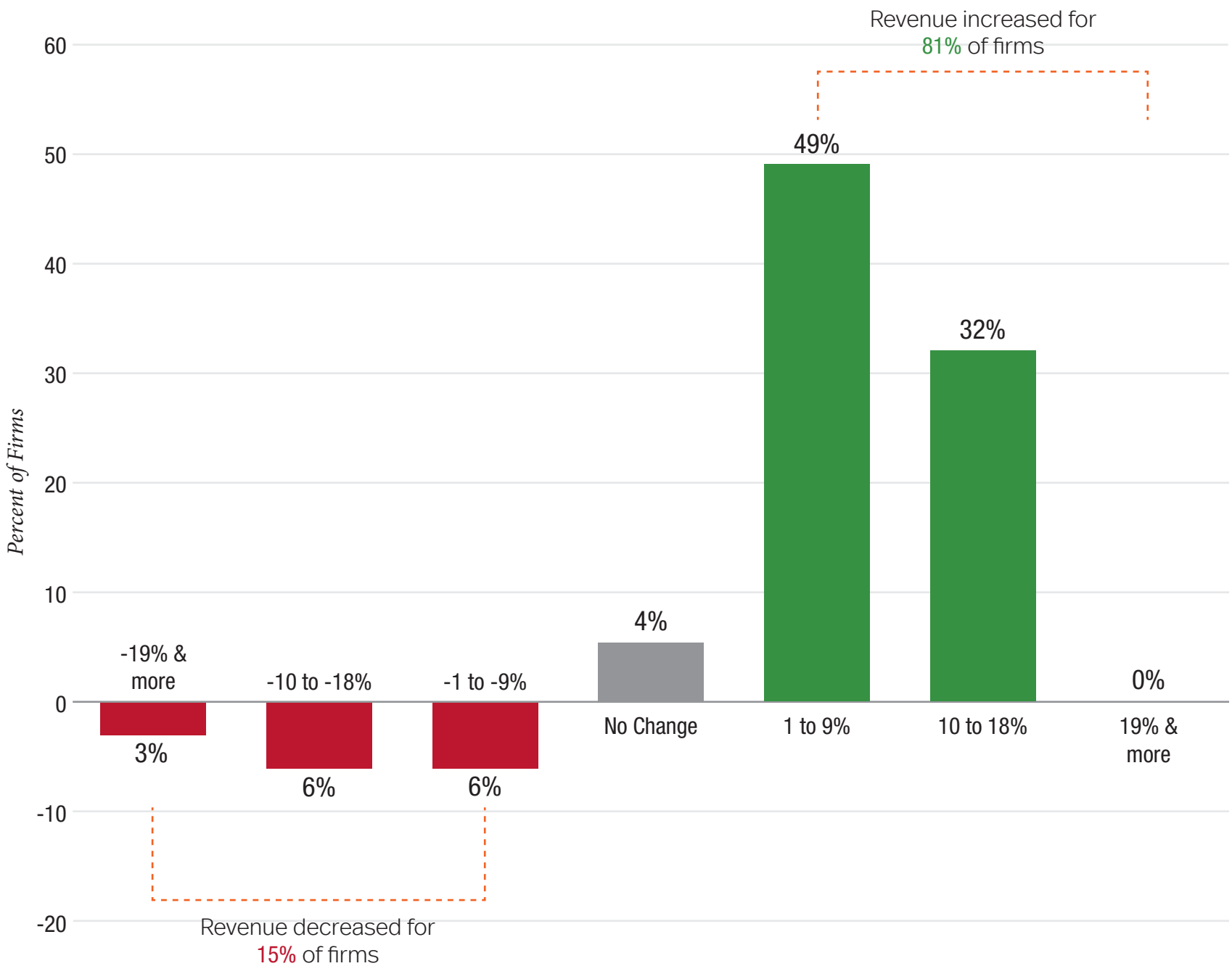
## Projected Average Organization-Wide Gross Revenue for 2017 | by Tiers*



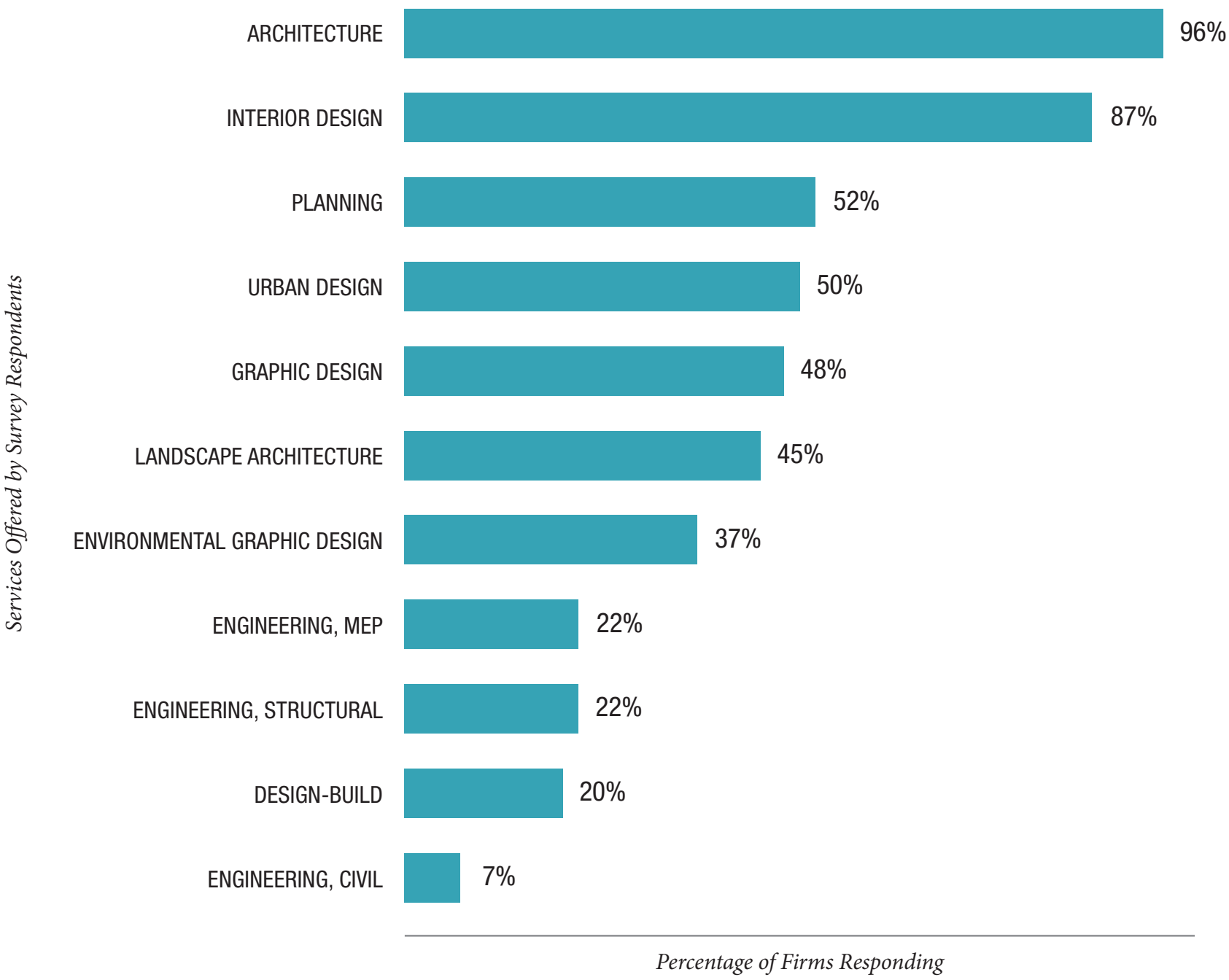

*Each tier represents the average of the number of responses received. Tier 1 is comprised of the average of the lowest 20% of responses received. Tier 5 is comprised of the average of the highest 20% of responses received. Revenue shown is in USD.
**Two outliers inflate the number.

GENERAL INFORMATION

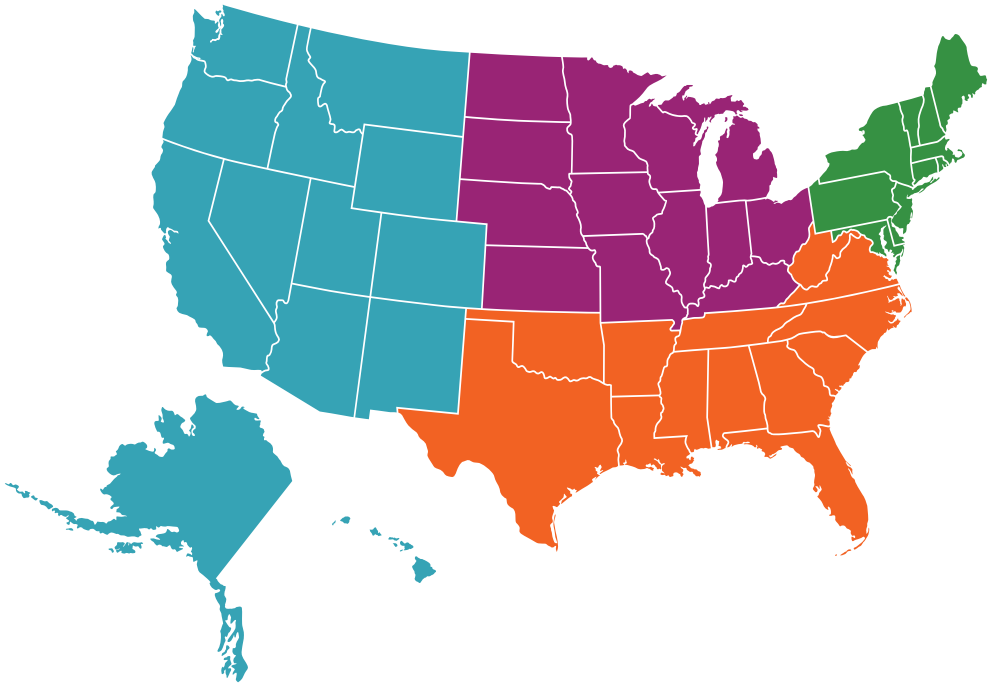
## Projected Organization-Wide Revenue Change for 2017 from 2016



## Services Offered by Survey Respondents



# Regional Breakdown Used in This Report



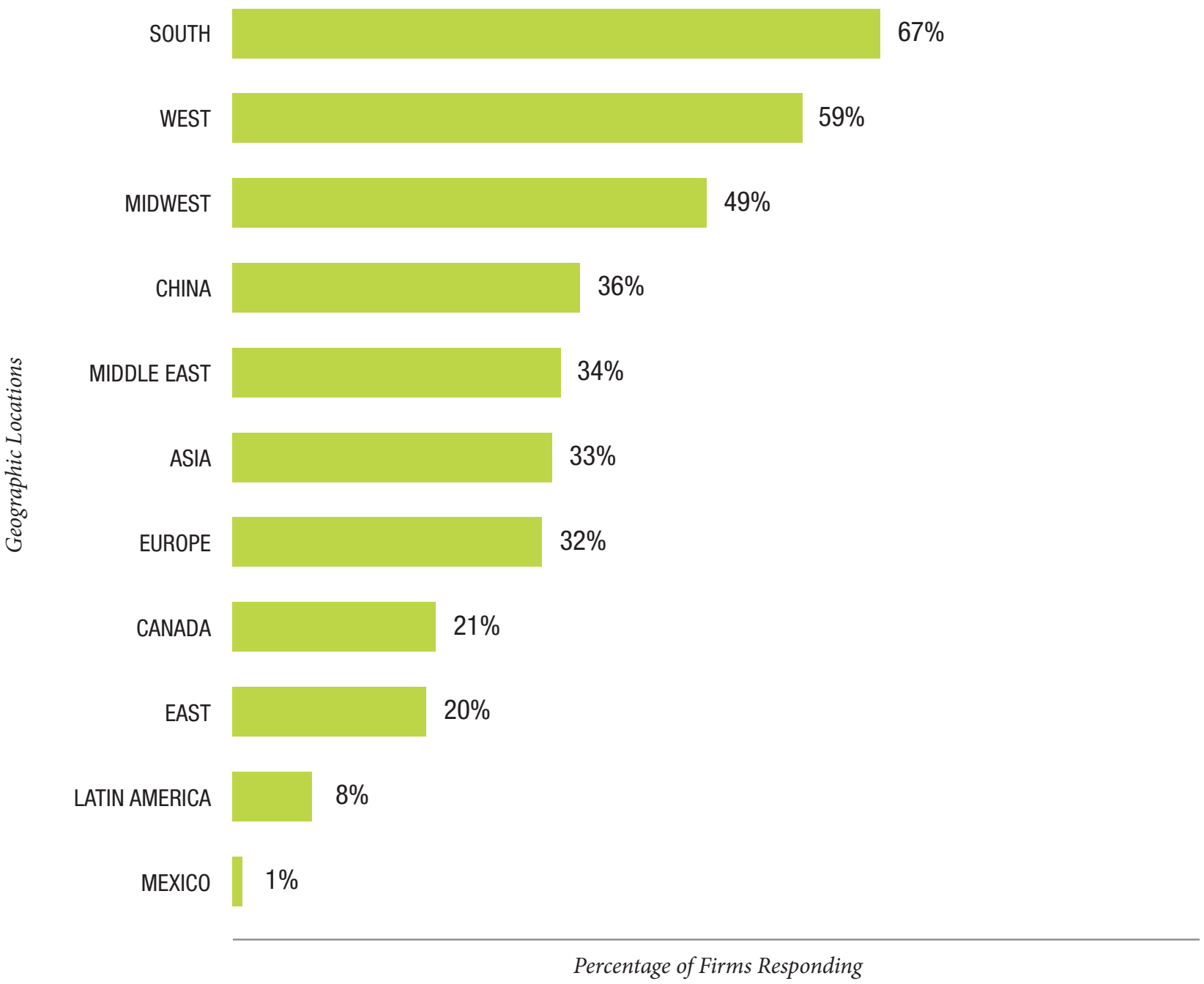
**MIDWEST**
Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, Wisconsin

**WEST**
Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, Wyoming

**EAST**
Connecticut, Delaware, D.C., Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont

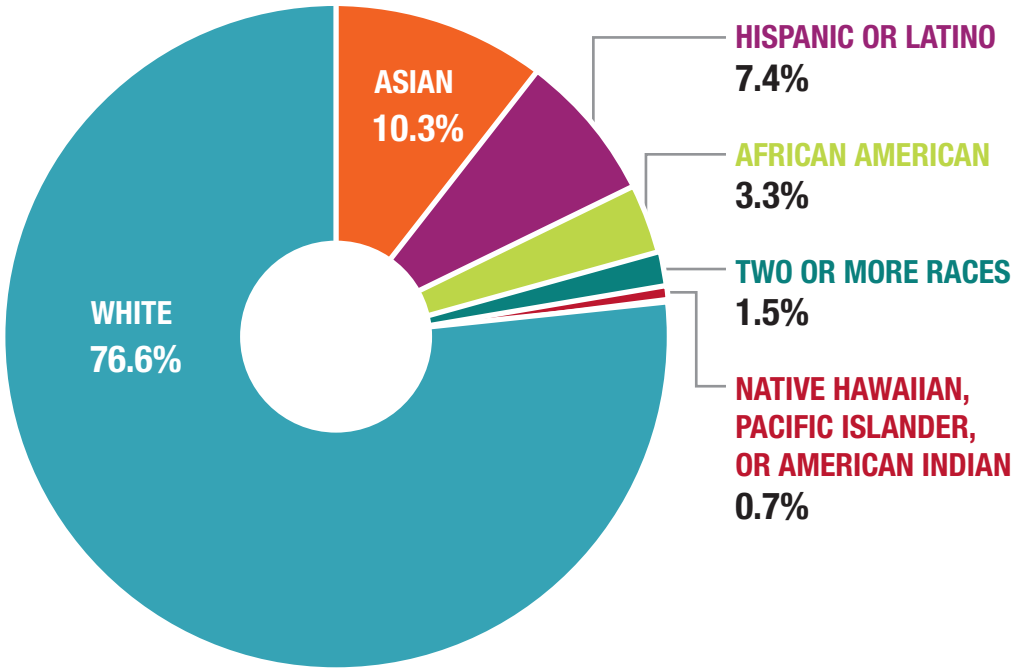
**SOUTH**
Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, West Virginia

## All Geographic Locations Where Your Organization Is Represented With an Office

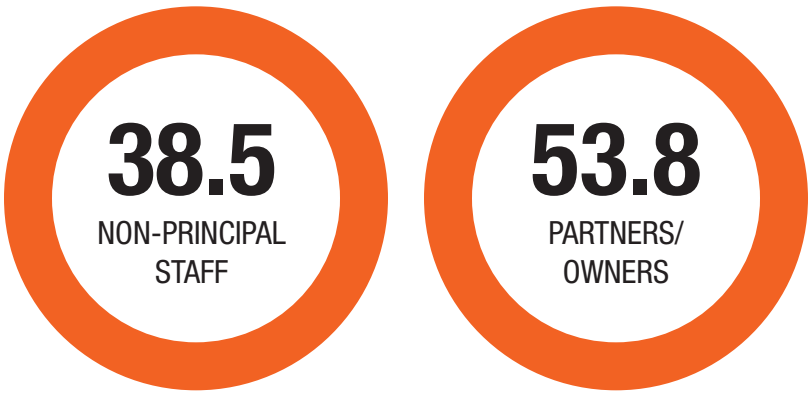


GENERAL INFORMATION

## Race/Ethnicity of Staff




## Median Age of Staff




## Median Ratio of Male/Female Saff


**36.4%**
of firms reported having a higher percentage of female than male staff.

DI INSIGHT

**Turnover Rates—the Good, the Bad, the Ugly**

Attracting, cultivating, retaining and engaging talent resources continues to be one of the most prevalent topics of discussion in the A/E/C community. While analysts suggest that the U.S. economy will remain strong for 2018, there are still high levels of concern and uncertainty considering both domestic and international geopolitics.

Resiliency and the ability to adapt swiftly to changing economic conditions requires laser-like focus on your firm's talent. Successful talent strategists keep close tabs on HR analytics to ensure their organization is not merely healthy at the present time, but also poised to prosper if economic hardship or a recession becomes a reality.

As the economy grows, employees have more job options and are looking for better opportunities. Also, as the economy grows, employers may be letting some unproductive employees go. Our research revealed a significant increase in employee involuntary turnover from the prior year—from 1.8 percent in 2016 to 6.6 percent in 2017—while voluntary turnover increased from 11.0 percent in 2016 to 12.5 percent in 2017. Firm size breakdowns revealed a combined rate of 14.4 percent voluntary turnover and a 3.6 percent combined rate of involuntary turnover.

All turnover is not considered equal. With involuntary turnover—i.e., terminating unproductive employees, or those with obsolete skills or poor performers—a company can then be infused with new employees who bring increased ability, fresh insight and new ideas. But in this case, hiring practices need to be reviewed—it is costly to hire, train and onboard employees who are not a fit for your organization or the position they were hired for.

On the other hand, when a company loses valuable employees through voluntary turnover, it might be a warning sign and suggests a need for a deeper dive into management practices. According to Gallup, 75 percent of employees leave their jobs because of factors under the control of management. Here are the top six reasons employees quit their jobs (according to Gallup):

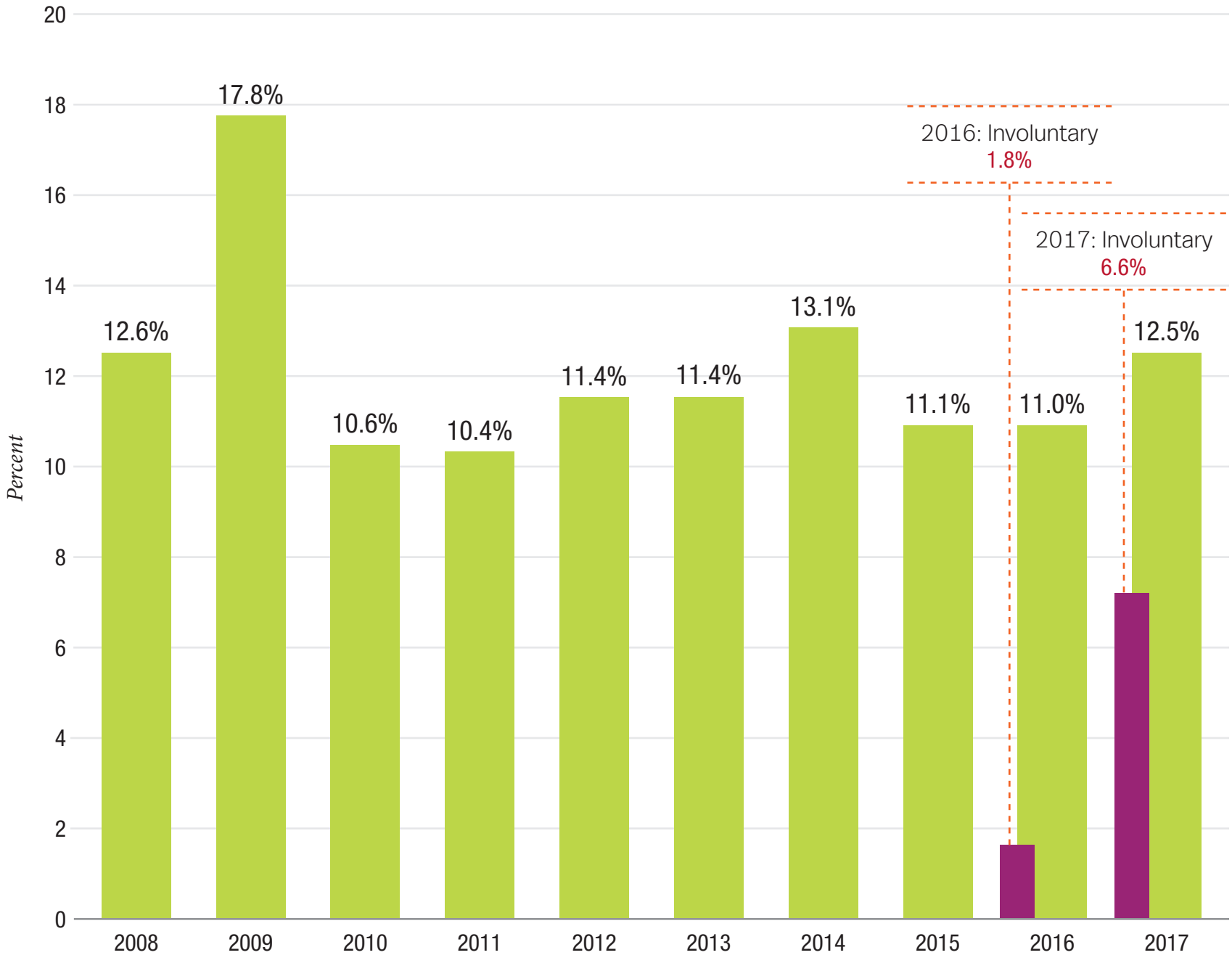
1. Career advancement or promotional opportunities: 32%
2. Pay/benefits: 22%
3. Lack of fit to job: 20%
4. Management or the general work environment: 17%
5. Flexibility/scheduling: 8%
6. Job security: 2%

Employee engagement is also crucial, especially for your top talent. Gallup says, "Highly talented employees who are not engaged were among those who had the highest turnover in each organization—on par with low talent, disengaged employees. In other words, when your best employees are not engaged, they are as likely to leave your organization as your employees who tend to have performance issues and are unhappy." Engagement begins with management setting clear goals and expectations, making sure an employee is a fit for their role, and charting a path for success and growth, especially for your most talented employees.

Sources:
https://www.inc.com/marcel-schwantes/why-are-your-employees-quitting-a-study-says-it-comes-down-to-any-of-these-6-reasons.html

http://news.gallup.com/opinion/gallup/226025/talent-walks-why-best-employees-leaving.aspx

## Mean Employee Voluntary Turnover Rate | Historical Perspective



**Millennial Employees**

Over the past five years, there has been little shift in the median age of staff—in fact, our research shows that the median age of non-principal staff and partners/owners has remained relatively unchanged for the years 2013–2017.

**Median Age of Staff**

| | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|---|
| Non-principal Staff | 39.4 | 39.2 | 39.0 | 38.9 | 38.5 |
| Partners/Owners | 53.7 | 54.2 | 55.3 | 54.6 | 53.8 |

This is an interesting statistic given a labor market that is almost at full employment, suggesting senior staff are remaining at A/E/C firms longer. The question arises: Are they passing along meaningful work to less junior employees? And what is the impact on the path to partnership?

In his Forbes article "Millennials Work for Purpose, Not Paycheck," Karl Moore states, "Giving your young employees a purpose will enable them to envision a future with your company. Young people are fickle. They are on an endless search for happiness. If an organization is unable to map out a road plan, a purpose of employment, it will unfortunately notice a high 0-2-year turnover. Millennials need direction and meaning, an interesting mixture of altruism and self-interest."

Therefore, leadership has less than two years to show their younger staff how the firm can provide them a sense of purpose and a road map for growth. Otherwise, this generation will go searching for purpose and potential elsewhere. This brings up questions for consideration:

1.) Is your firm actively and consistently promoting how its work fits into the broader social context? According to research conducted by Jeanne C. Meister and Karie Willyerd of *Harvard Business Review*, millennials are the most socially conscious generation since the 1960s. In the 2018 Deloitte Millennial survey of 10,455 millennials representing 36 countries, 75 percent of respondents indicated a belief that businesses focus on their own agenda rather than considering the wider society (up from 64 percent in last year's report). And 67 percent responded that businesses have no ambition beyond wanting to make money (up from 54 percent in last year's report).

2.) How well is your firm investing in younger employees? In the 2018 Deloitte Millennial Survey, respondents say that employers are falling short in developing employees' soft skills. One of the most important things an organization can do to demonstrate their investment in a young employee to help them develop soft skills is to train, coach and mentor them. While formal mentoring programs can still be beneficial vehicles for coaching, this new generation of workers has high expectations for regular, consistent and meaningful feedback which, of course, requires a precious commodity: time. In their article "Mentoring Millennials" the authors suggest several non-traditional mentoring models for consideration as firms seek to grow and develop this next generation of leaders including:

**Reverse mentoring:** where a younger employee is paired with a senior executive for the purpose of mentoring upwards. The benefits of reverse

mentoring can include: integration within an existing traditional mentoring program; fulfills the millennial's desire for purpose and development; and benefit older staff from an infusion of fresh ideas, improved skills in technology, more familiarity with social media and current trends.

**Group mentoring:** pairing one mentor with a group of mentees or several mentors with a larger group of mentees, thereby increasing opportunity for coaching, knowledge transfer and learning not just from a senior leader but also from one's peers.

**Anonymous mentoring:** matching mentees with trained mentors outside the organization. In their HBR article, Meister and Willyerd note, "Exchanges are conducted entirely online, and both the mentee and the mentor, who is usually a professional coach or seasoned executive, remain anonymous. The engagement, generally paid for by the mentee's company, lasts six to 12 months." This approach is similar to situational mentoring in which a mentee would seek out a mentor for a specific task.

**Micro mentoring:** informal mentoring, where a mentee reaches out to multiple mentors for advice and help on different topics, such as interviewing, team development, negotiating a salary, and more. Usually, this type of mentoring is very informal, over a small time frame, and usually covers one-off issues and topics.

When faced with the high cost of turnover, the cost of providing younger staff with mentoring opportunities is negligible compared to the potential benefit. The Deloitte survey found that "millennials paired with a mentor were more likely to say they planned on staying with their current employer compared to millennials without a mentor." In fact, those intending to stay for five years or more with their organization were twice as likely to have a mentor (68 percent) than not (32 percent).

There is no "one size fits all" approach to mentoring. Each of these types of mentoring approaches have their strengths and weaknesses, but mentoring benefits all ages of employees in all types of industries.

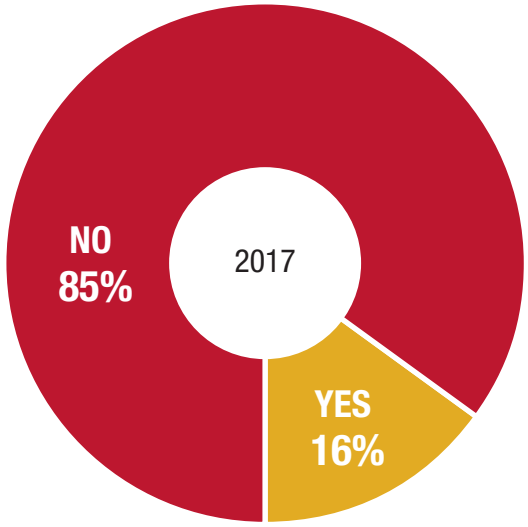
Sources:
Moore. "Millennials Work for Purpose, Not Paycheck." https://www.forbes.com/sites/karlmoore/2014/10/02/millennials-work-for-purpose-not-paycheck/#129d8e416a51

Meister and Willyerd. "Mentoring Millennials." https://hbr.org/2010/05/mentoring-millennials

"The 2018 Deloitte Millennial Survey: Winning Over the Next Generation of Leaders." https://www2.deloitte.com/global/en/pages/about-deloitte/articles/millennialsurvey.html

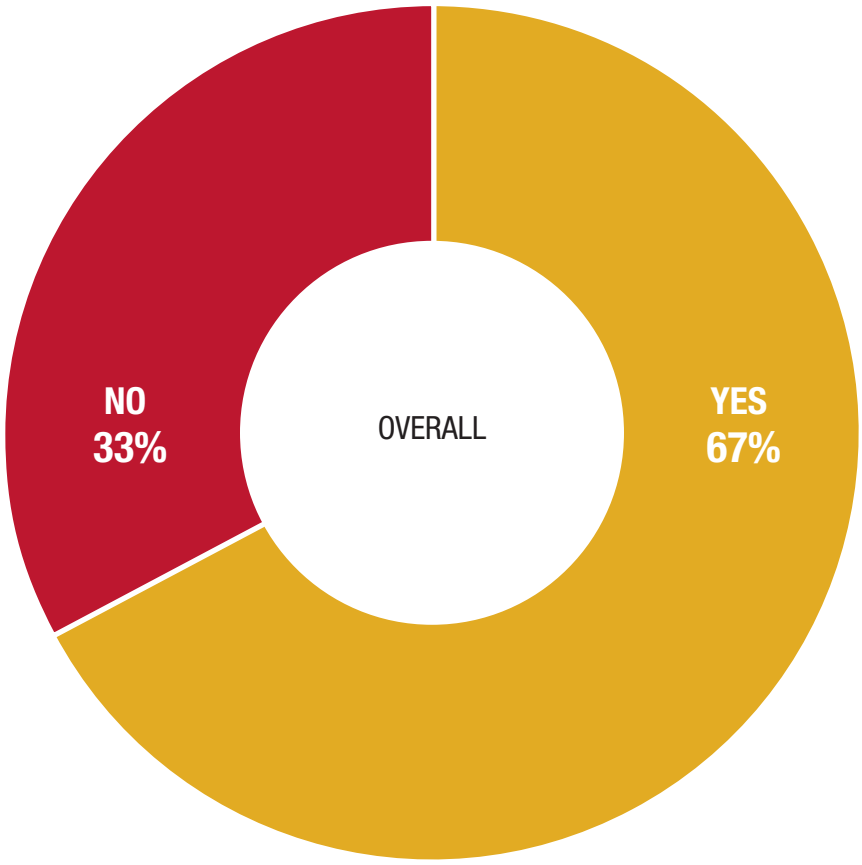
Zimmerman. "Modern Mentoring Is the Key to Retaining Millennials." https://www.forbes.com/sites/kaytiezimmerman/2016/07/18/modern-mentoring-is-the-key-to-retaining-millennials/2/#1cff30fc26c7

## Are some design staff compensated at a higher level based on the market sector they work in?





## Do you have a merit-based performance system in place for those at the partner/principal level?



DI INSIGHT

**Diversity**

This year's survey results on the median ratio of male to female staff show an increase of female staff to a decrease of male staff. For 2017, the ratio of male staff to female staff was 54 percent to 46 percent respectively. From our research over the years, this shows a steady increase in the number of female employees (from 38 percent in 2011 to 46 percent in 2017), and a steady decrease in the number of male employees (from 62 percent in 2011 to 54 percent in 2017). For 2017, 36.4 percent of firms reported having a higher percentage of female staff than male staff.

For race/ethnicity of staff, survey participants report that 76.6 percent of employees are white; 10.3 percent of employees are Asian; 7.4 percent of employees are Hispanic/Latino; and 3.3 percent of employees are African American for 2017. For 2016, those numbers are 80.1 percent; 9.1 percent; 5.7 percent; and 3.0 percent, respectively.

The needle on ethnic diversity in the design community hasn't moved appreciably over the past few years. For example, in our 2015 survey, the responding firms indicated that 2.9 percent of their staff were African American. This percentage moved to 3 percent in our 2016 study, and 3.3 percent in our 2017 current study. In 2015, responding firms indicated that 6.9 percent of their staff were Hispanic/Latino. This percentage moved to 5.7 percent in our 2016 study, and 7.4 percent in our 2017 study. In 2015, responding firms indicated that 9.7 percent of their staff were Asian, and 9.1 percent in 2016 and 10.3 percent in 2017.

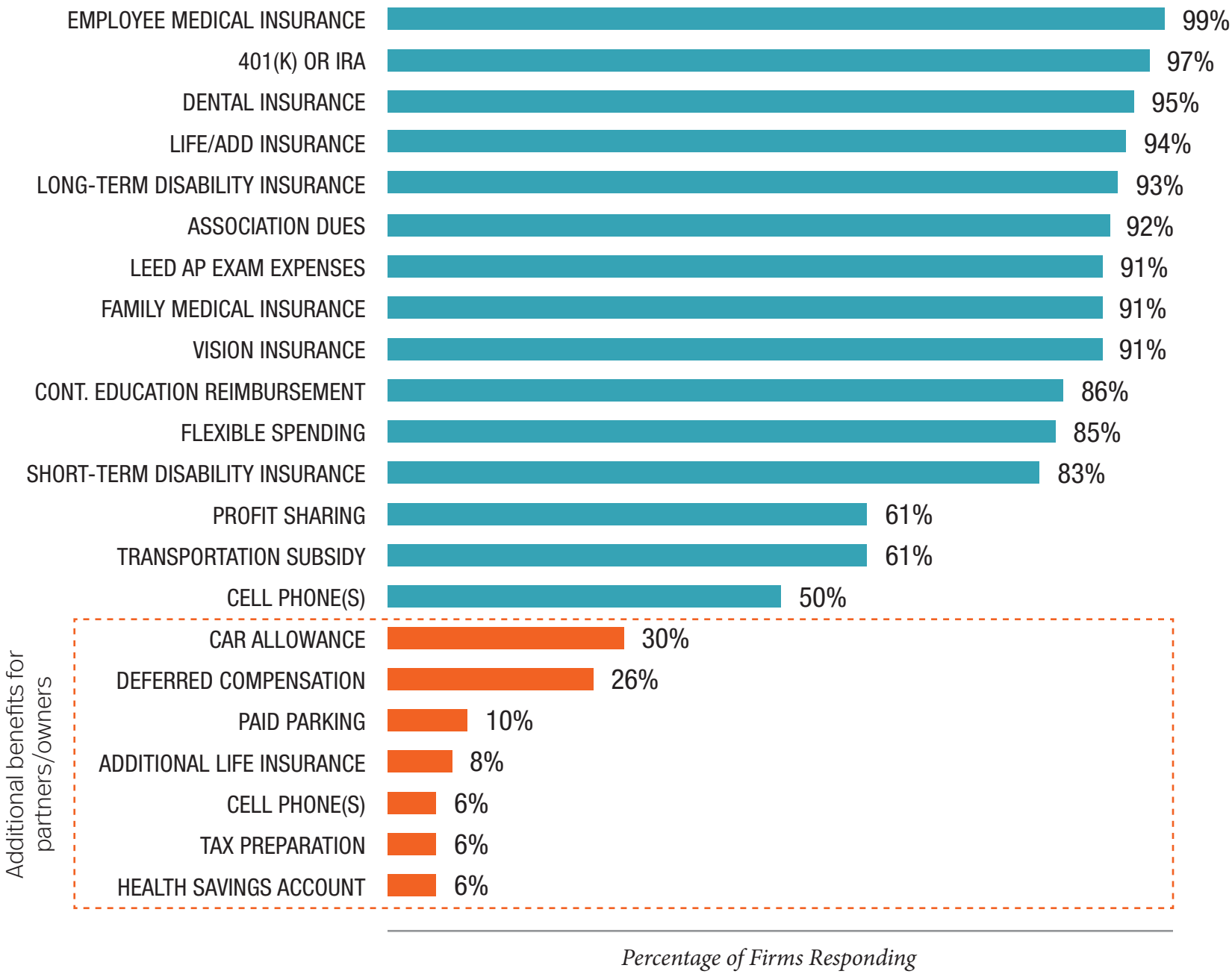
The 2018 Deloitte Millennial Survey found that diversity is linked to greater employee loyalty. Those working for employers perceived to have a diverse workforce are more likely to want to stay five or more years than those who say their companies are not diverse (69 percent to 27 percent).

We can talk about the lack of diversity at the institution level, which is creating a smaller ethnic talent pool. And we can talk about the challenges for women in architecture and engineering, and how our programs can be modified to ensure a level playing field. But if we're honest with ourselves, can we look deep within to identify any unconscious bias? Do our own perceptions derail us? These are important questions, says the Deloitte survey report, "not only from the perspective of doing the right thing, but also because of the very strong correlation between perceptions of workforce diversity and loyalty, and how well respondents say their companies perform financially."

Sources:
Deloitte Millennial Survey 2018. https://www2.deloitte.com/global/en/pages/about-deloitte/articles/millennialsurvey.html

# Benefits

## Benefits for Staff and Partners/Owners

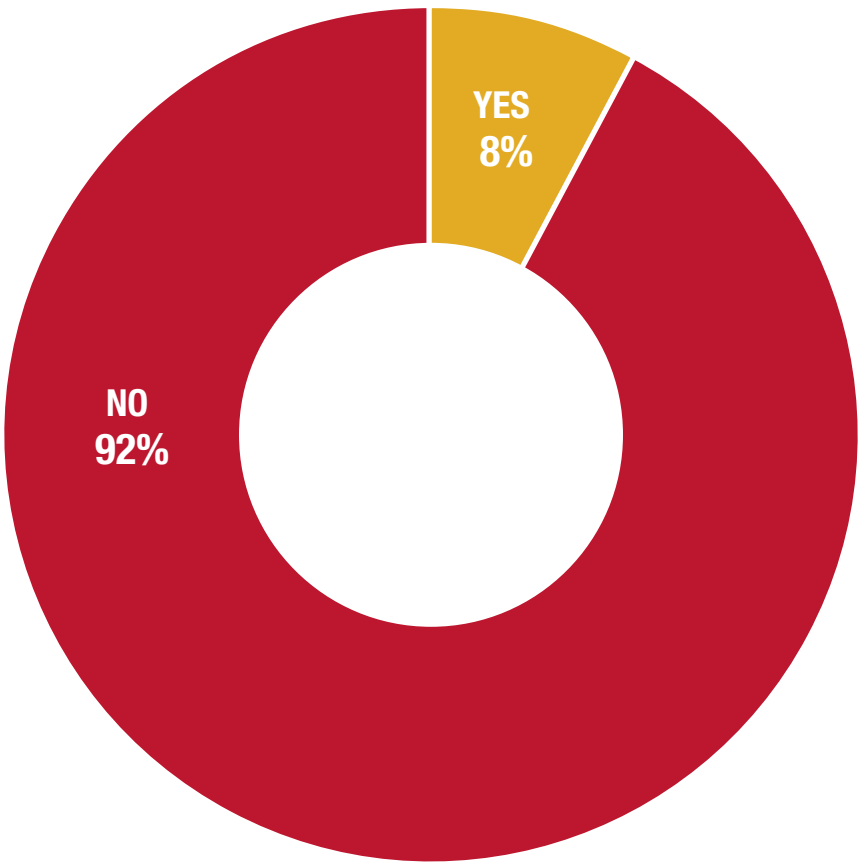


# Paid Days Off

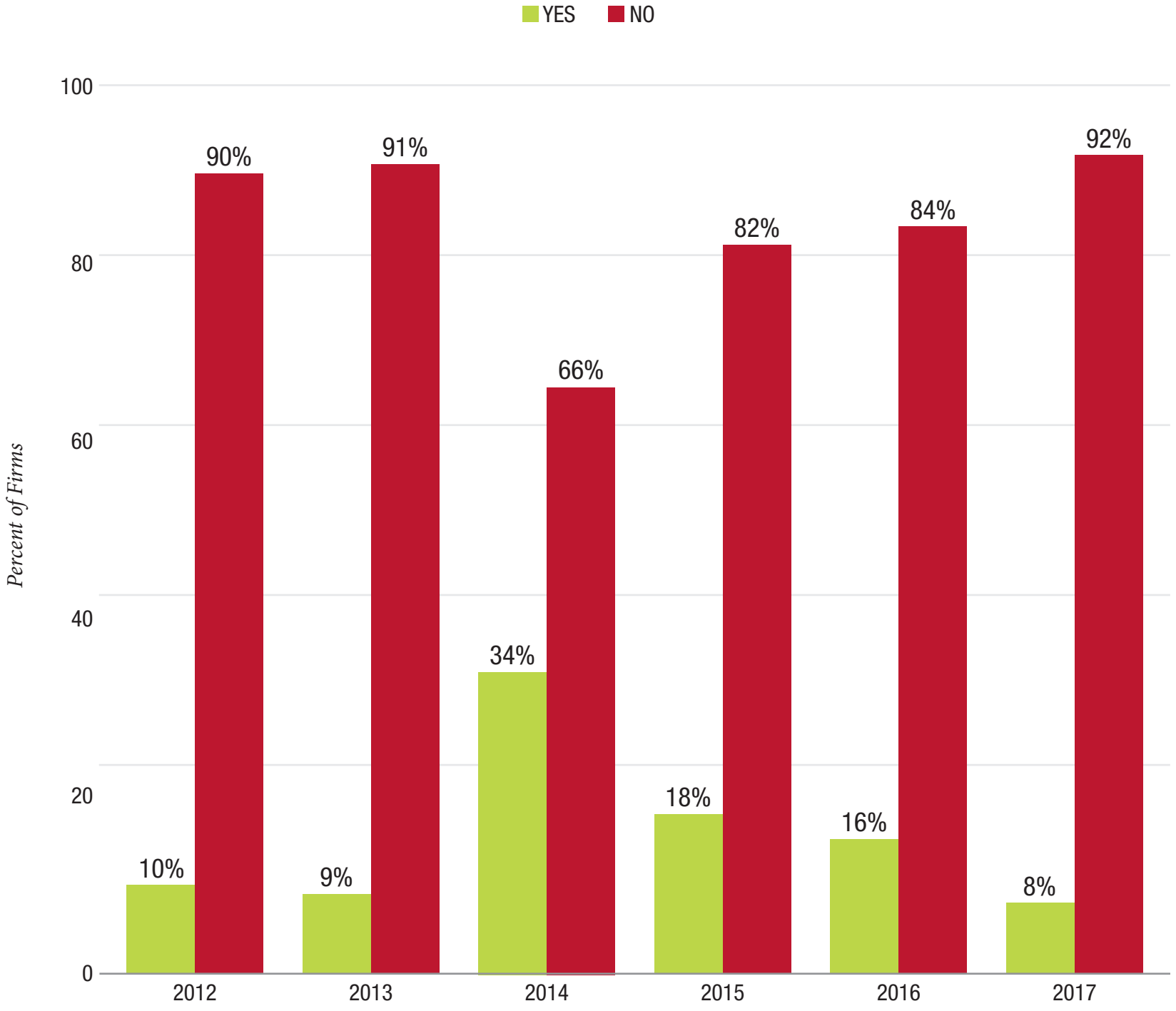
| EMPLOYEES | | Most Common Response | |
|---|---|---|---|
| Holiday | Mean = 8.7 | **31.5%** | 9 days |
| Sick | Mean = 6.6 | **54.4%** | 5 days |
| Vacation | Mean = 14.8 | **62.3%** | 10 days |
| Other PTO | Mean = 12.8 | **34.1%** | 8 days |
| **Total** | **Mean = 24.4** | 19% | 18 days |

| PARTNERS/OWNERS | | Most Common Response | |
|---|---|---|---|
| Holiday | Mean = 8.7 | **36.8%** | 10 days |
| Sick | Mean = 6.4 | **58.3%** | 5 days |
| Vacation | Mean = 17.8 | **39.6%** | 15 days |
| Other PTO | Mean = 21.7 | **23.1%** | 22 days |
| **Total** | **Mean = 29.3** | 22.1% | 26 days |

## Does the firm give employees an allowance for performing pro-bono work?



## Does the firm give employees an allowance for performing pro-bono work? | Historical Perspective



DI INSIGHT

## Benefits

Looking back to the benefits research from our 2016 survey, the results for 2017 vary little in terms of the benefits offered and ranking for staff and partners/owners. Nearly all responding firms offer employee medical insurance (99 percent) and 401(k) (97 percent). Almost all offer dental insurance, life/ADD, LTD, payment for LEED AP Exam expenses, and more.

### Benefits for Staff and Partners/Owners

| | 2015% | Rank 2015 | 2016% | Rank 2016 | 2017% | Rank 2017 |
|---|---|---|---|---|---|---|
| 401(k) | 87 | 1 | 95 | 1 | 97 | 2 |
| Association Dues | 85 | 3 | 93 | 2 | 92 | 6 |
| Life/ADD | 79 | 6 | 89 | 3 | 94 | 4 |
| Dental Insurance | 85 | 3 | 88 | 4 | 95 | 3 |
| Long-term Disability | 80 | 5 | 86 | 5 | 93 | 5 |
| LEED AP Exam Expenses | 74 | 8 | 86 | 5 | 91 | 7 |
| Family Medical Insurance | 73 | 9 | 84 | 7 | 91* | 7 |
| Con. Ed. Reimbursement | 79 | 6 | 81 | 8 | 86 | 10 |
| EE Medical Insurance | 87 | 2 | 77 | 9 | 99* | 1 |
| Vision | 72 | 10 | 75 | 10 | 91 | 7 |
| Short-term Disability | 67 | 12 | 75 | 10 | 83 | 12 |
| Flex Spending | 68 | 11 | 72 | 12 | 85 | 11 |
| Profit Sharing | 54 | 13 | 52 | 13 | 61 | 13 |
| Transportation Sub. | 45 | 14 | 46 | 14 | 61 | 13 |
| Long-term Care | 5 | 15 | 5 | 15 | | |
| Cell Phone | 4 | 15 | 5 | 15 | 50 | 15 |

Benefit offerings have changed somewhat this year, with "employee medical insurance" ranking first among benefit offerings at 99 percent of firms. According to the MetLife 15th Annual U.S. Employee Benefit Trends study, 87 percent of employee respondents said that "having insurance benefits gives me peace of mind for the unexpected." The survey revealed that insurance benefits help employees' mental well-being, and the right benefits keep today's employees coming back.

*The percentage of the cost of coverage paid by the employer varies greatly – from 0% – 100%.

DI INSIGHT

According to the U.S. Census Bureau and reported by Pew Research Center, the "Millennials are expected to overtake Boomers in population in 2019 as their numbers swell to 73 million and Boomers decline to 72 million. Generation X (ages 36 to 51 in 2016) is projected to pass the Boomers in population by 2028." As firms evaluate their total compensation packages in a tight labor market, what is attractive to millennials cannot be overlooked. Firms may attract top talent millennials with signing bonuses and attractive base salaries. But an attractive cash compensation program and benefits package will not retain younger staff for long as they seek to find purpose in their work and the firms they choose to contribute to.

In a competitive labor market, it can be tempting to keep offering "more" as a way to keep up–more money, more flexibility, more benefits. But according to the MetLife Study, "Employers that can satisfy their employees' diverse needs will emerge clear winners in the talent war." The study found that 58 percent of employees are interested in customized benefit plan options based on their personal information. Today's employees don't necessarily want "more"–they want what is offered to match their needs.

The MetLife Benefits study went on: "Today's workforce is becoming increasingly multigenerational, and each generation has its own unique needs. But even within generations, employees want benefits that recognize their unique circumstances. Therefore, salary, family structures, educational levels and company tenure all come into play."

And employers agree. In fact, they see these new expectations as an opportunity. "Cultivating a benefits plan that addresses employees' diverse circumstances and gives them choices pays off for employers by improving productivity, loyalty and employee satisfaction." Employers reported the payoff: 80 percent saw increased employee satisfaction and increased employee productivity; 78 percent saw an increase in employee loyalty; 73 percent used their benefits packages to attract employees and 64 percent used them to help their employees make better financial decisions. In this new workforce era, employees in all age groups are looking for happiness, work/life balance, and personal satisfaction from their jobs. And they are willing to leave their current employers to change jobs, switch careers, join the gig economy, or start their own business. It is important to see the "benefit of benefits."

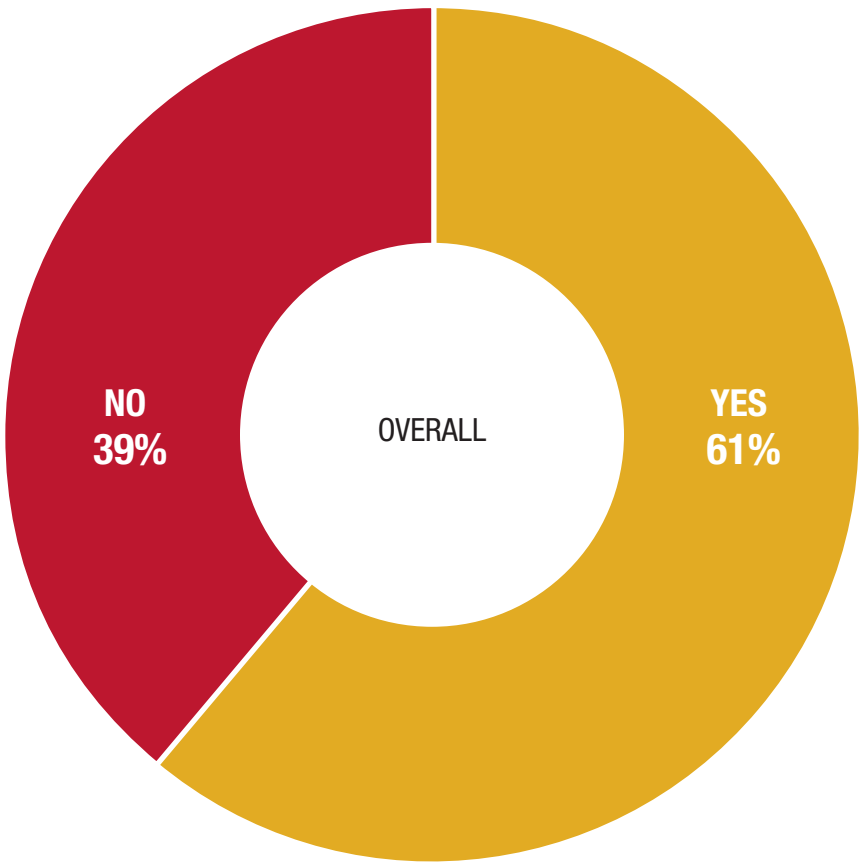
Don't overlook the intangible benefit that a sense of belonging, purpose and intentionality bring to the new workforce. "Unless firms can create resident magnetism through creative use of culture, purpose, compensation and non-intuitive rewards, they will struggle to attract and retain top talent. This goes across the board for architecture, design, engineering and construction/project management. The rising generations want to now that they matter to the organizations they are working for."
– DI Strategic Advisors

Sources:
"Work Redefined: A New Age of Benefits," MetLife. https://benefittrends.metlife.com

Fry, Richard. "Millennials projected to overtake Baby Boomers as America's largest generation," Pew Research Center. http://www.pewresearch.org

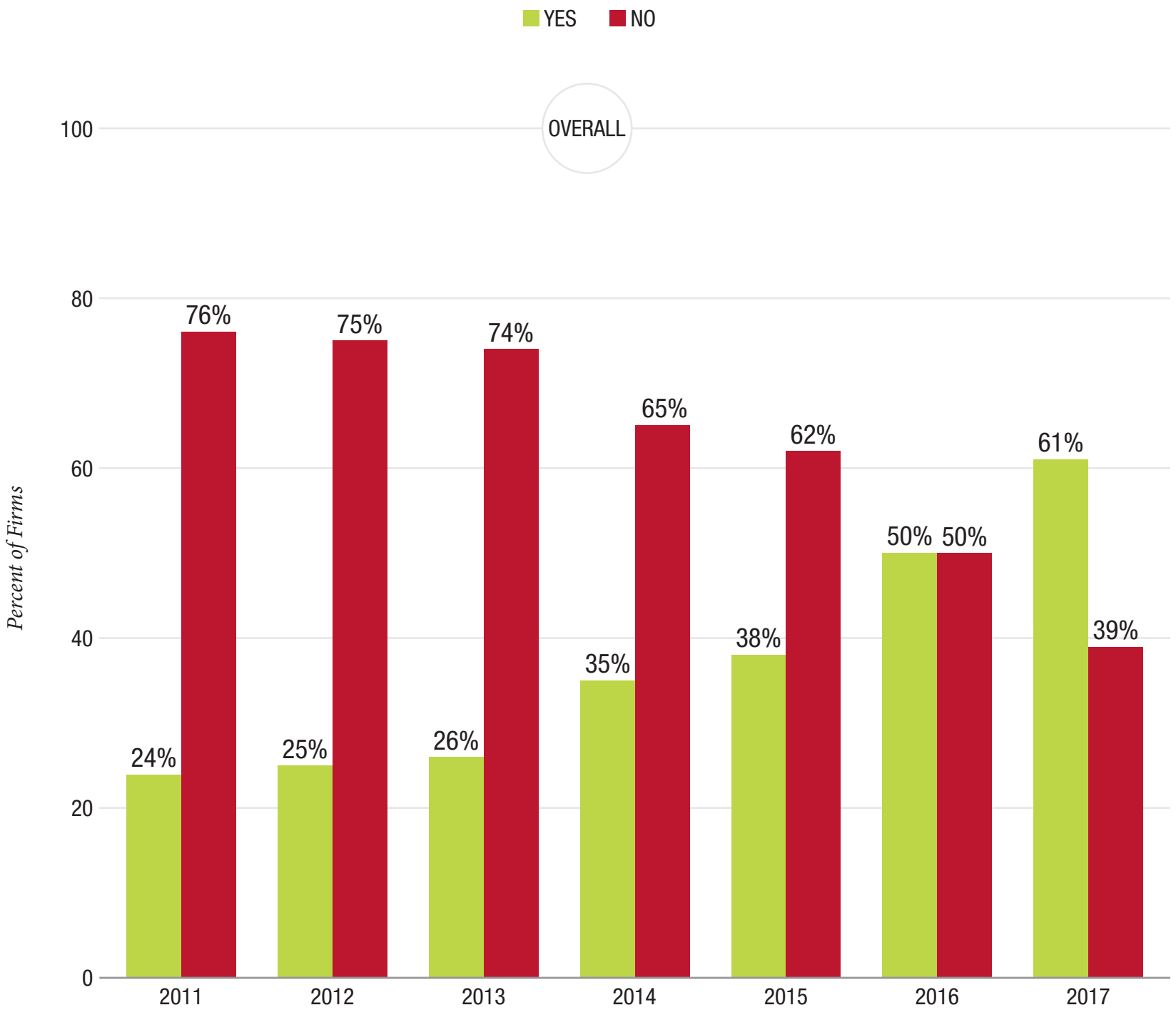
# Cash Bonus Facts & Figures Across Disciplines

## Has your firm paid a signing bonus in the past year?



## CASH BONUS FACTS & FIGURES ACROSS DISCIPLINES

### Has your firm paid a signing bonus in the past year? | Historical Perspective

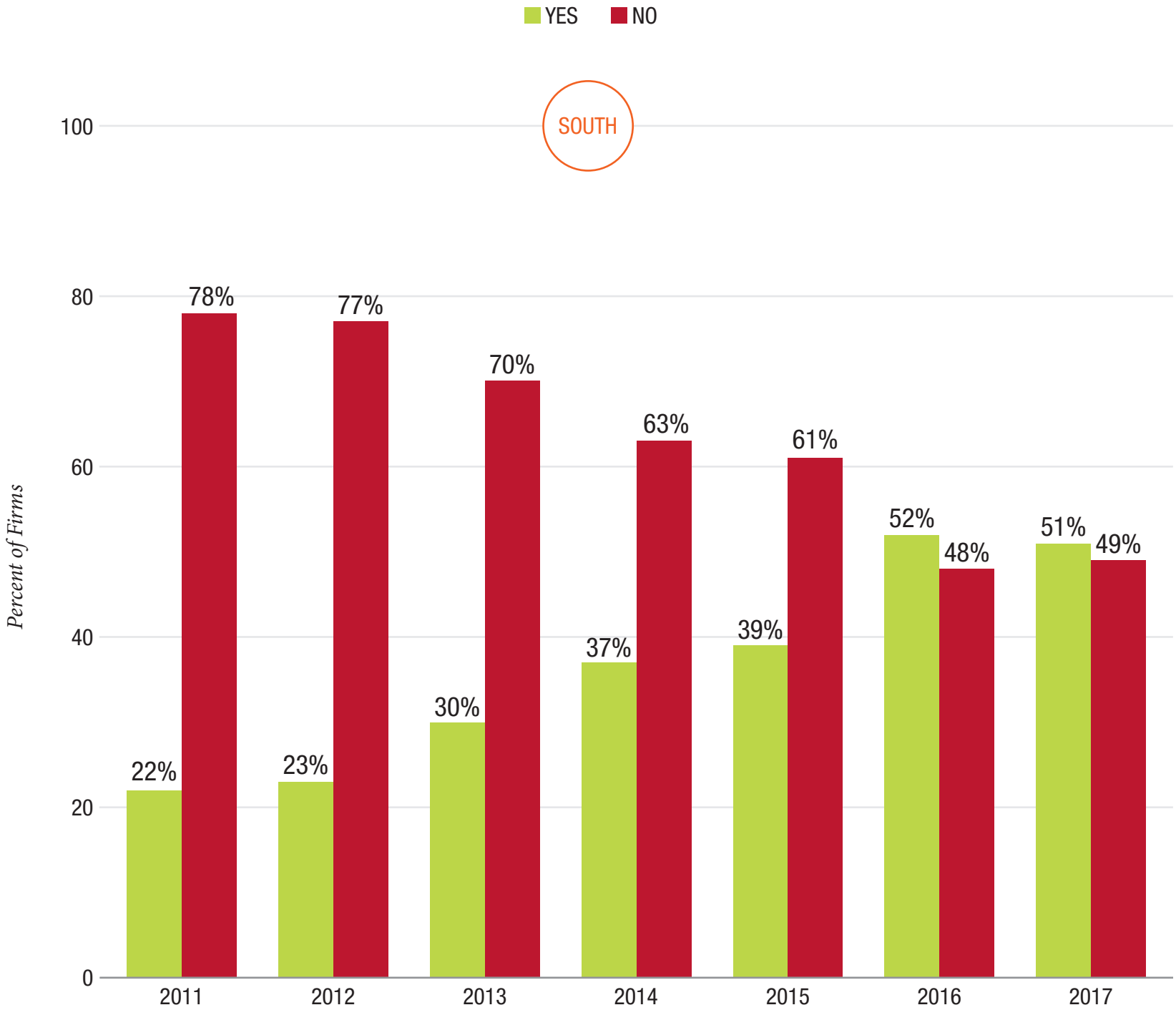


CASH BONUS FACTS & FIGURES ACROSS DISCIPLINES

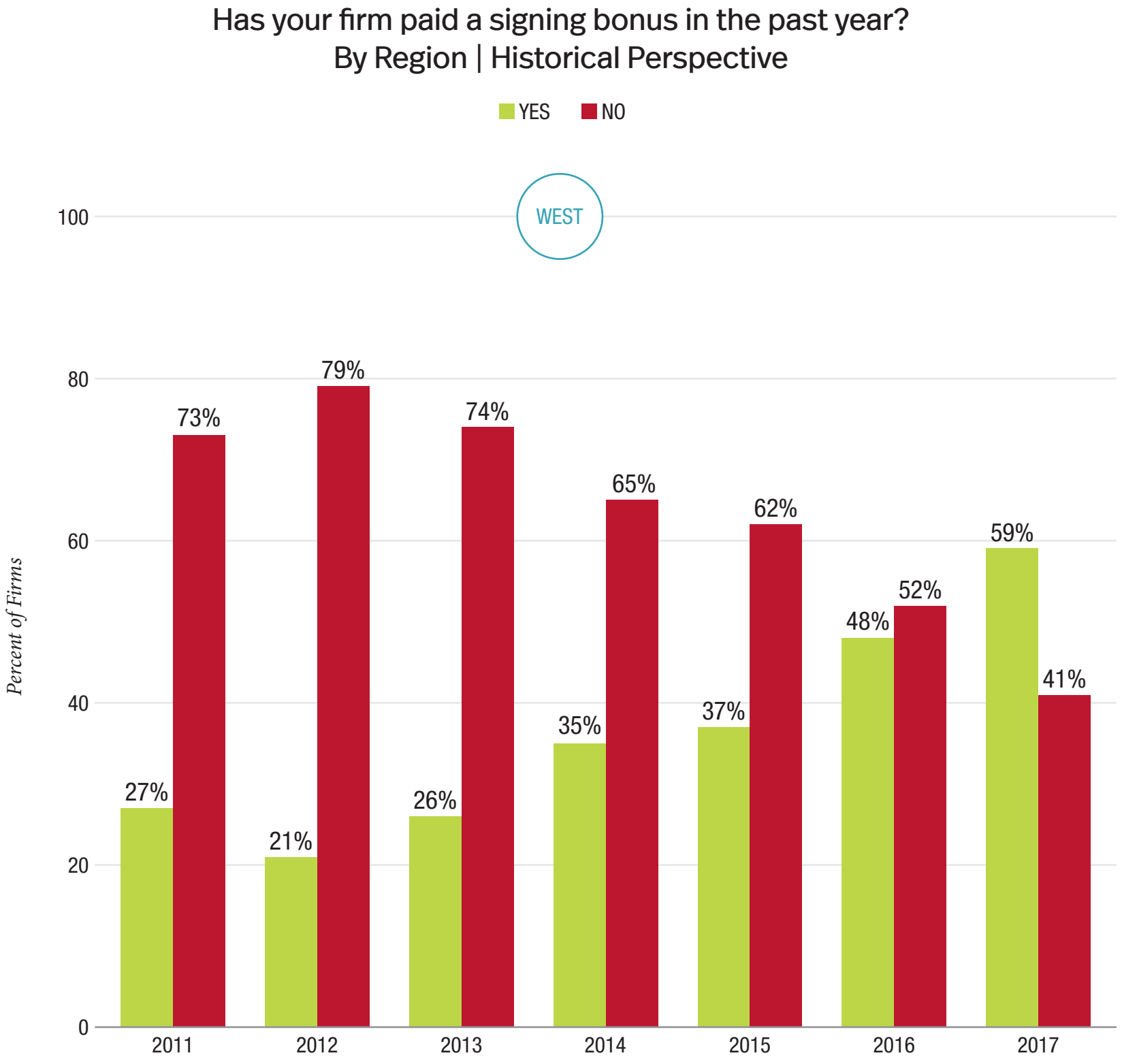
## Has your firm paid a signing bonus in the past year?
## By Region | Historical Perspective

## Has your firm paid a signing bonus in the past year?
## By Region | Historical Perspective

## Has your firm paid a signing bonus in the past year?
## By Region | Historical Perspective

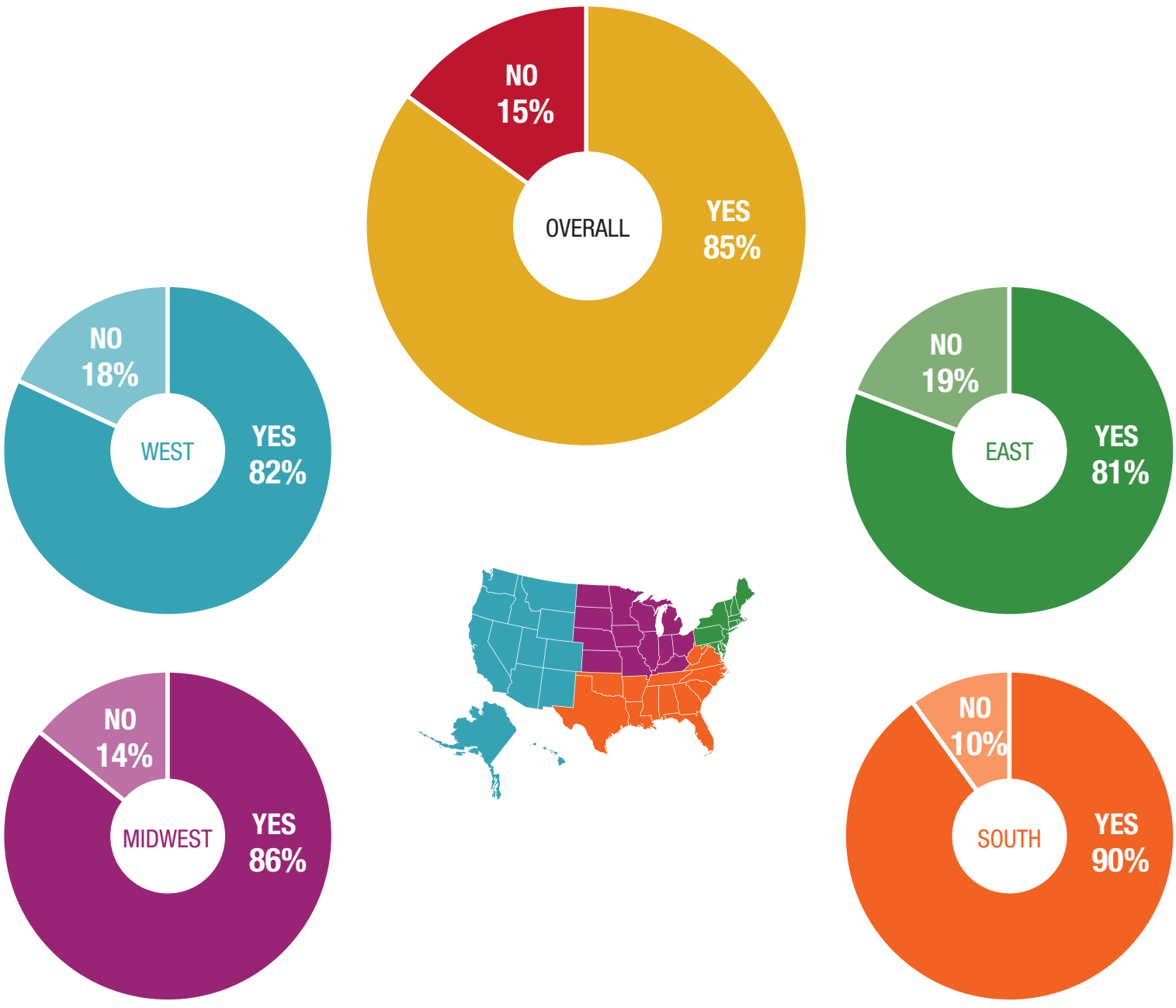


## CASH BONUS FACTS & FIGURES ACROSS DISCIPLINES

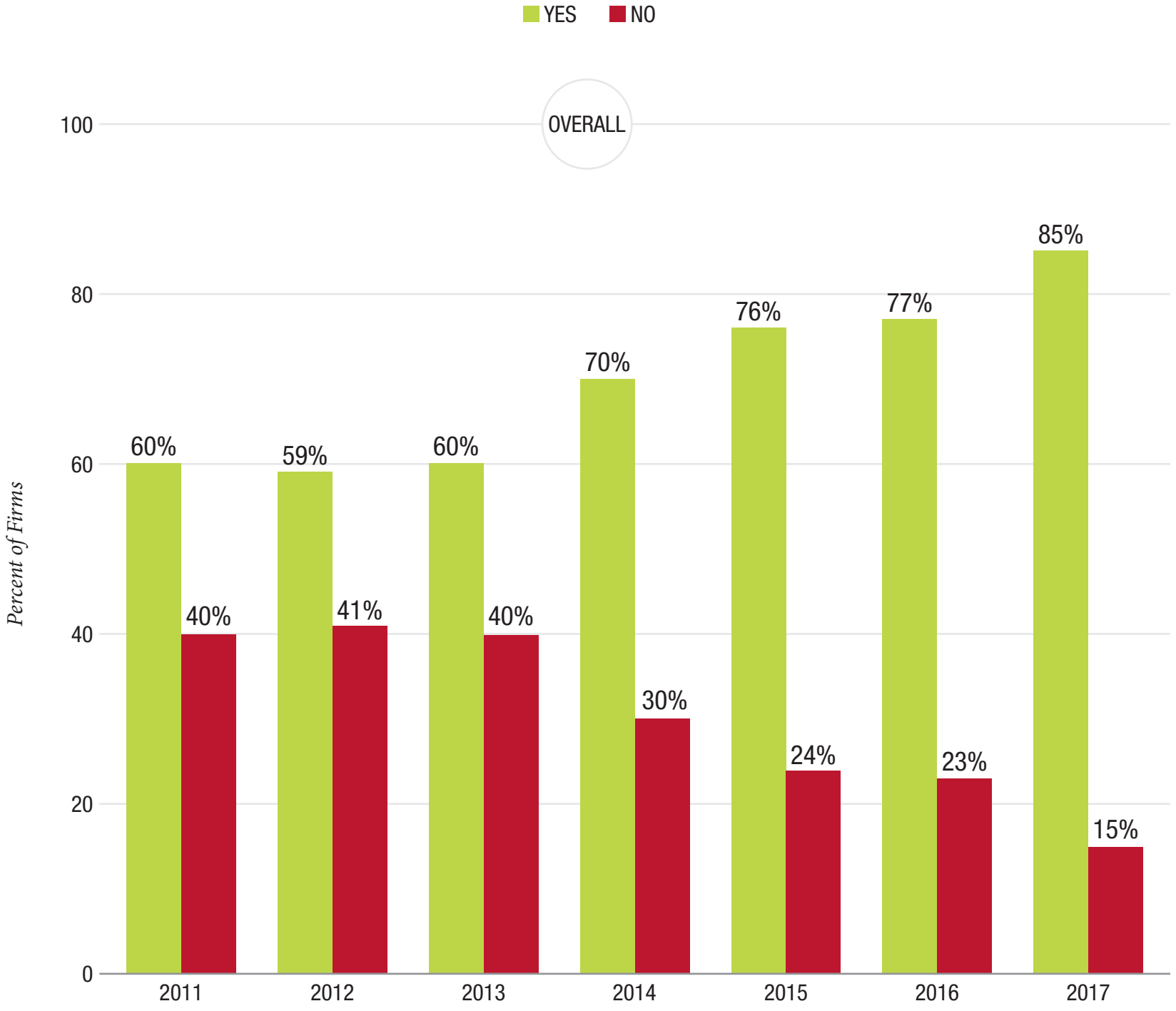


## CASH BONUS FACTS & FIGURES ACROSS DISCIPLINES

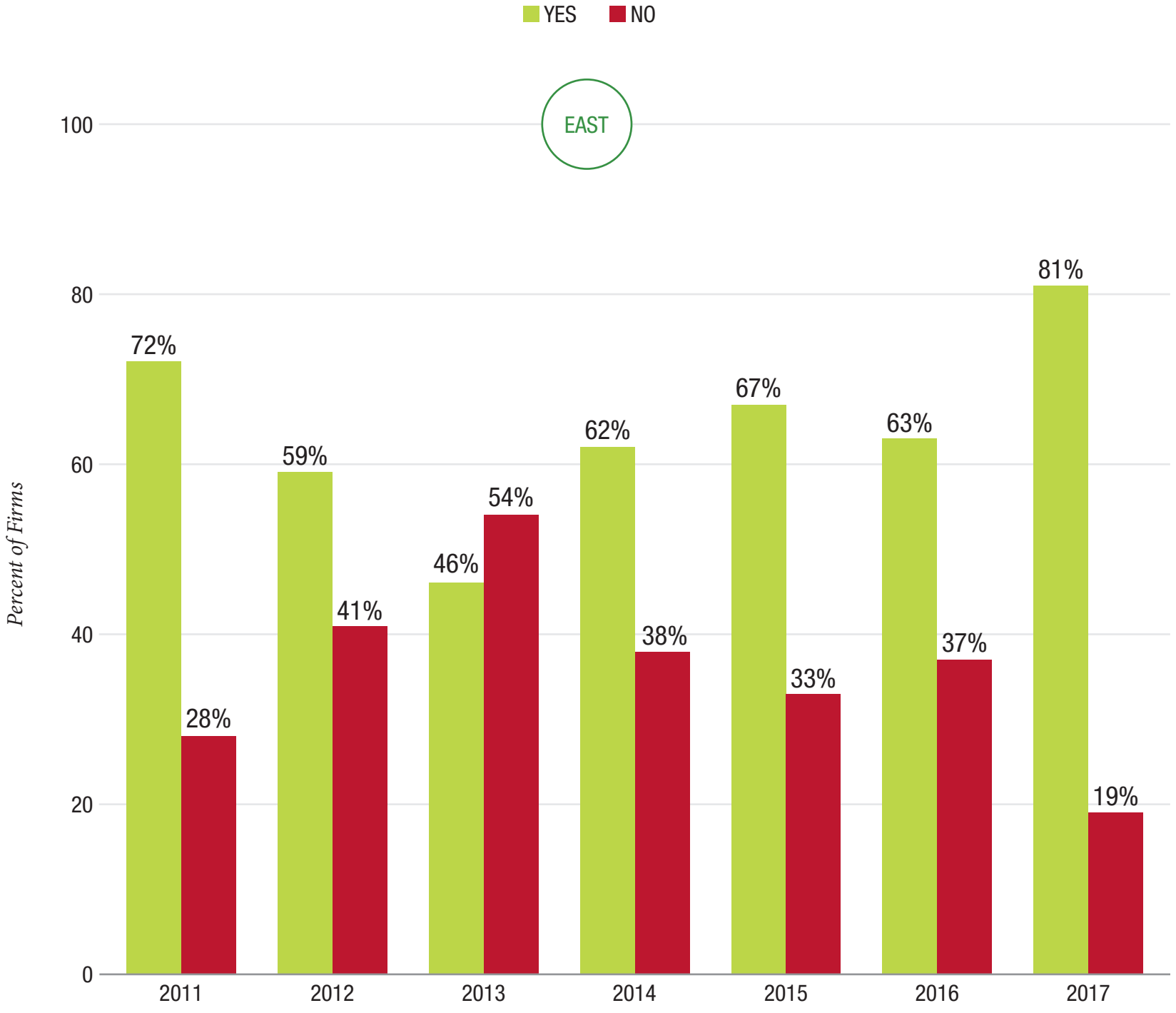
### Has your organization paid any performance-based bonuses in the past year?



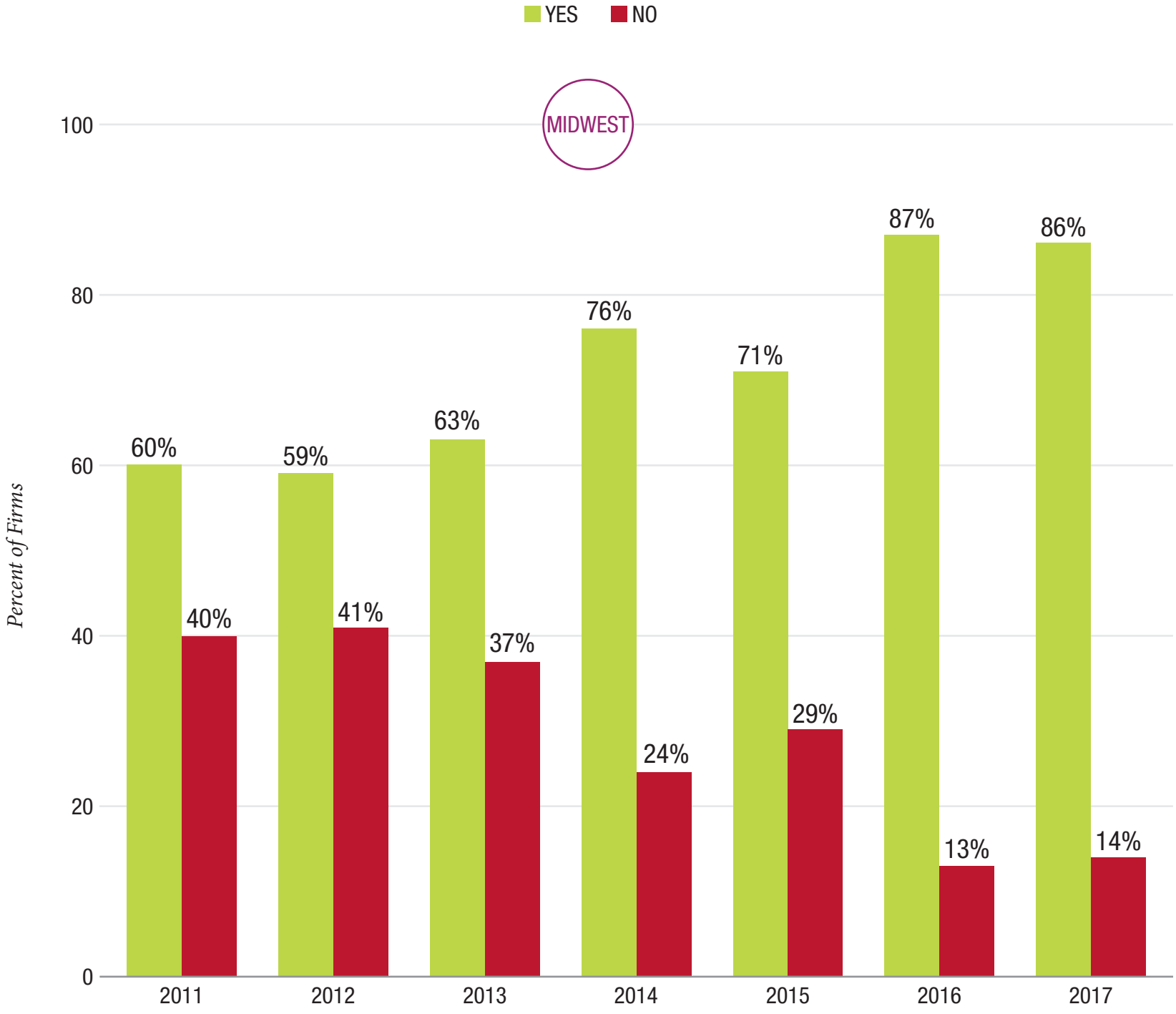
## Has your organization paid any performance-based bonuses? | Historical Perspective



## Has your organization paid any performance-based bonuses?
## By Region | Historical Perspective

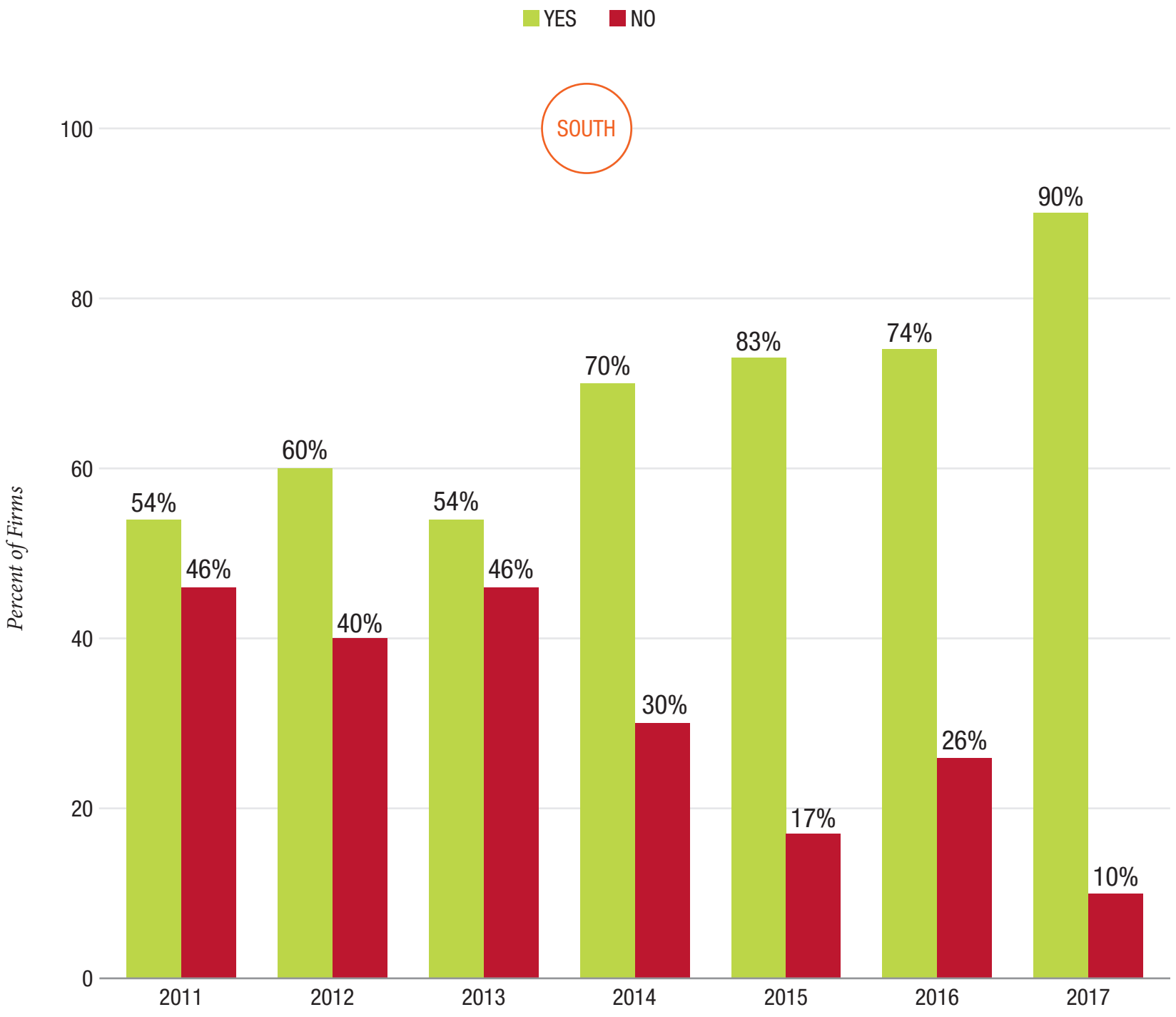


## Has your organization paid any performance-based bonuses?
## By Region | Historical Perspective

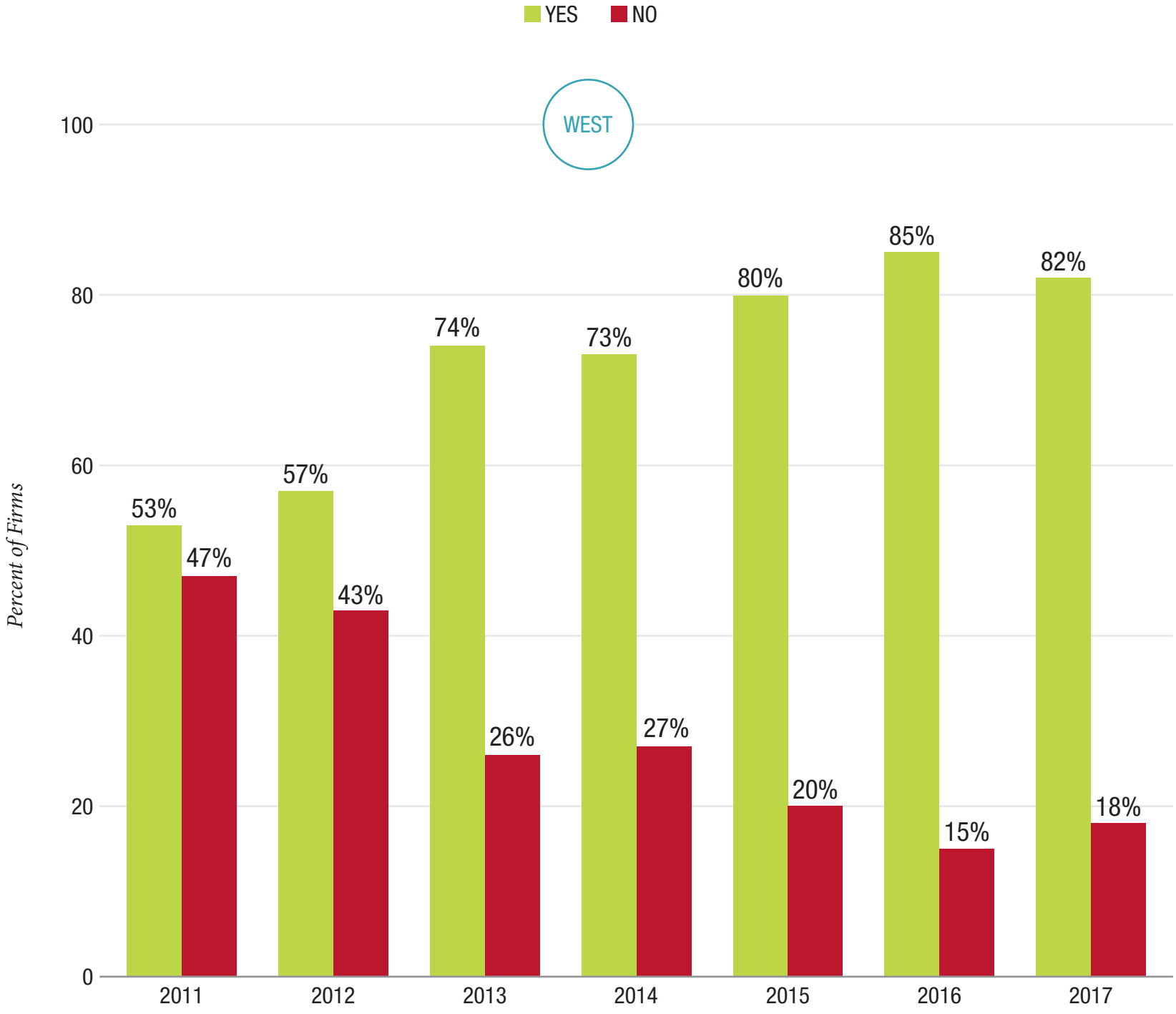


## CASH BONUS FACTS & FIGURES ACROSS DISCIPLINES

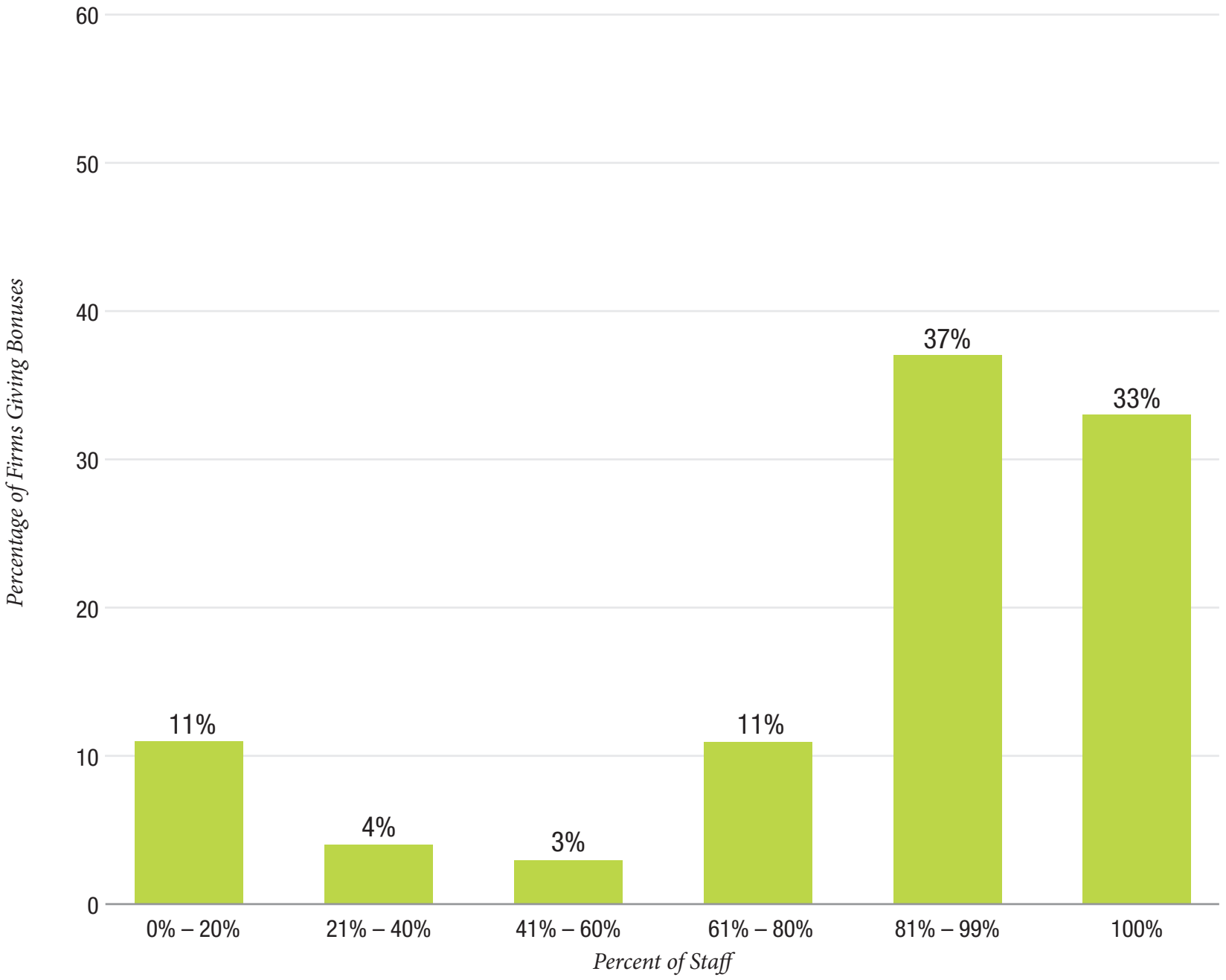
### Has your organization paid any performance-based bonuses? By Region | Historical Perspective



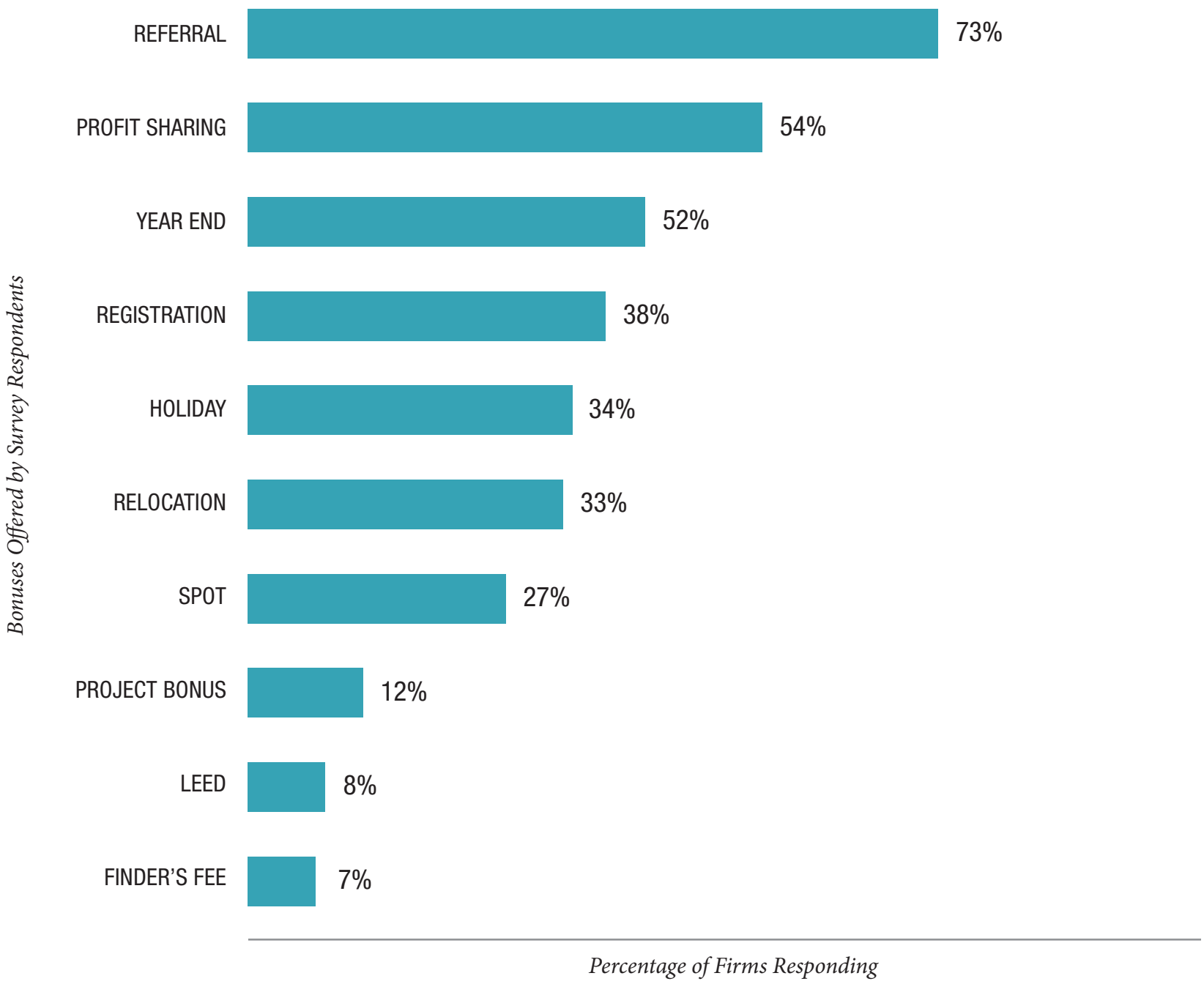
## Has your organization paid any performance-based bonuses?
## By Region | Historical Perspective



## Percentage of Staff That Received Performance Bonuses

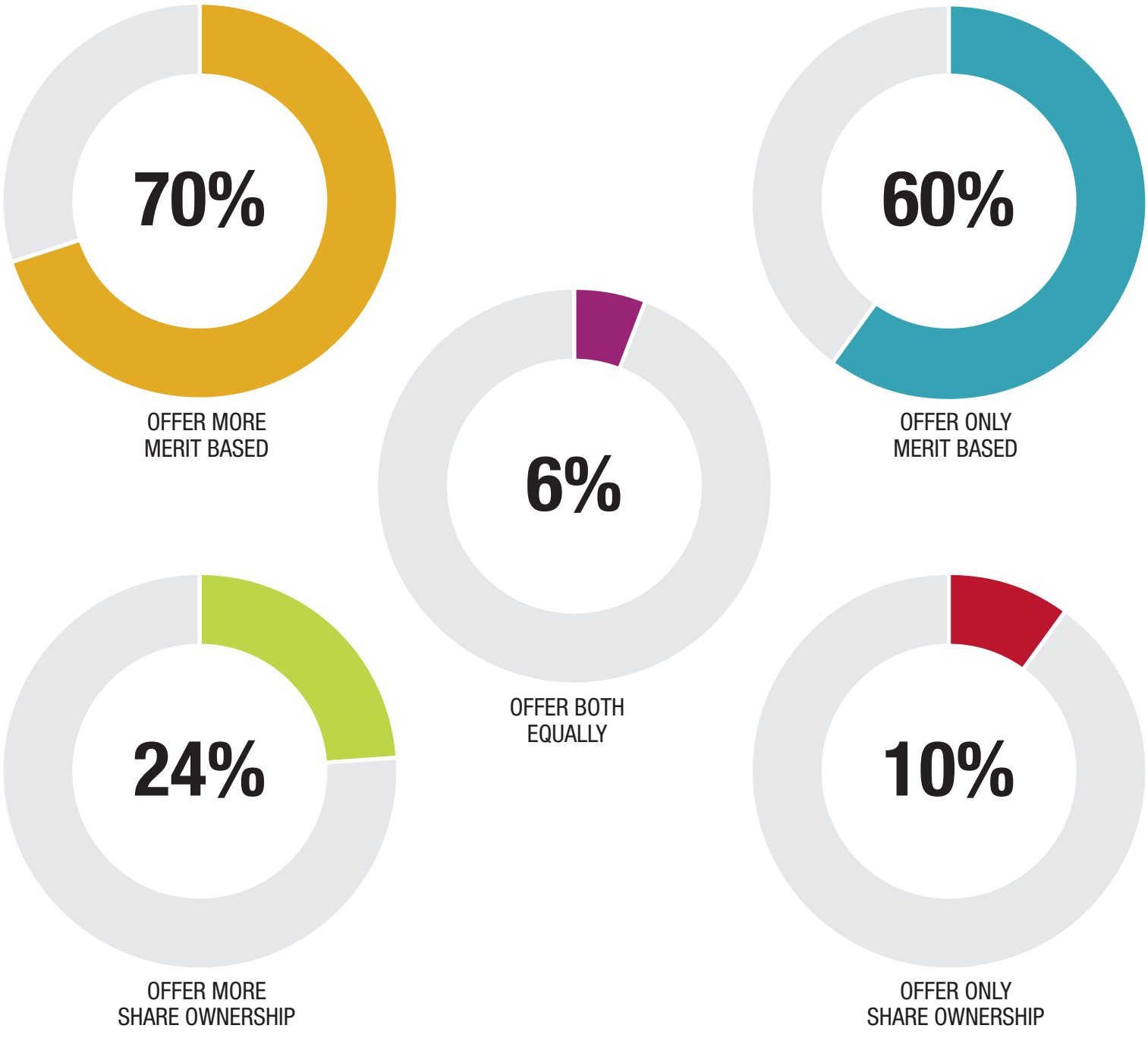


## What other kinds of bonuses does your organization offer?

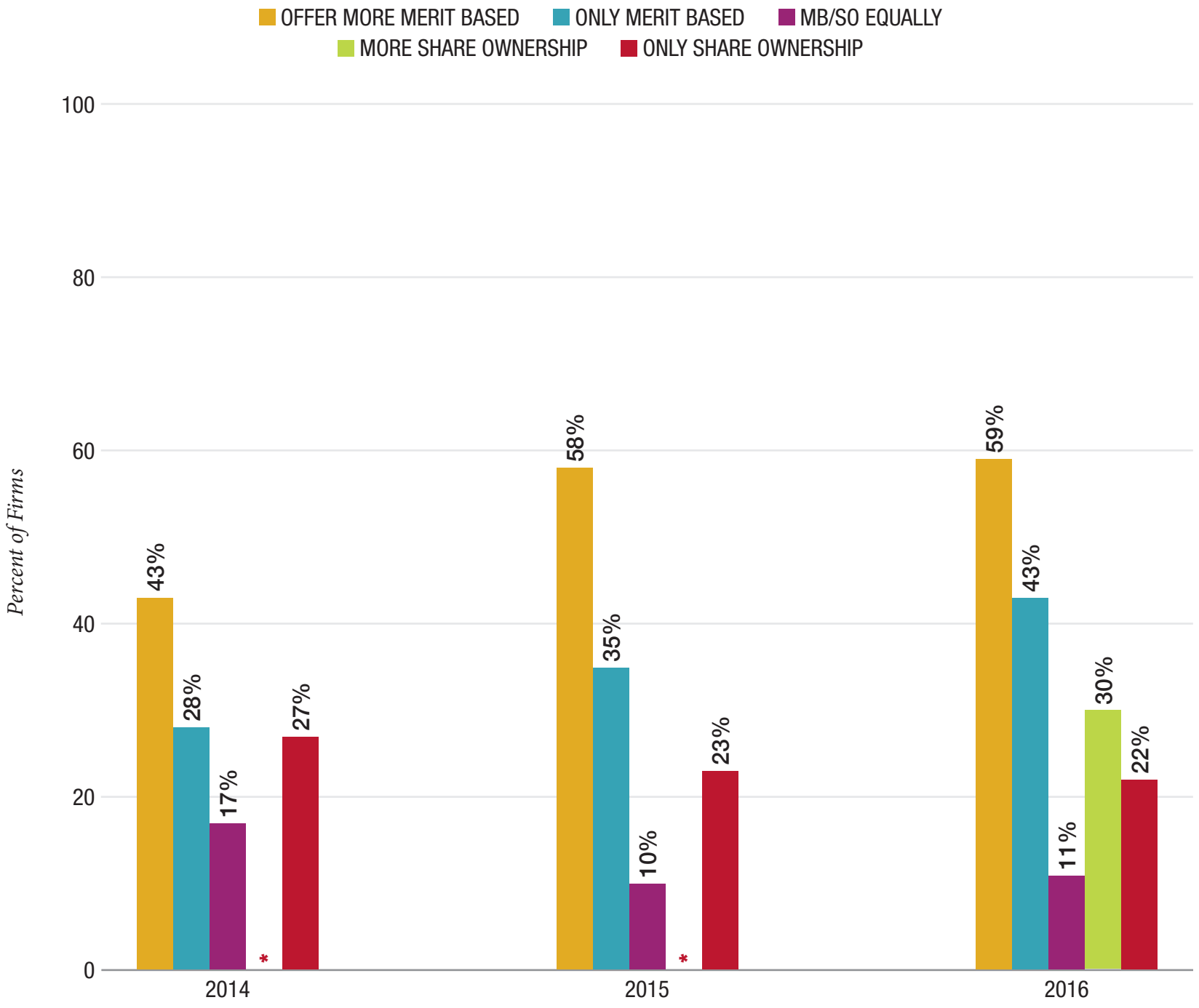


## CASH BONUS FACTS & FIGURES ACROSS DISCIPLINES

### Bonus Compensation to Shareholders
### Merit Based vs. Share Ownership



## Bonus Compensation to Shareholders
## Merit Based vs. Share Ownership | Historical Perspective




* Not enough data

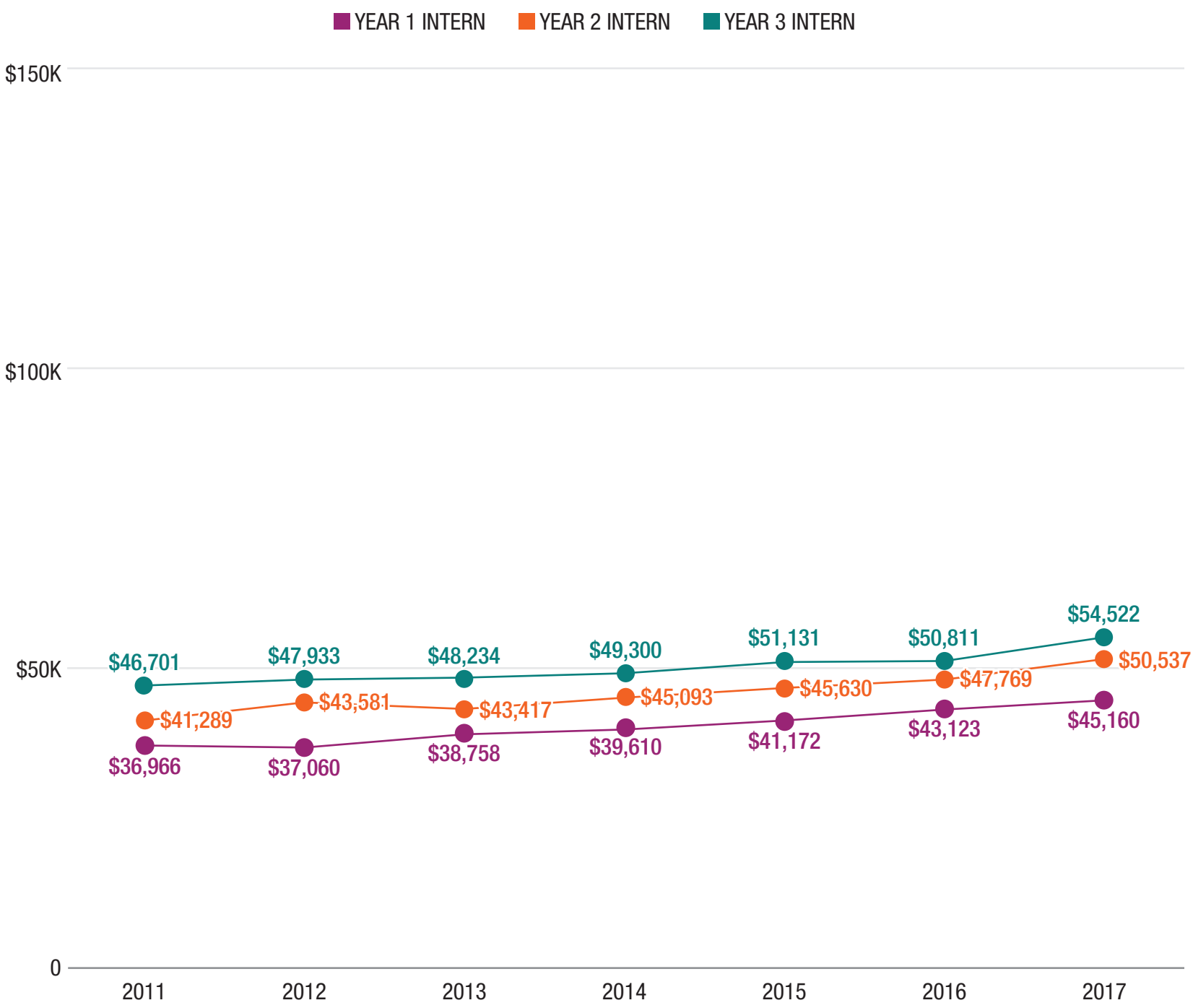
# Base Cash Compensation by Discipline & Role

## BASE CASH COMPENSATION BY DISCIPLINE & ROLE

# Base Compensation: Architecture Interns

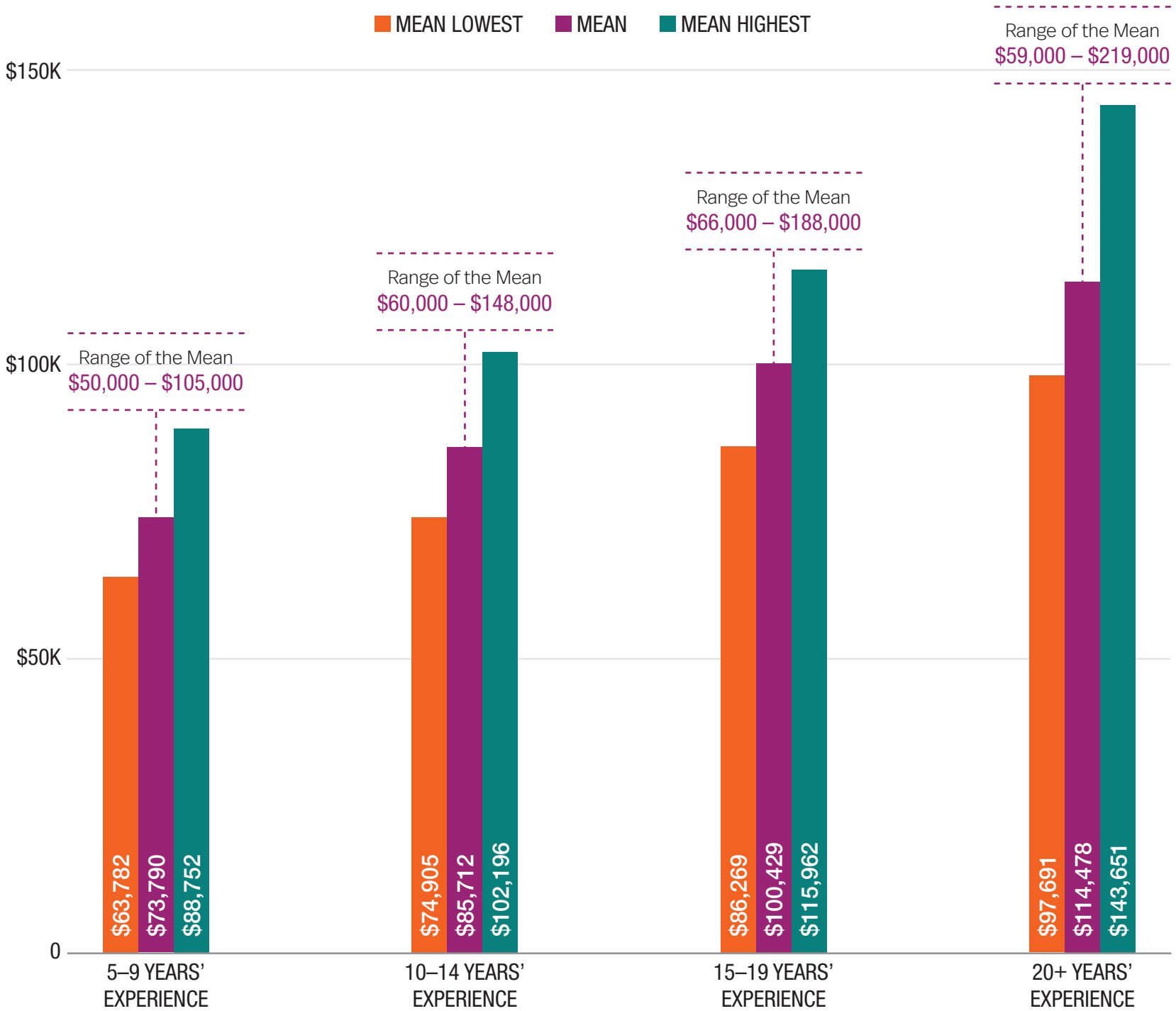
## BASE CASH COMPENSATION BY DISCIPLINE & ROLE

### Base Compensation: Architecture Interns | Historical Perspective



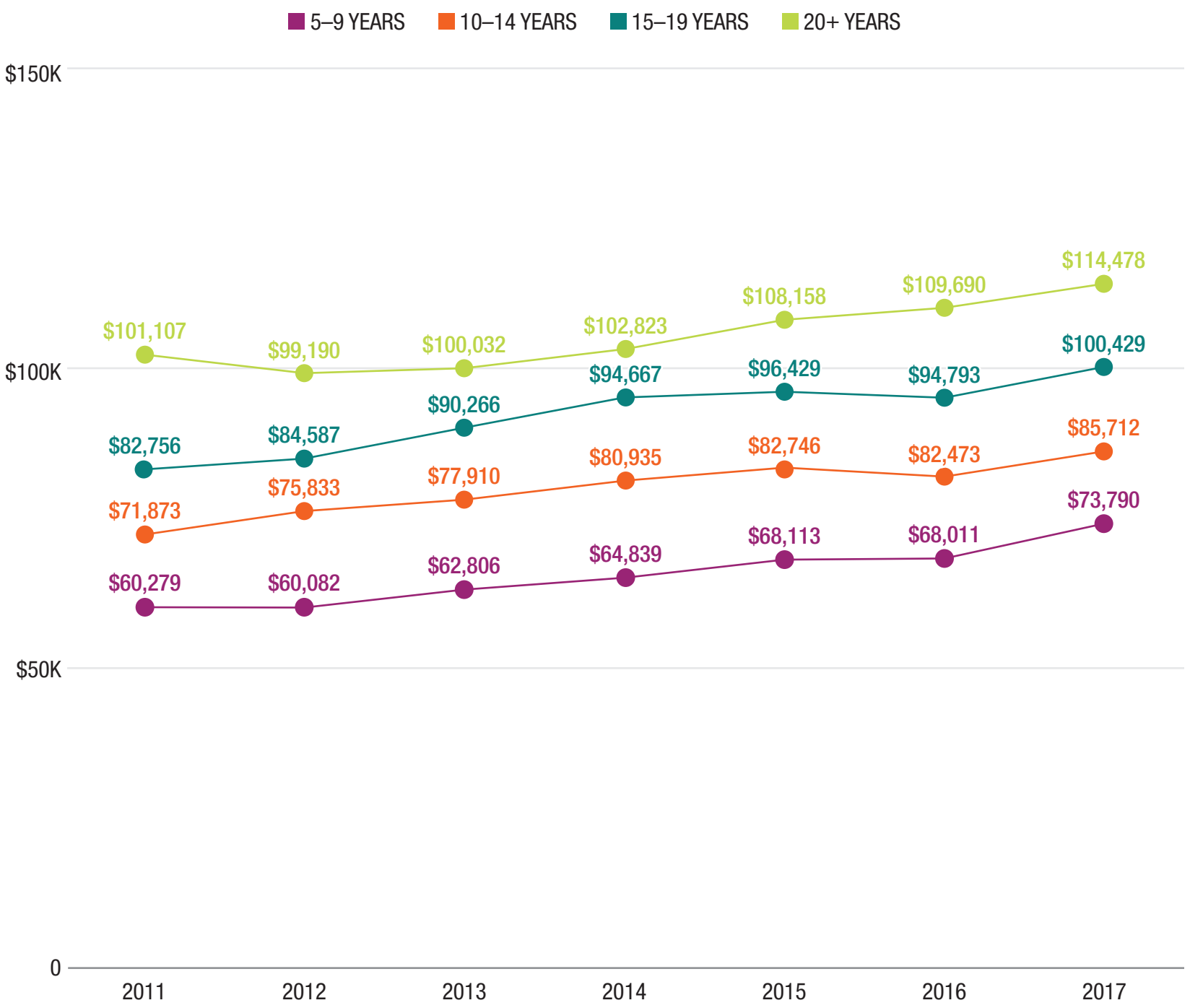
## BASE CASH COMPENSATION BY DISCIPLINE & ROLE

# Base Compensation: Architects

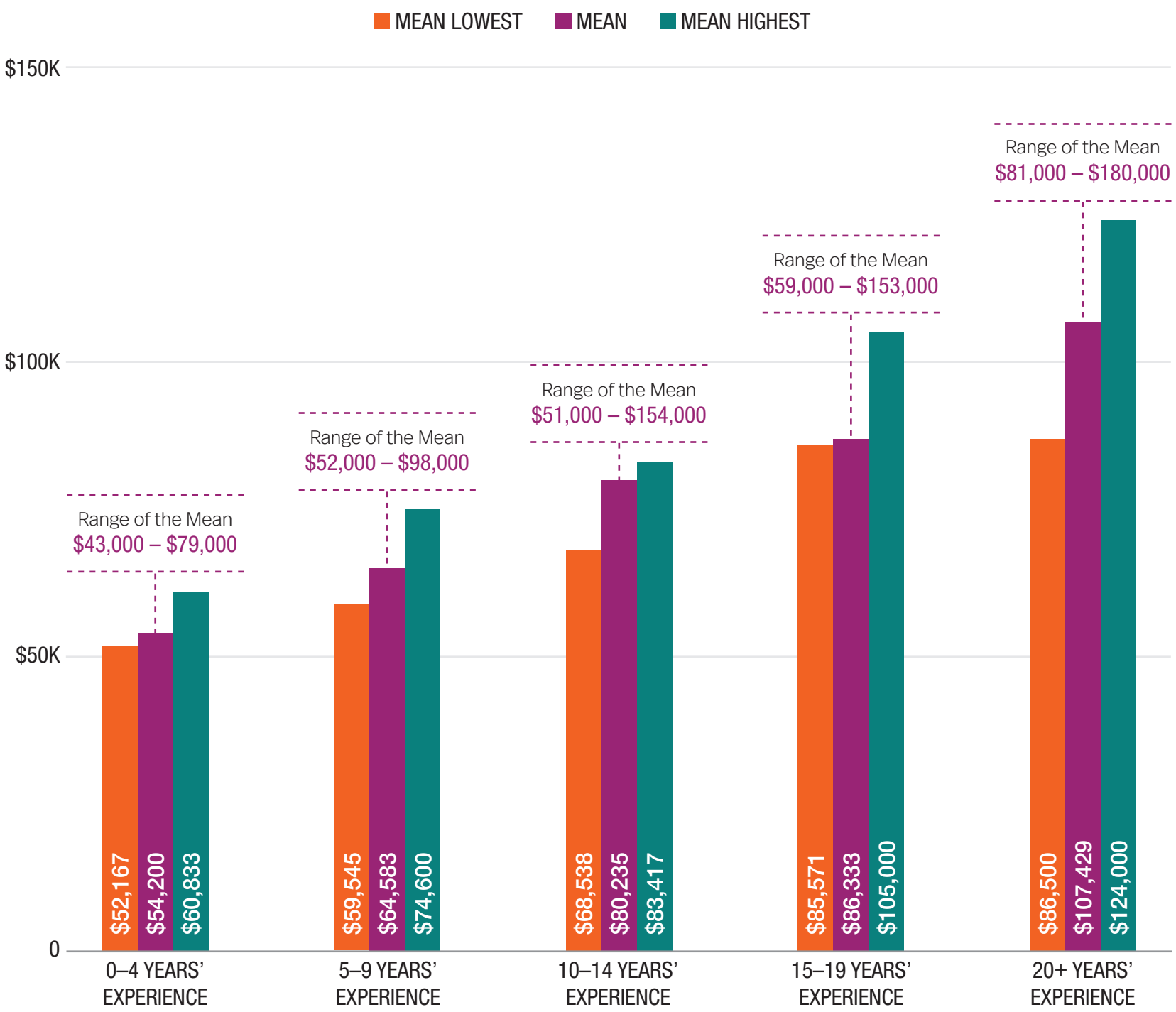


## BASE CASH COMPENSATION BY DISCIPLINE & ROLE

### Base Compensation: Architects | Historical Perspective

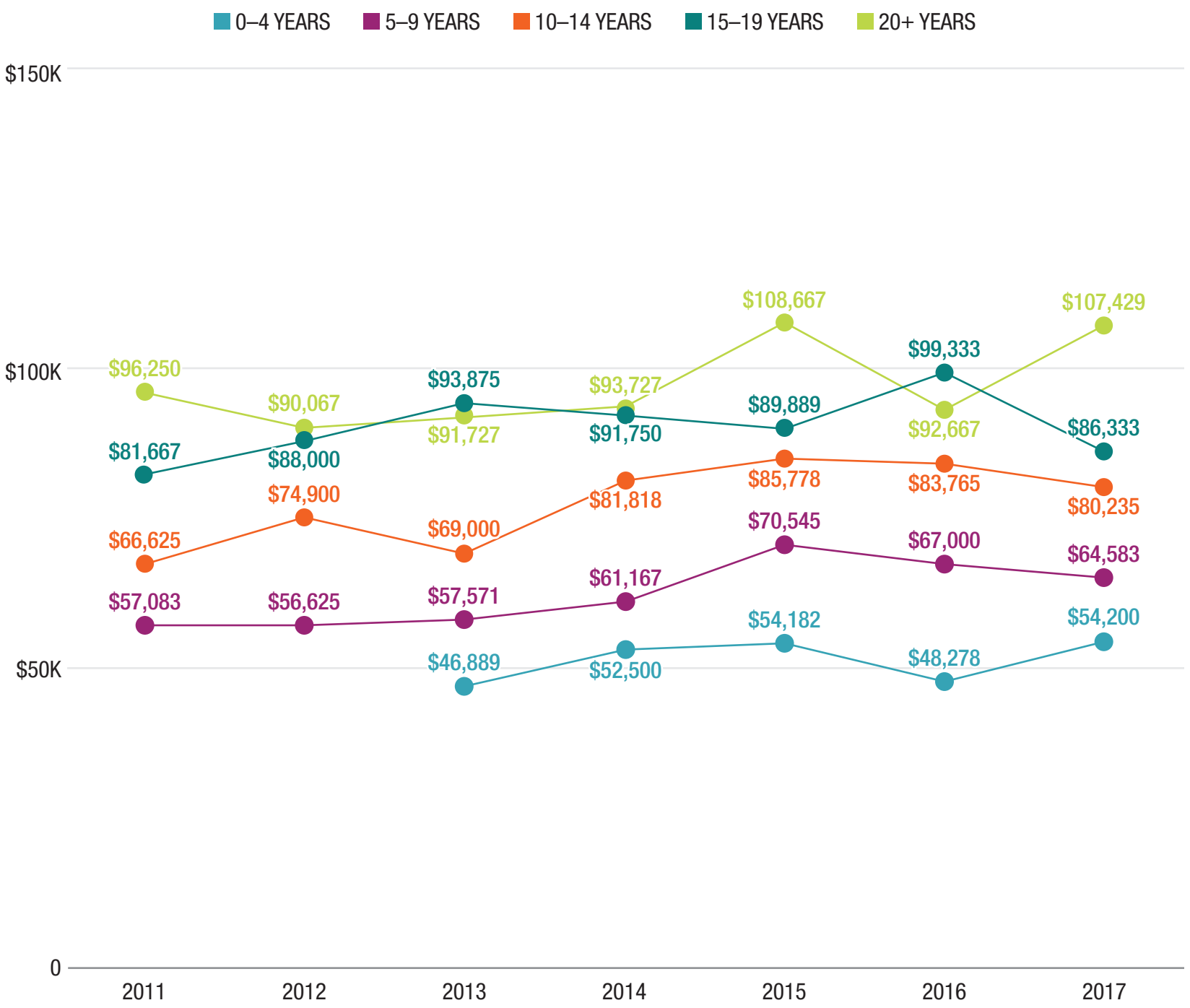


# Base Compensation: Landscape Architects



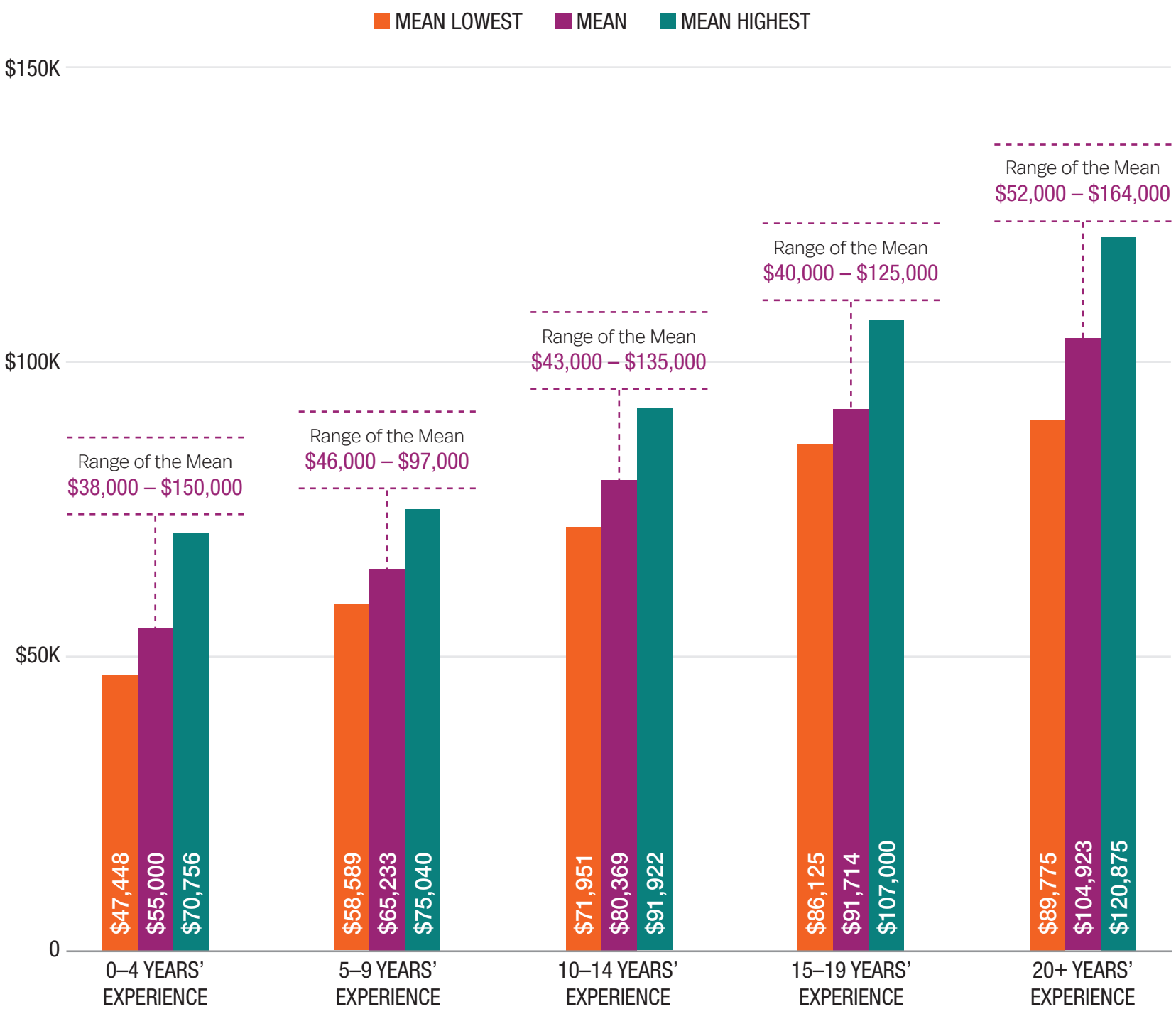
## BASE CASH COMPENSATION BY DISCIPLINE & ROLE

### Base Compensation: Landscape Architects | Historical Perspective



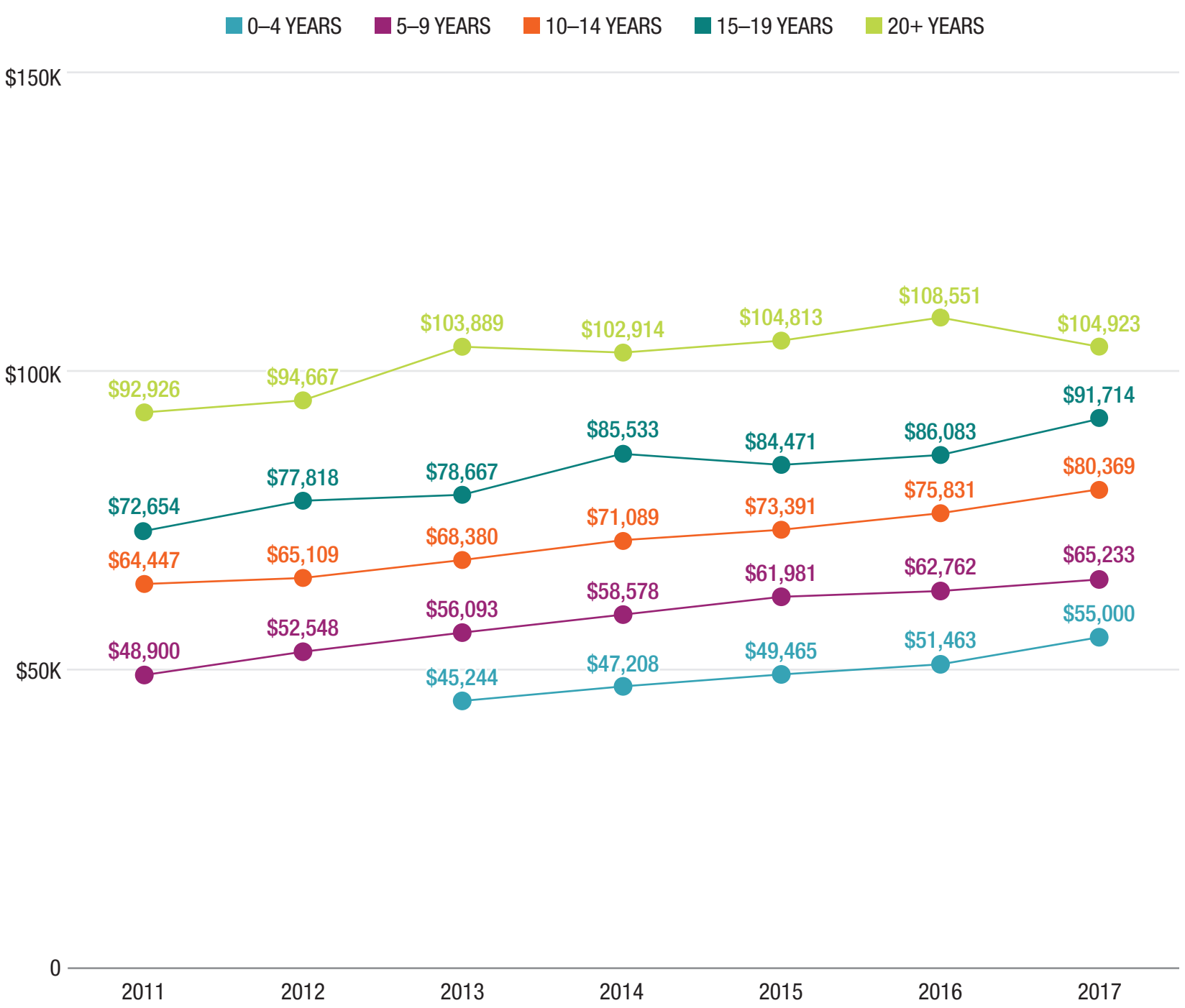
## BASE CASH COMPENSATION BY DISCIPLINE & ROLE

# Base Compensation: Interior Designers



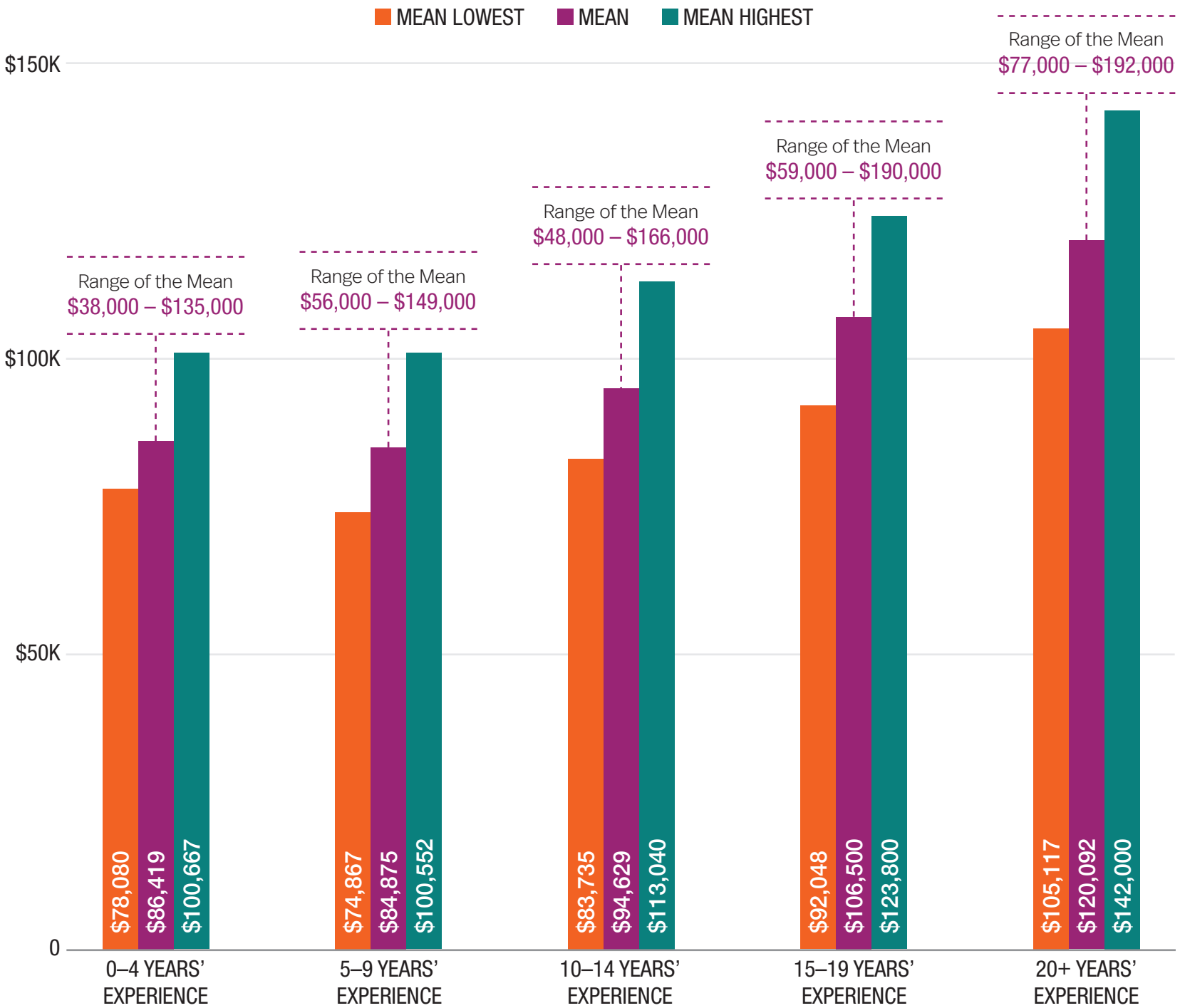
## BASE CASH COMPENSATION BY DISCIPLINE & ROLE

### Base Compensation: Interior Designers | Historical Perspective



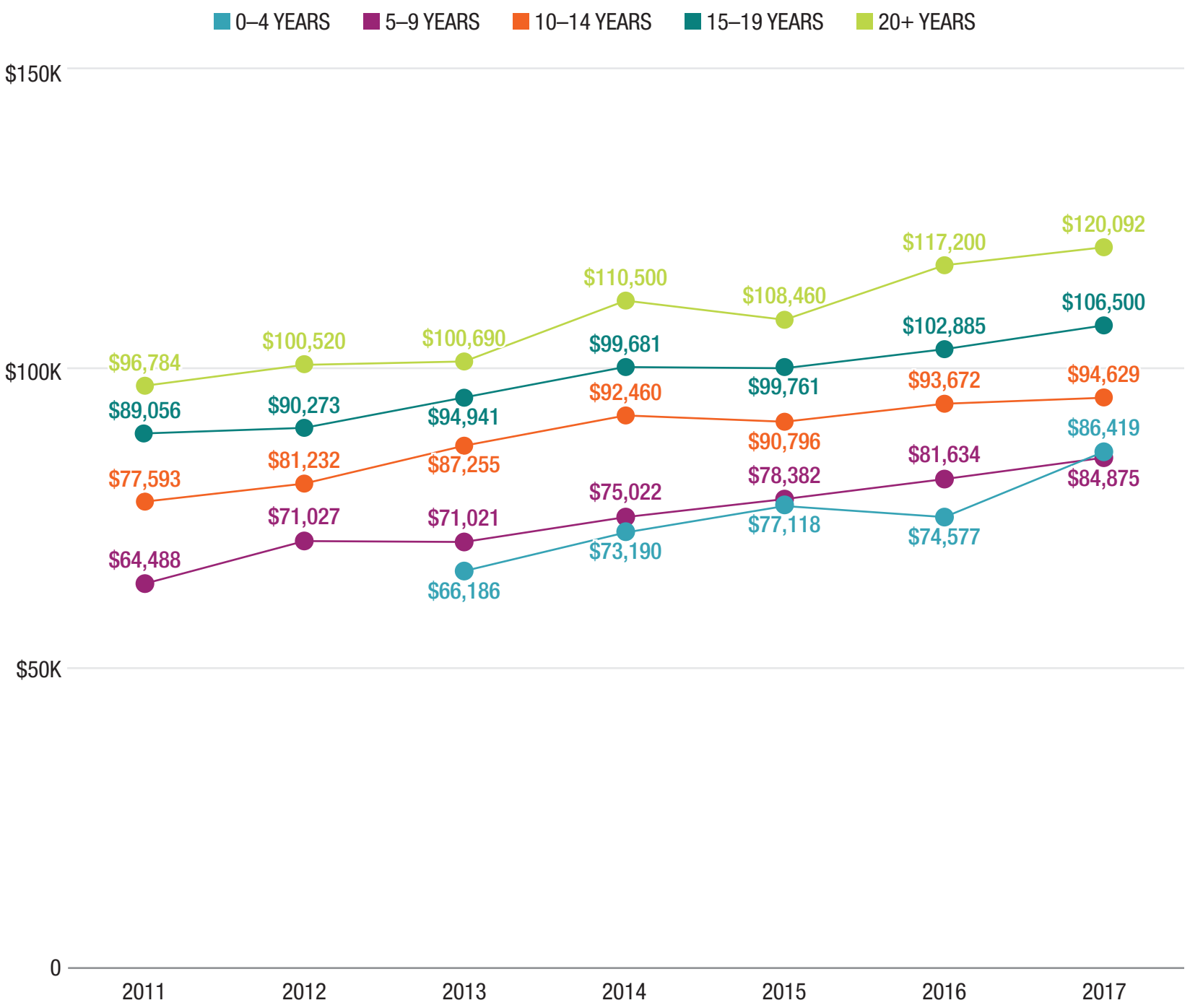
## BASE CASH COMPENSATION BY DISCIPLINE & ROLE

# Base Compensation: Project Managers

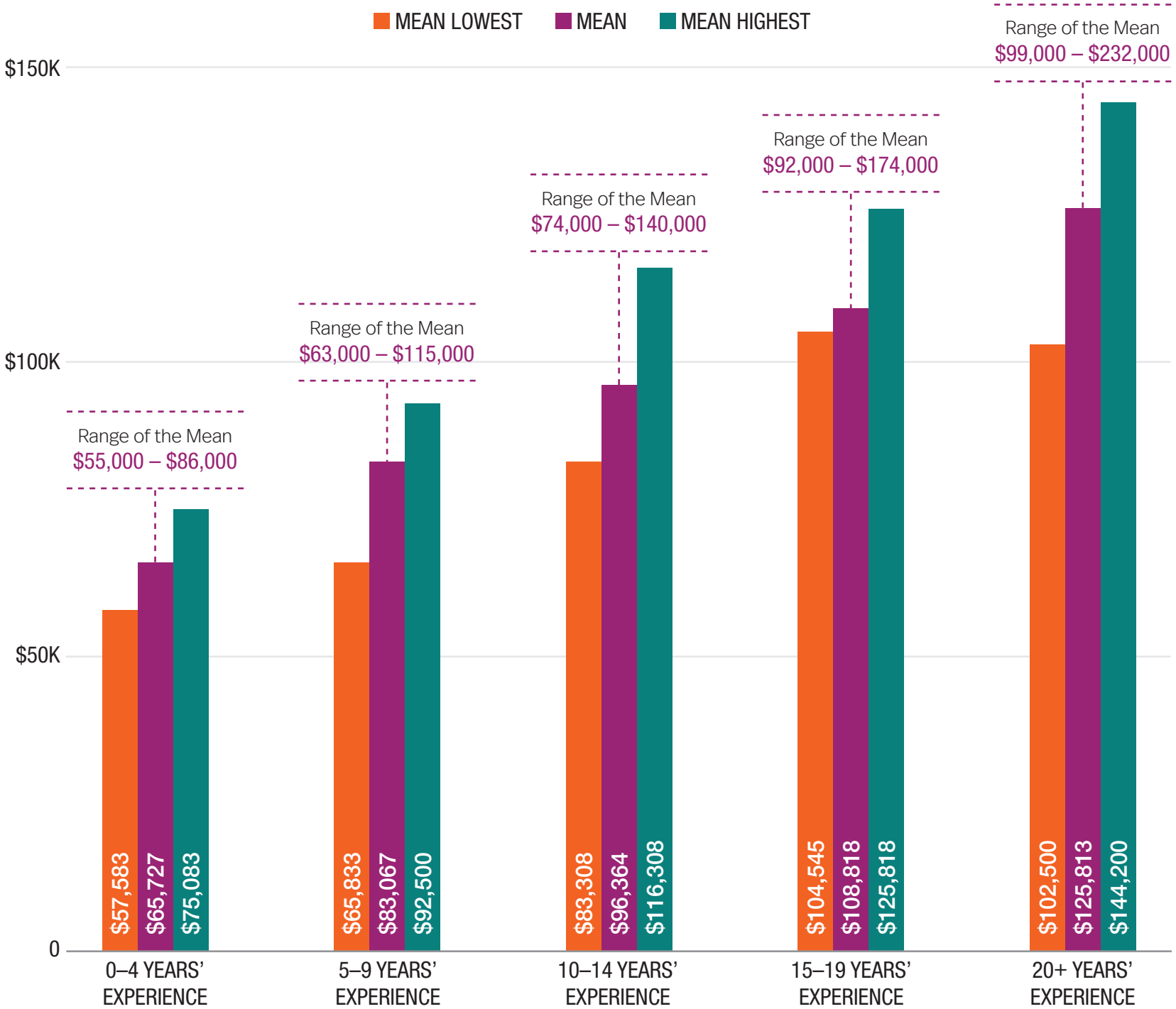


## BASE CASH COMPENSATION BY DISCIPLINE & ROLE

### Base Compensation: Project Managers | Historical Perspective

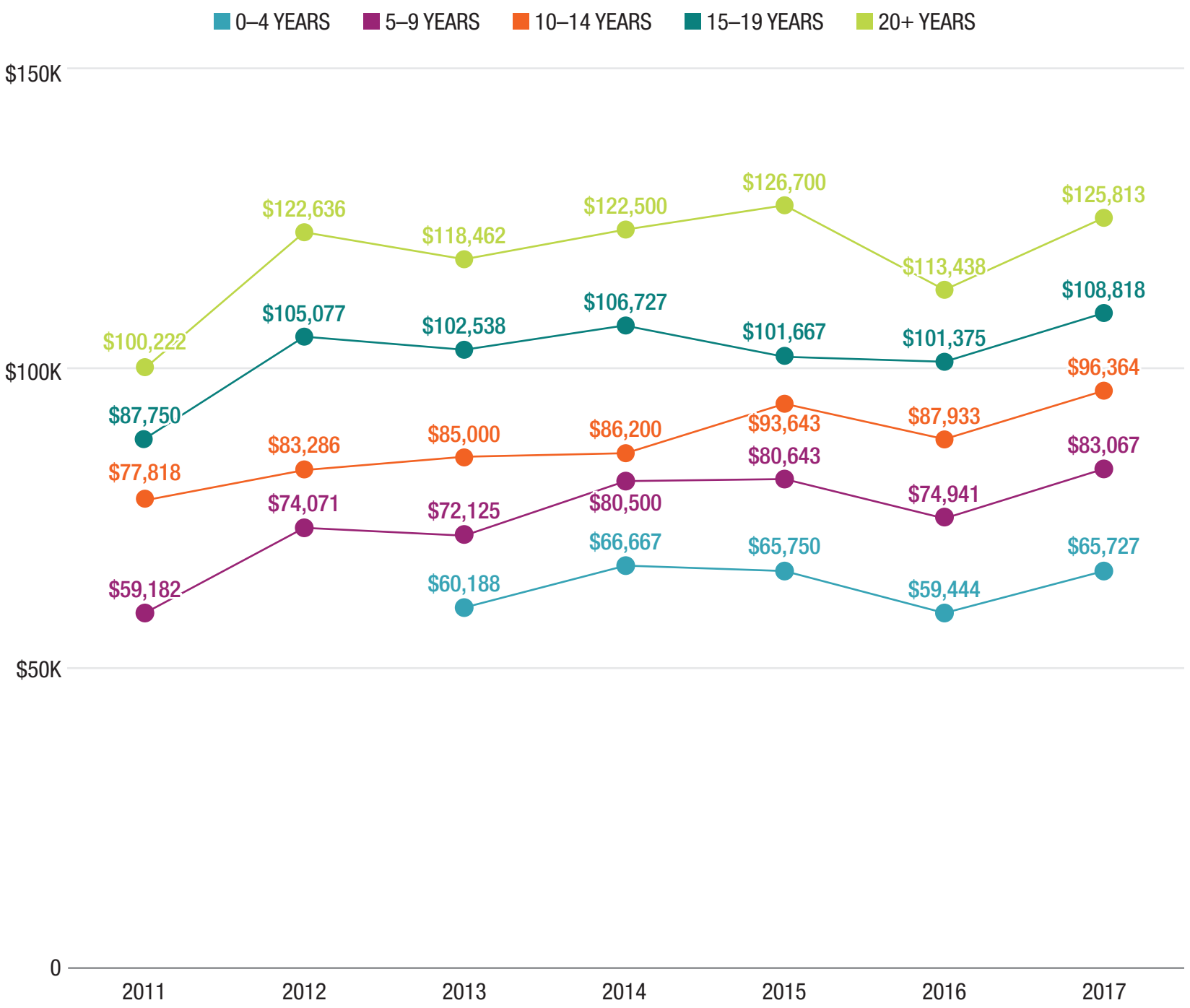


# Base Compensation: Mechanical/Electrical/Plumbing Engineers

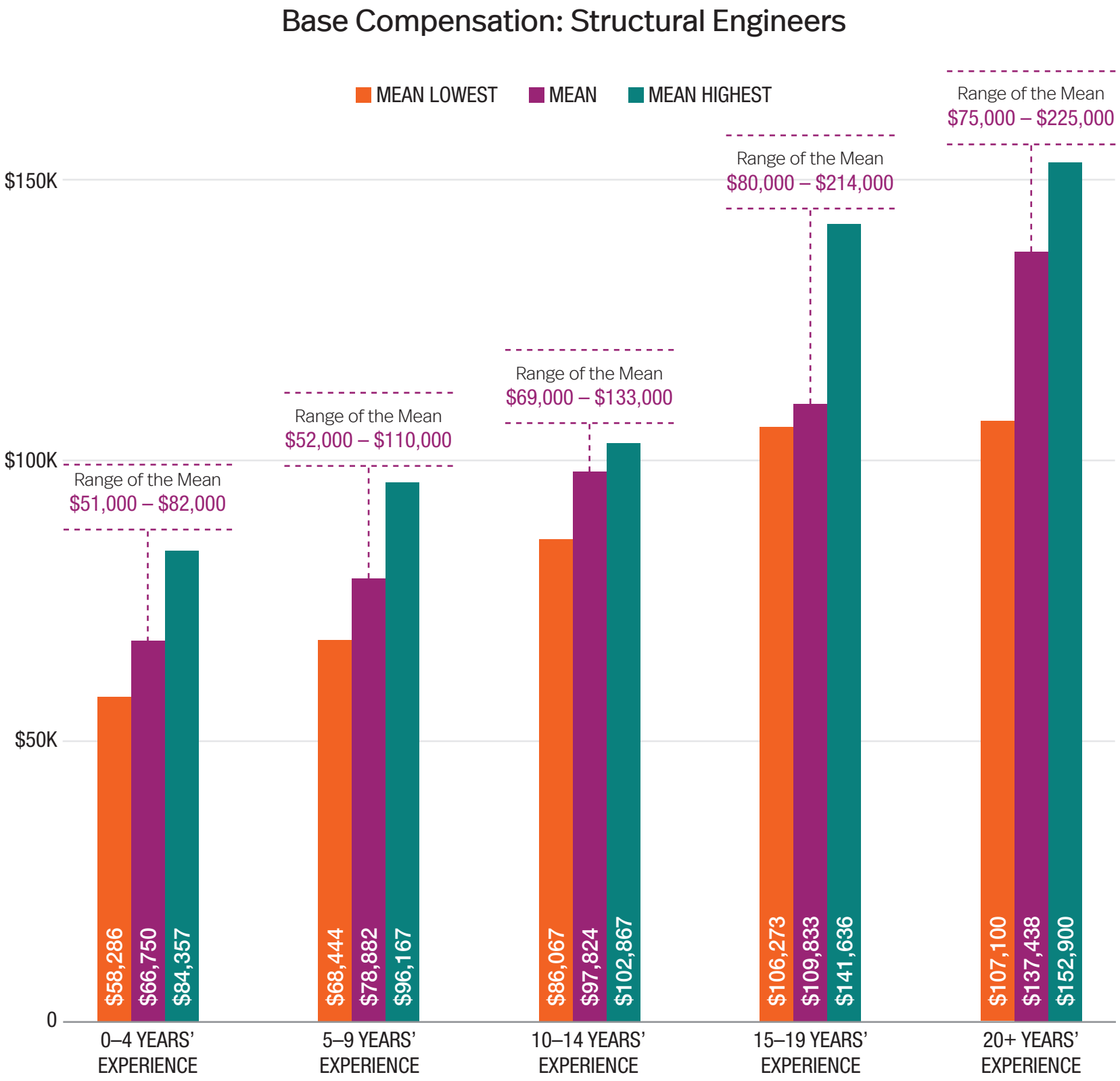


## BASE CASH COMPENSATION BY DISCIPLINE & ROLE

### Base Compensation: Mechanical/Electrical/Plumbing Engineers | Historical Perspective

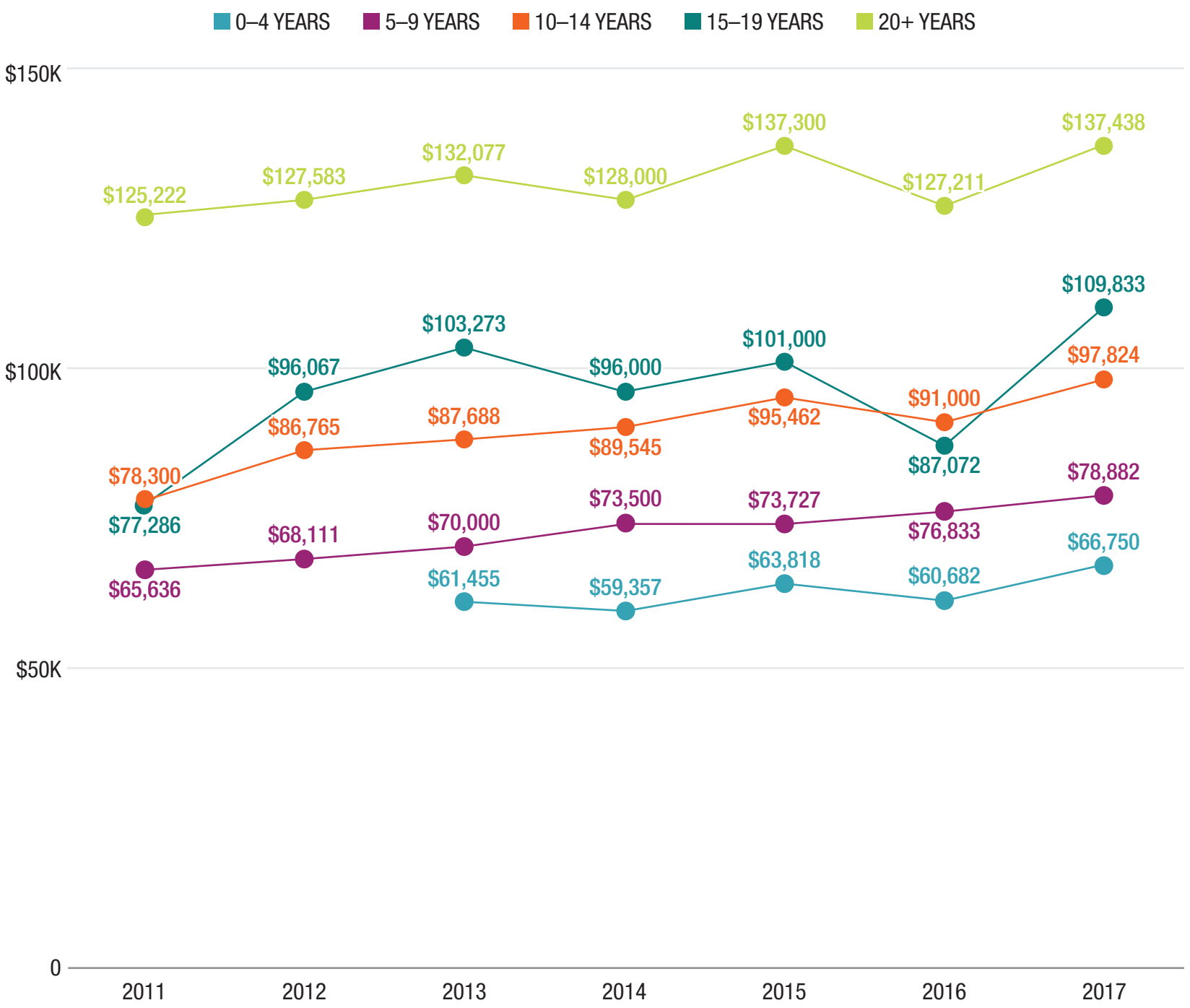


## BASE CASH COMPENSATION BY DISCIPLINE & ROLE

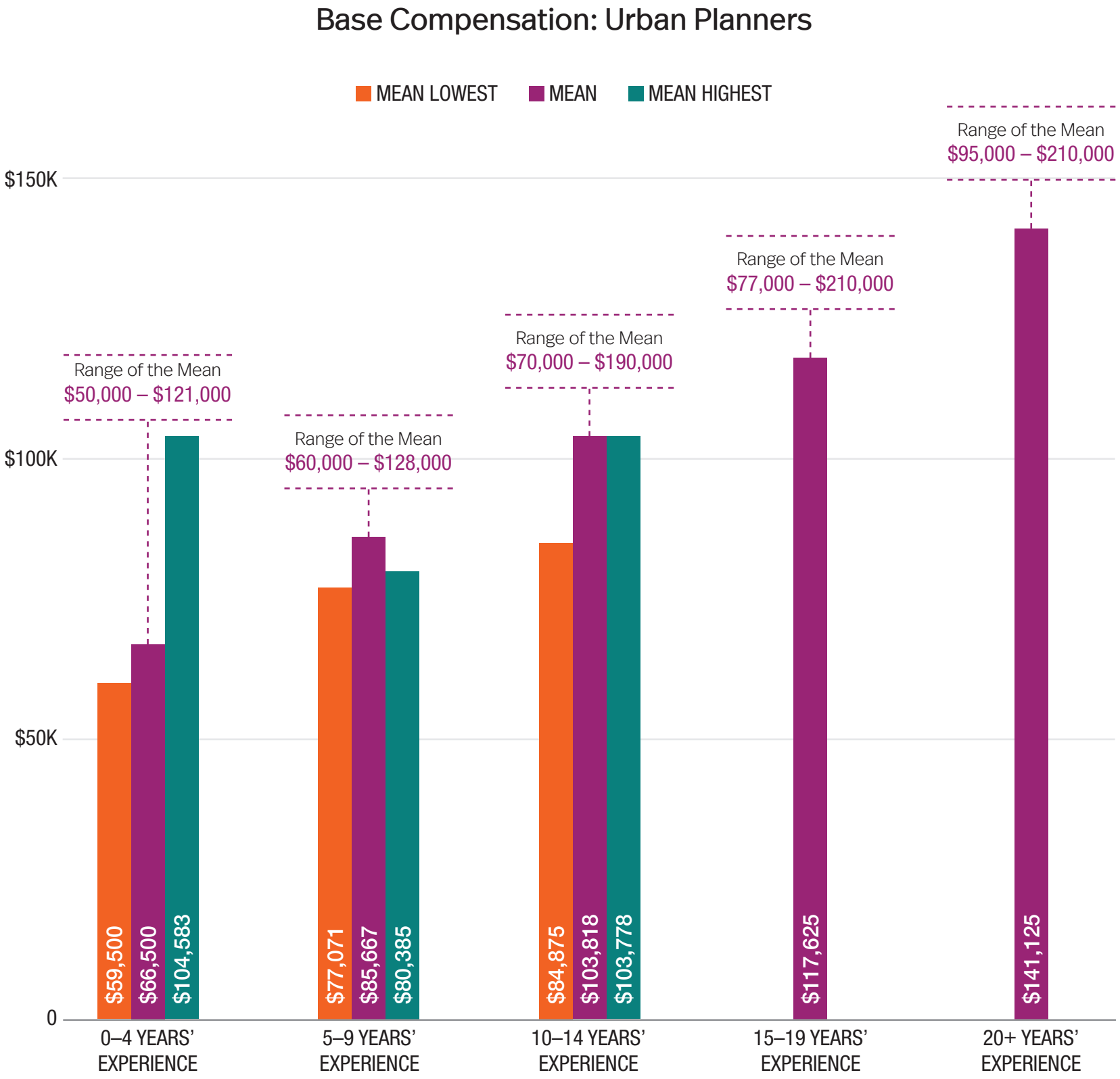


## BASE CASH COMPENSATION BY DISCIPLINE & ROLE

### Base Compensation: Structural Engineers | Historical Perspective

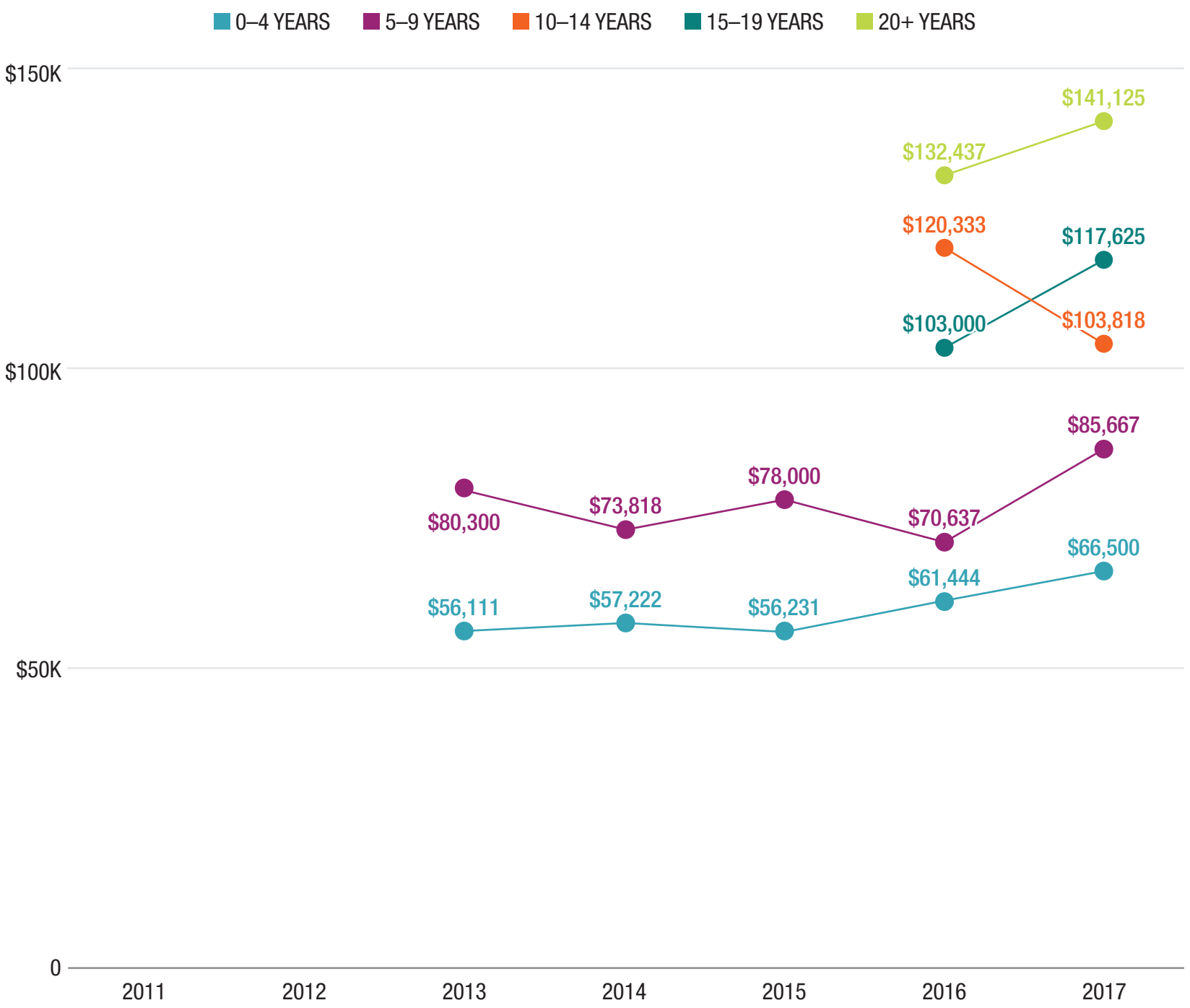


## BASE CASH COMPENSATION BY DISCIPLINE & ROLE



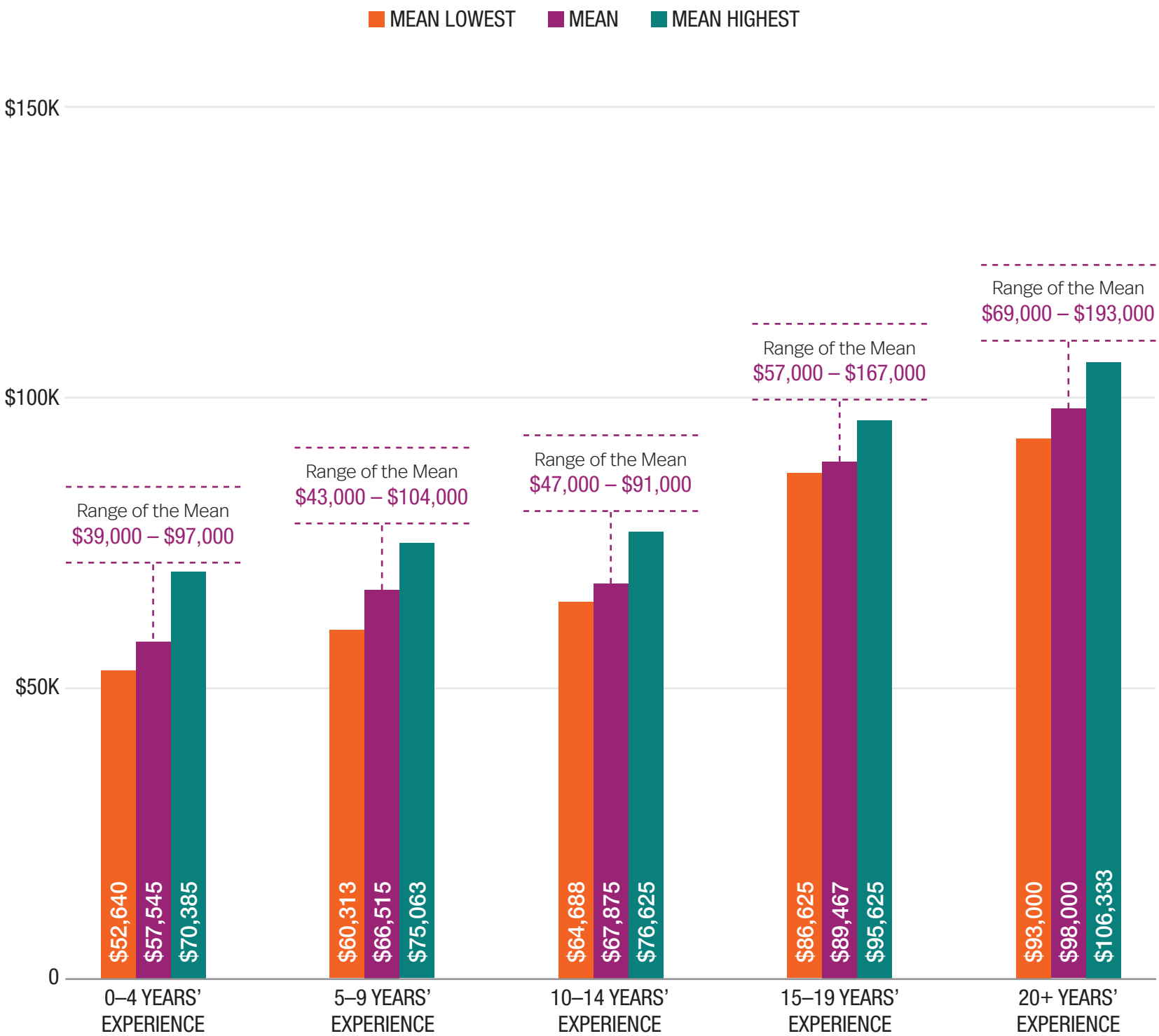
## BASE CASH COMPENSATION BY DISCIPLINE & ROLE

### Base Compensation: Urban Planners | Historical Perspective



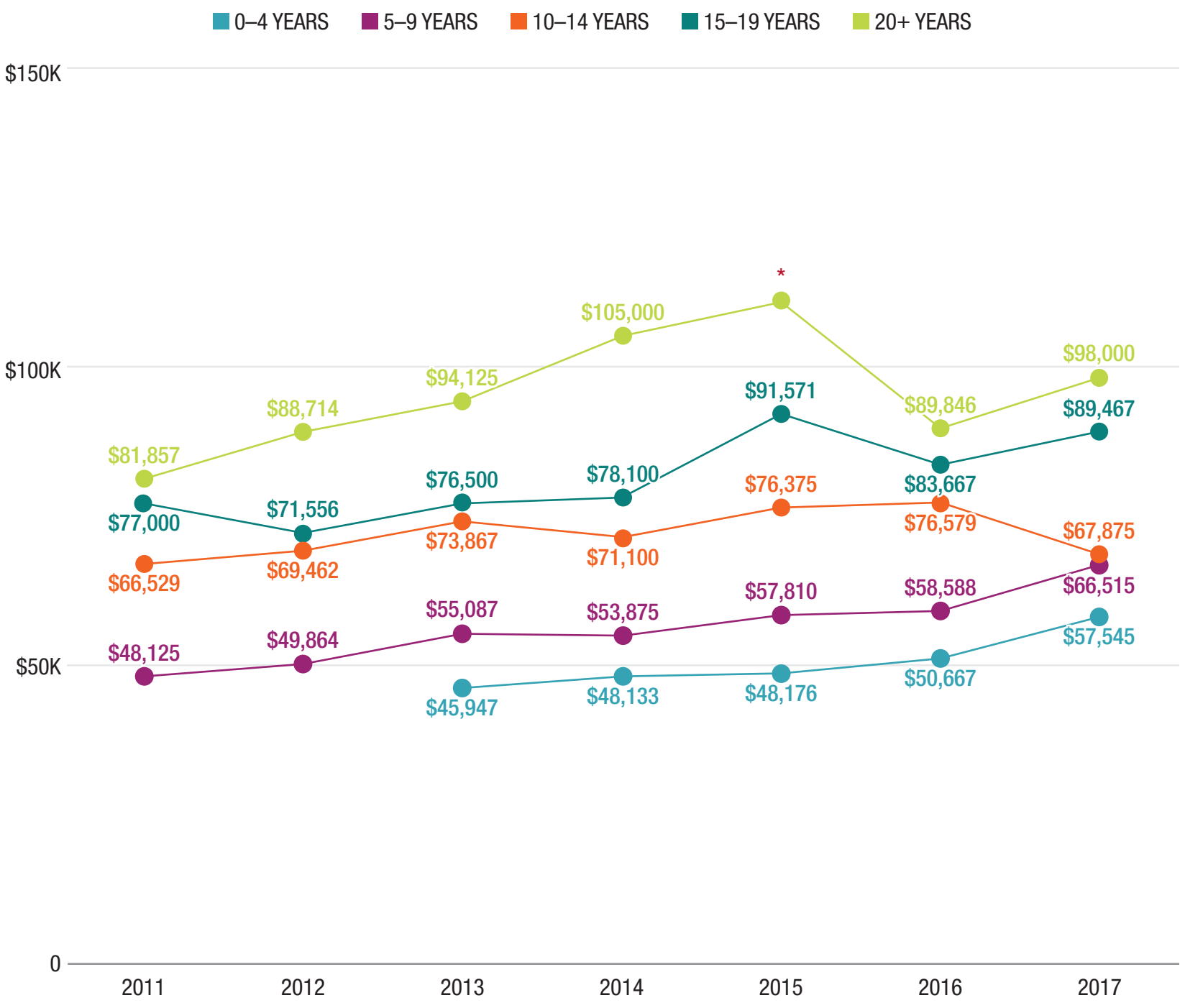
## BASE CASH COMPENSATION BY DISCIPLINE & ROLE

# Base Compensation: Graphic Designers



## BASE CASH COMPENSATION BY DISCIPLINE & ROLE

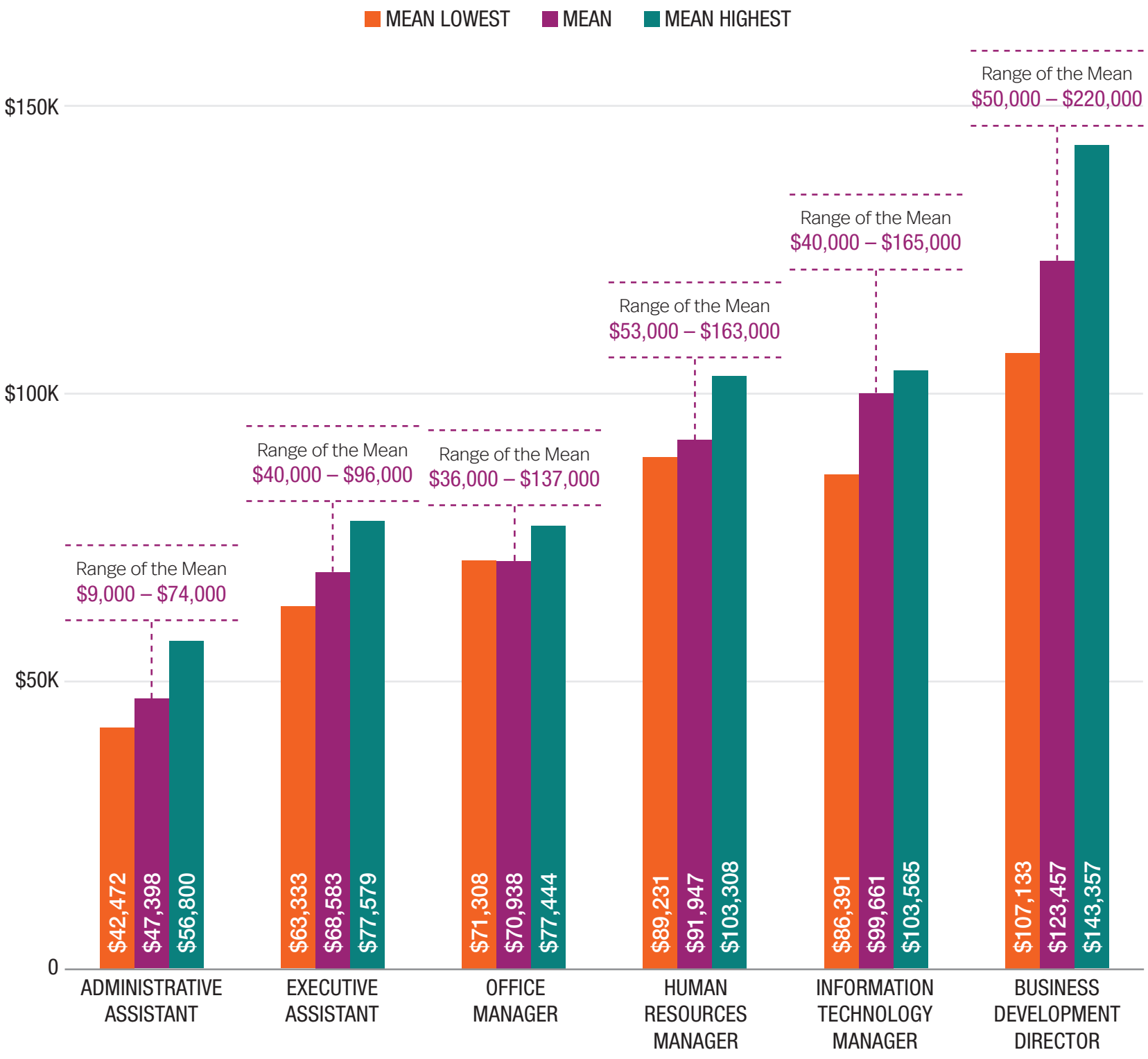
### Base Compensation: Graphic Designers | Historical Perspective




* Not enough data

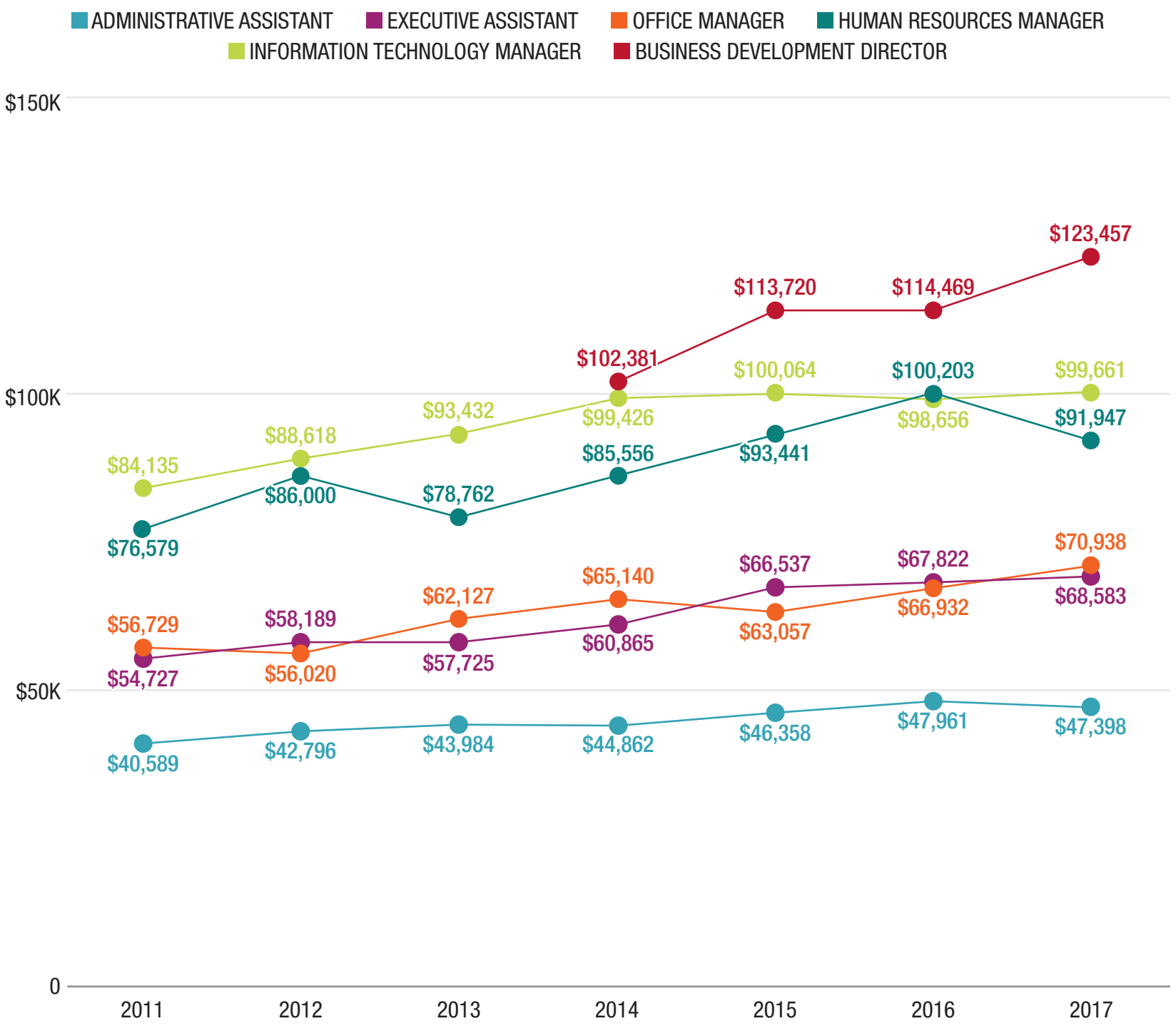
## BASE CASH COMPENSATION BY DISCIPLINE & ROLE

### Base Compensation: Specialized and Support Staff

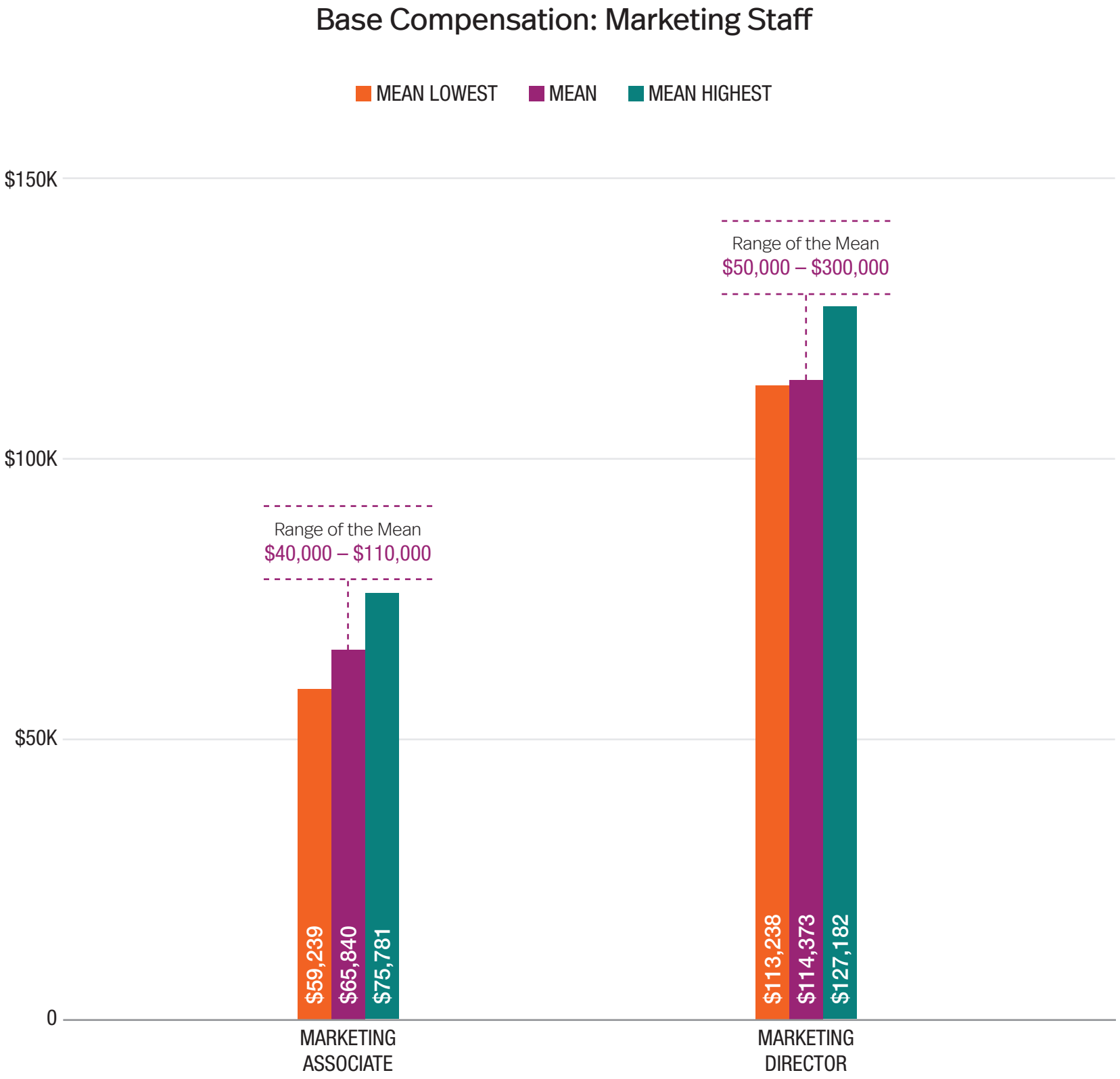


## BASE CASH COMPENSATION BY DISCIPLINE & ROLE

### Base Compensation: Specialized and Support Staff | Historical Perspective

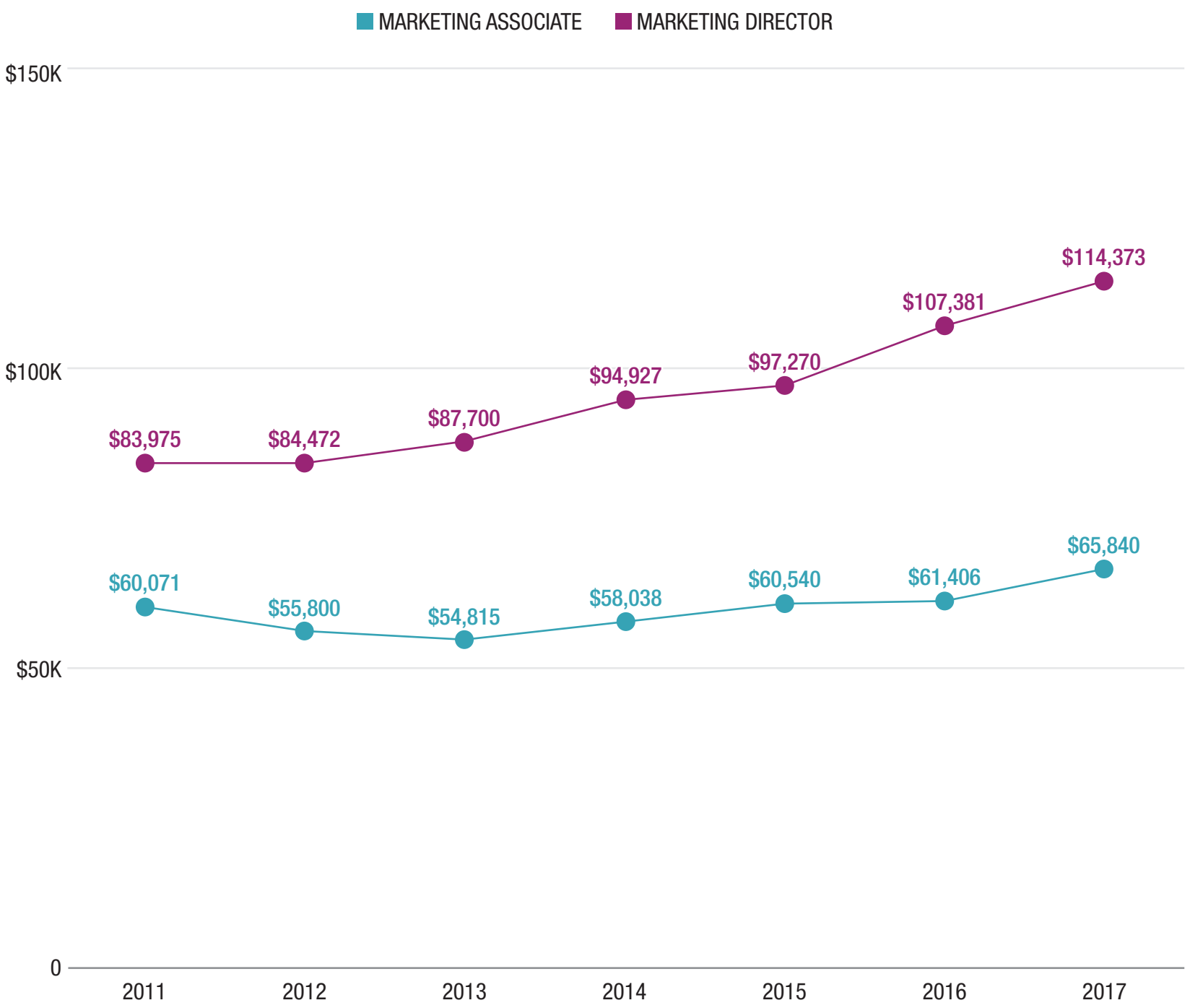


## BASE CASH COMPENSATION BY DISCIPLINE & ROLE

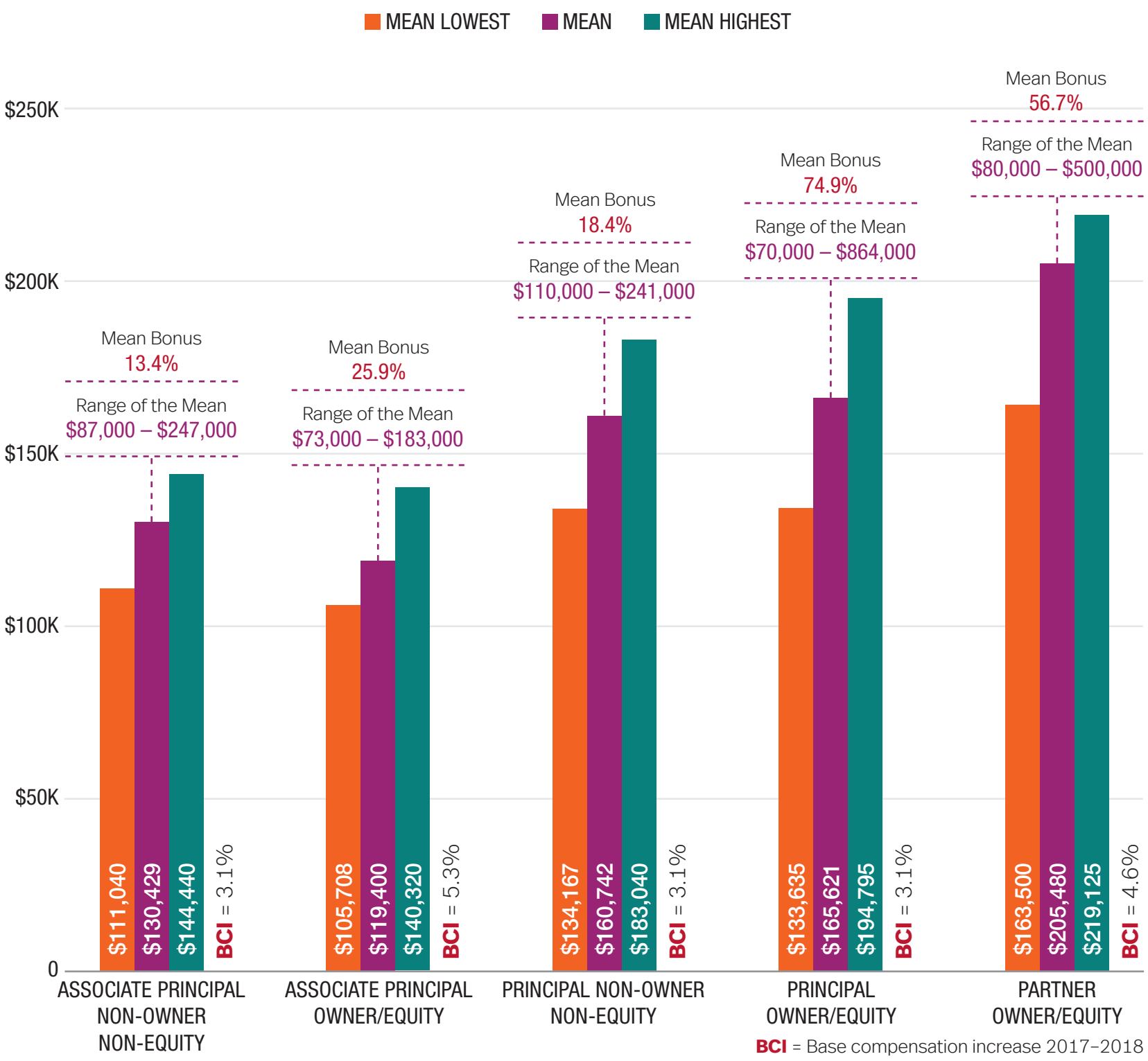


## BASE CASH COMPENSATION BY DISCIPLINE & ROLE

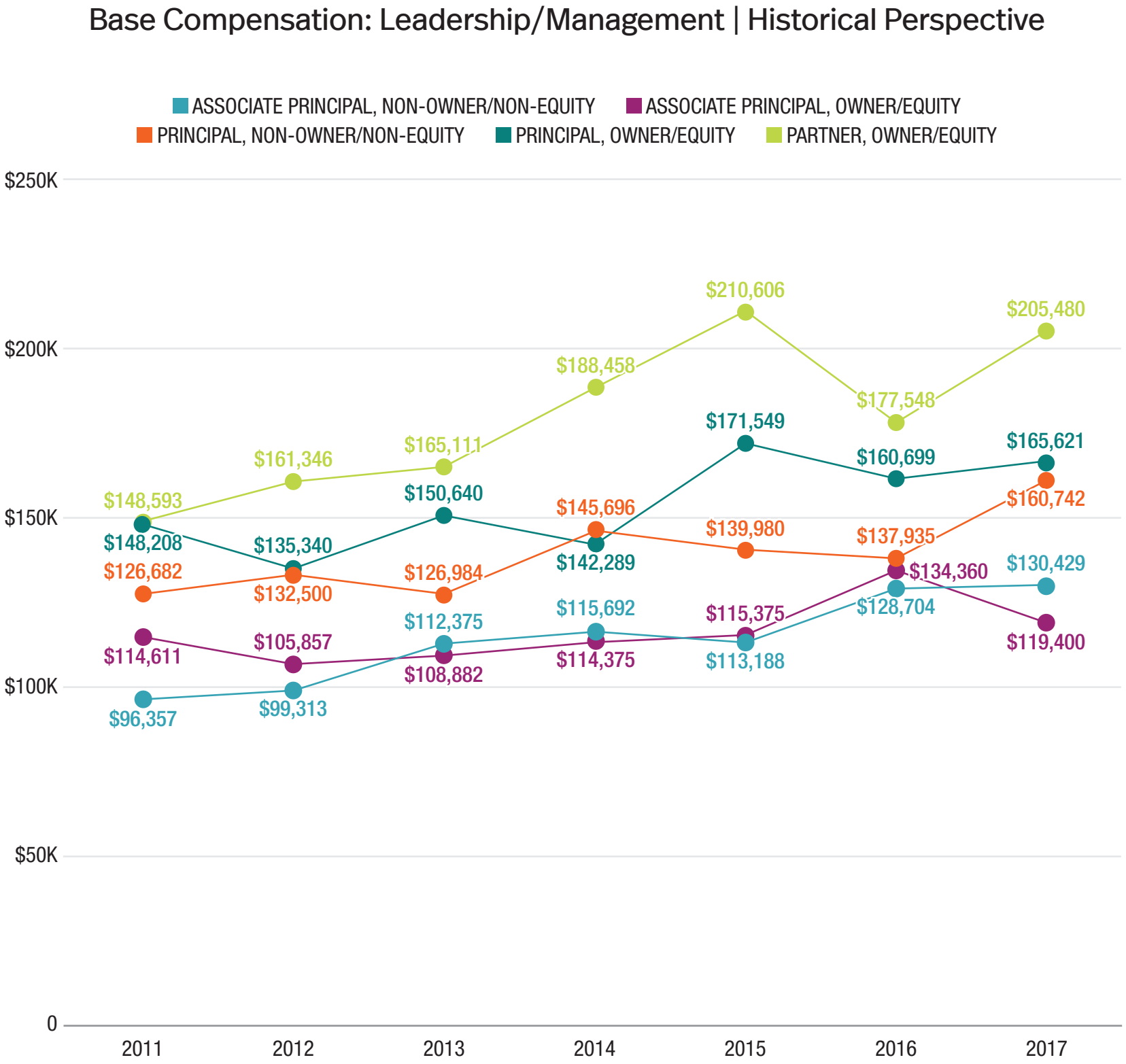
### Base Compensation: Marketing Staff | Historical Perspective



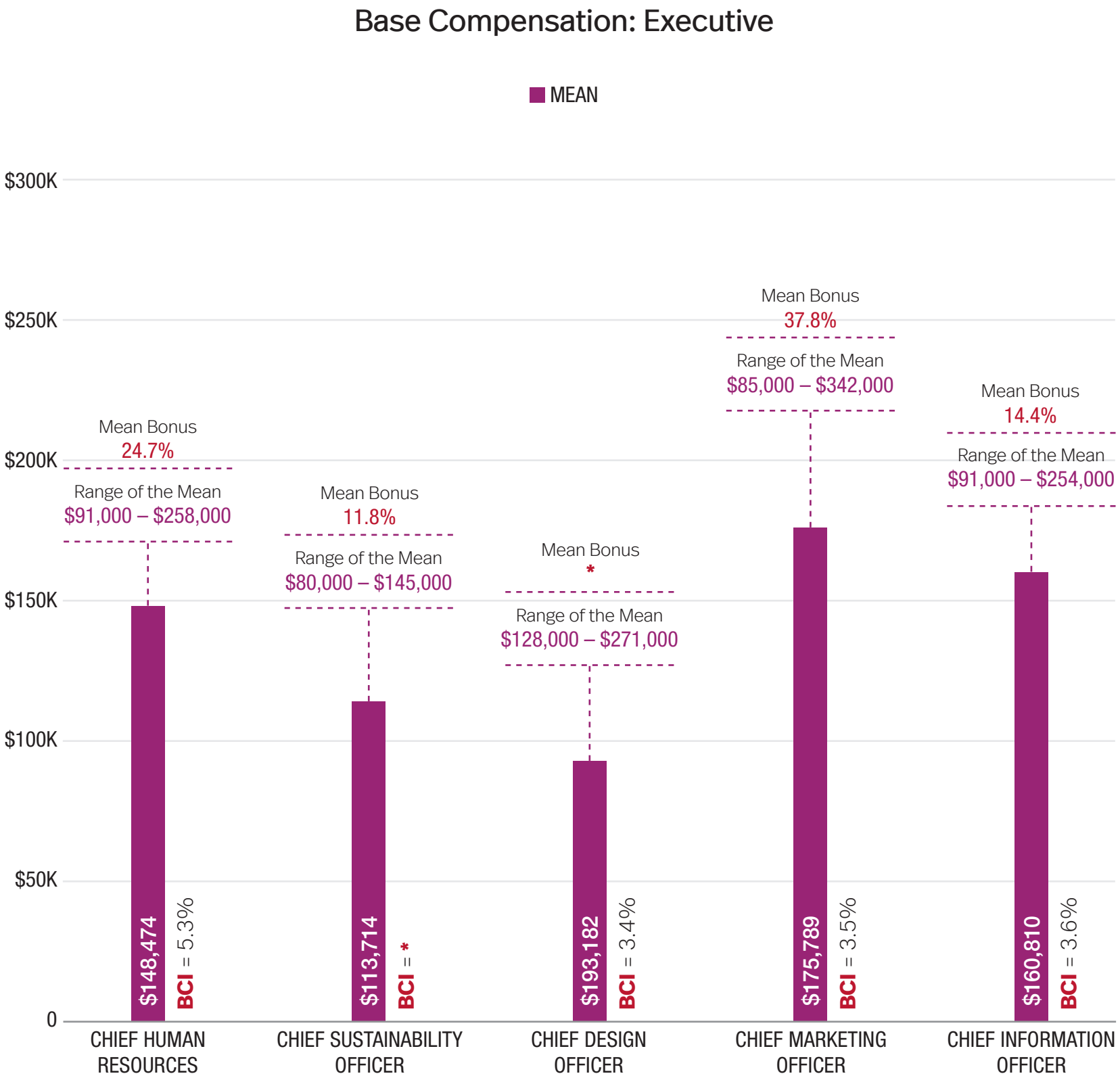
## BASE CASH COMPENSATION BY DISCIPLINE & ROLE



## BASE CASH COMPENSATION BY DISCIPLINE & ROLE



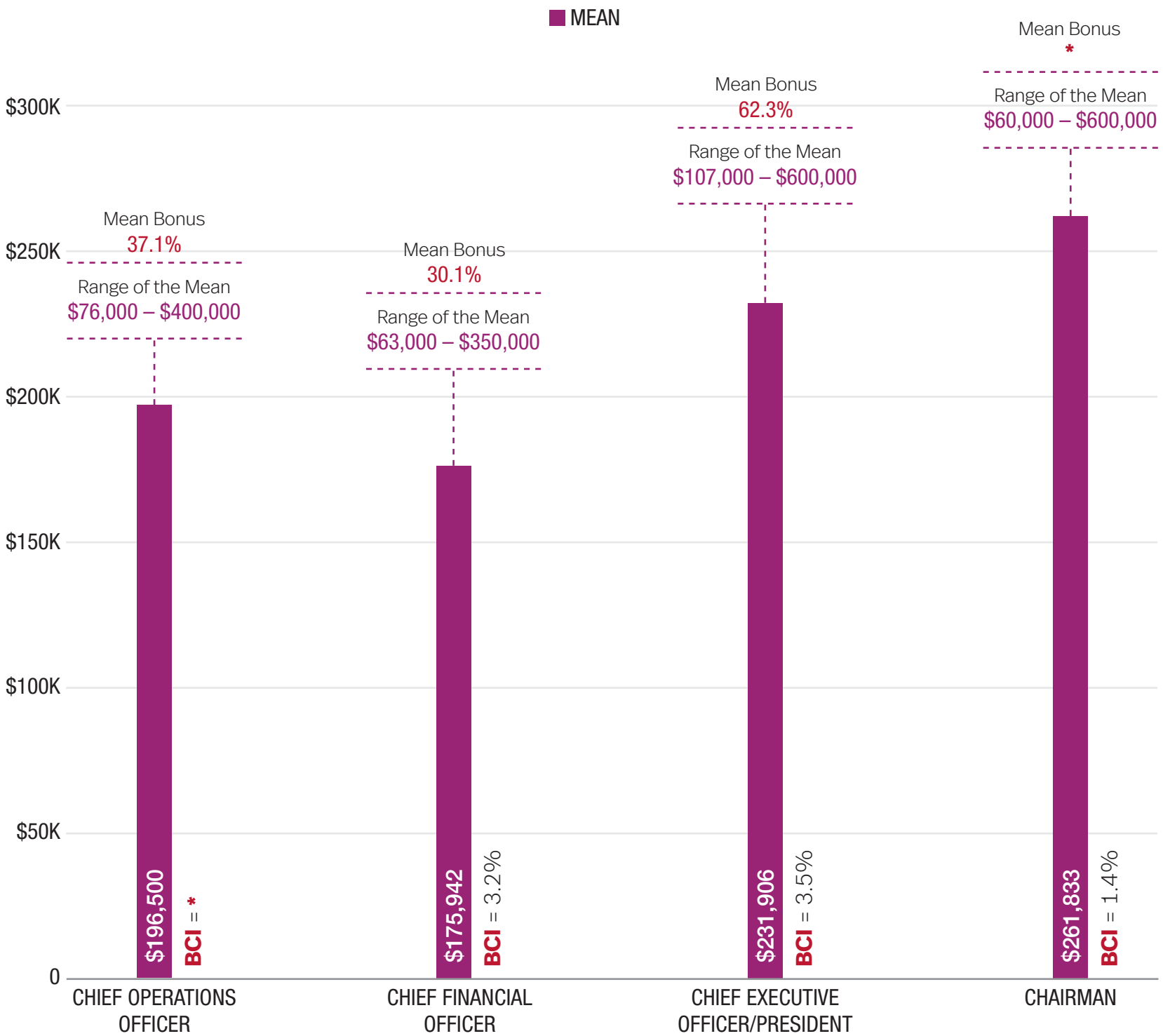
## BASE CASH COMPENSATION BY DISCIPLINE & ROLE




**BCI** = Base compensation increase 2017–2018
* Small sample size

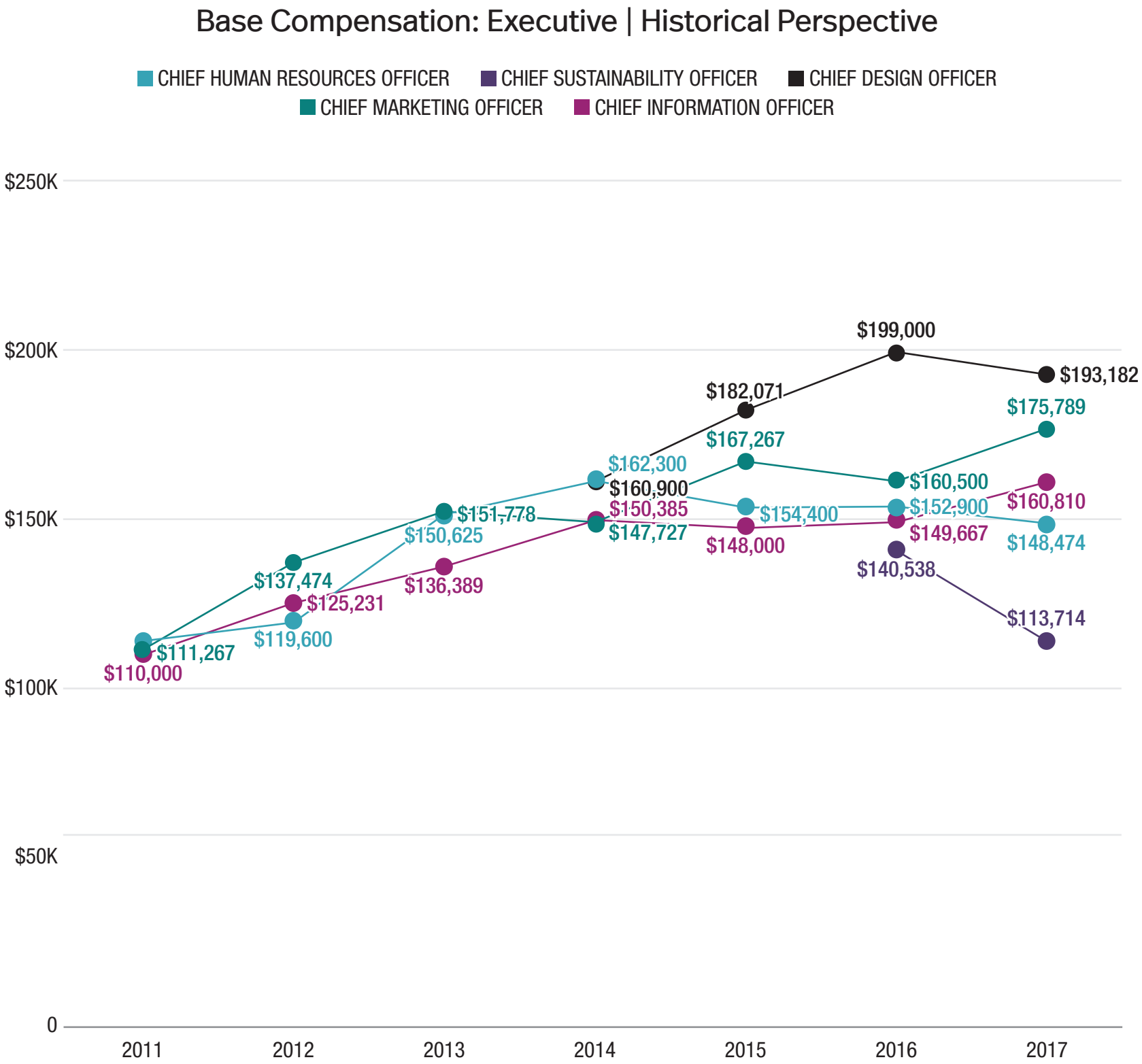
## BASE CASH COMPENSATION BY DISCIPLINE & ROLE

### Base Compensation: Executive

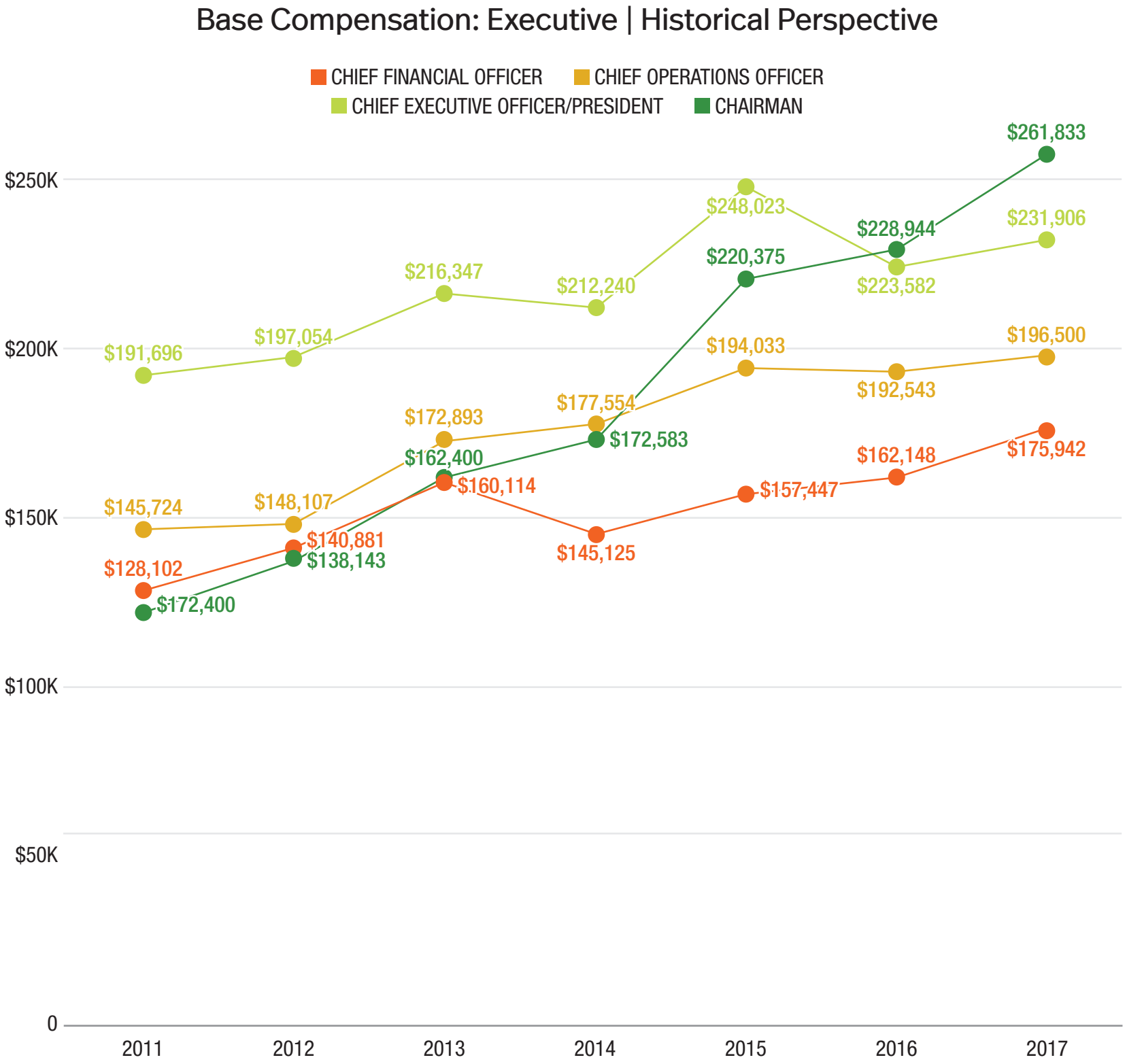



**BCI** = Base compensation increase 2017–2018
* Small sample size

## BASE CASH COMPENSATION BY DISCIPLINE & ROLE

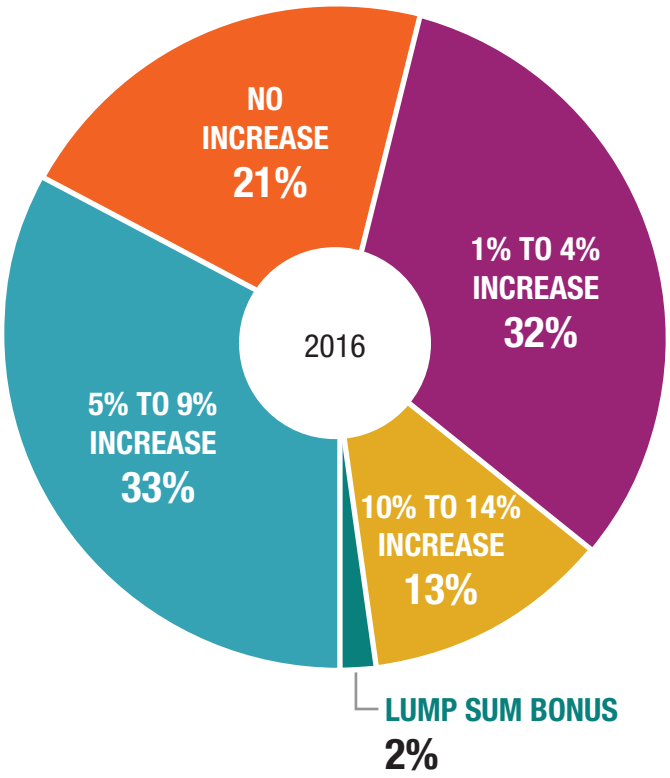


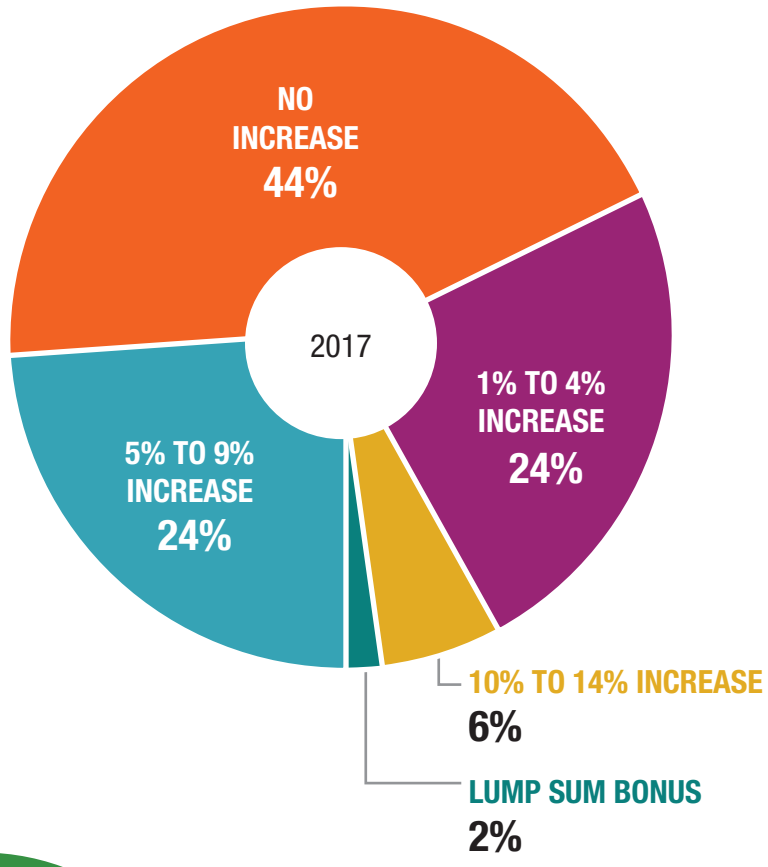
## BASE CASH COMPENSATION BY DISCIPLINE & ROLE

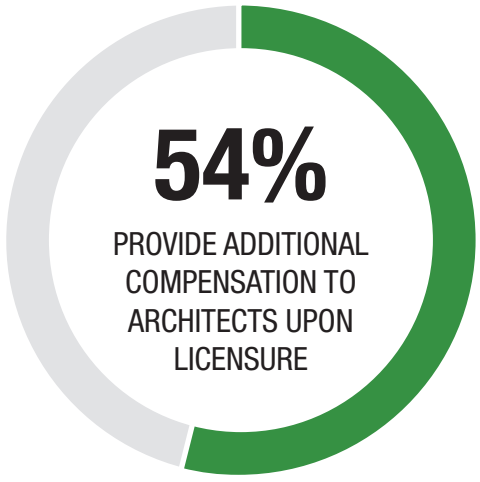


# Licensure

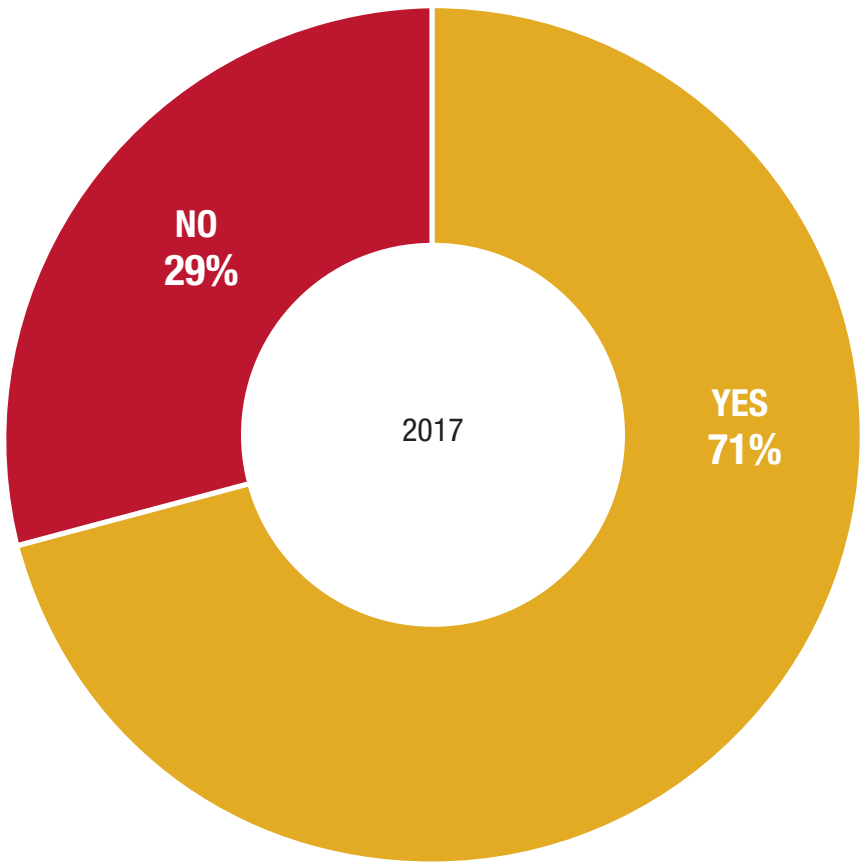
## How much does base compensation increase upon licensure?



## Does your firm pay for some or all of the expenses associated with preparing to take the Architect Registration Exam?



Design Futures Council

# 2018 Leadership Summit Events

Each year the Design Futures Council gathers together around a series of essential themes ruddering the A/E/C industry. The gatherings are always titled as Leadership Summits or Forums. Each gathering is attended by leaders from property development, architecture, design, engineering, construction, finance, banking, building product manufacturing, academia, and more. The overarching goals for these exchanges are:

- relational connectedness among attendees,
- challenging the status quo of design and delivery,
- presentation of thought-leading content that alters perspectives,
- staging the questions every industry leader should be asking,
- and more.

The schedule of remaining DFC events for 2018 is:

### Leadership Summit of the Future of Architecture...Preparation, Practice, Posture

**October 9–11 (Venice - ITALY)** - Centering around the La Biennale di Venezia, this event will bring together A/E/C leaders from across the globe to grapple with the accelerated changes encountered daily in the profession and highlights both opportunities and challenges.

### Leadership Summit on the Business of Design

**November 12–13 (New York, NY - USA)** - All things business. This gathering deals with leadership, risk, organizational constructs, finance, marketing, and an ever-relevant list of themes every leader needs to know.

All gatherings are limited to 100 executive-level participants to ensure the relational connectedness and personal dynamic the DFC has been known to sustain for over twenty years.

---

# DI Research℠ Other Events in 2018

### Action Forums: From Sustainable, to Resilient, to Regenerative Design

**July through August, 2018** - Action Forums will be held in Boston, Dallas, and Seattle. More information can be found at: **www.di.net/research-forums/**

---

# An Initiative of DesignIntelligence®

### Cybersecurity Hygiene for A/E/C

**September 27–28, 2018 (Atlanta, GA - USA)** - Hands-on instructional event bringing together industry recognized experts and A/E/C technology leaders to understand the rapidly changing landscape of cybersecurity. More information at: **www.di-registrations.com/design-intelligence-cyber-security-hygiene-for-a-e-c-event**

## Notable Quotes

# Le Corbusier

**1887–1965**

“A house is a machine for living in.”

“Space and light and order. Those are the things that men need just as much as they need bread or a place to sleep.”

“I prefer drawing to talking. Drawing is faster, and leaves less room for lies.”

“Architecture is the learned game, correct and magnificent, of forms assembled in the light.”

“The home should be the treasure chest of living.”

**“The top three decision makers at the firm are all over 60. What is going to happen when they retire?”**

“You’d think we would have a plan for that, wouldn’t you?”

For when you need to think about leadership and the future.

di/strategic advisors℠

whenstrategymatters.com
678.785.3359

Design Futures Council

# COMMERCIAL MEMBERS

AS OF JUNE 2018

Armstrong® CEILING & WALL SOLUTIONS

constructconnect™ Powering connections. Improving results.

CS Construction Specialties®

di/strategic advisors℠

DUPONT®

KAWNEER AN ALCOA COMPANY

Steelcase®

Tarkett

USG™

Design Futures Council

# PROFESSIONAL EXECUTIVE MEMBERS

AS OF JUNE 2018

ARUP

BECK

BIG

BUROHAPPOLD ENGINEERING

CALLISONRTKL
A DESIGN CONSULTANCY OF ARCADIS

cbt

DIALOG

DLR Group

esg architects

EYP/
Architecture & Engineering

FENTRESS ARCHITECTS

Foster + Partners

GBBN

Gensler

HANBURY

HCMA
Architecture +Design

HDR

HED

hga

HKS

HL DESIGN BUILD

HMC Architects

HOLDER

hok

hord | coplan | macht
ARCHITECTURE LANDSCAPE ARCHITECTURE INTERIOR DESIGN PLANNING

INTERFACE ENGINEERING

JACOBS

Kahler Slater


kasian


KIERANTIMBERLAKE


KPF


ktgy
Architecture+Planning


LEO A DALY


LMN


LS3P


lynchmykins


MAGNUSSON
KLEMENCIC
ASSOCIATES
Structural + Civil Engineers


MEYER | BORGMAN | JOHNSON
STRUCTURAL DESIGN + ENGINEERING


nbbj


NILES BOLTON
ASSOCIATES


orcutt|winslow


OVERLAND


PDR


Perkins Eastman


PERKINS
+ WILL


RAMSA
ROBERT A.M. STERN ARCHITECTS


RATIO


RDG
PLANNING ● DESIGN


RLB
Rider
Levett
Bucknall


SASAKI


Shepley Bulfinch


SHP
LEADING DESIGN


SLAM
The S/L/A/M Collaborative


SMITHGROUP JJR


Stantec


Thornton
Tomasetti


threshold


Turner
Construction Company


tvsdesign


WALTER P MOORE


Wight


Williston
ENTERPRISES


WSP


ZGF
ZIMMER GUNSUL FRASCA ARCHITECTS LLP

Design Futures Council

# INSTITUTIONAL AFFILIATES

AS OF JUNE 2018

The American Institute of Architects

Arizona State University

ACSA Association of Collegiate Schools of Architecture

Auburn University

Cal Poly San Luis Obispo

Carnegie Mellon University

Colorado State University

Drexel University

Georgia Tech

Harvard University Graduate School of Design

Iowa State University

Kansas State University

Kent State University

NC State University

Northeastern University

Penn State 1855

SAIC School of the Art Institute of Chicago

SCAD The University for Creative Careers

SMPS Society for Marketing Professional Services

TERREFORM


Tulane
University


Tyler School of Art
TEMPLE UNIVERSITY


THE UNIVERSITY
OF ARIZONA


UNIVERSITY OF
ARKANSAS
Fay Jones School
of Architecture + Design


University of
CINCINNATI


University of Colorado
Boulder


UNIVERSITY of
HOUSTON


ILLINOIS


KU THE UNIVERSITY OF
KANSAS


UNIVERSITY OF MINNESOTA


UNIVERSITY OF
Nebraska
Lincoln


THE UNIVERSITY OF NORTH CAROLINA
GREENSBORO


THE UNIVERSITY of
TENNESSEE
KNOXVILLE


UNIVERSITY OF
MICHIGAN


THE
UNIVERSITY
OF UTAH


VCU
VIRGINIA COMMONWEALTH UNIVERSITY

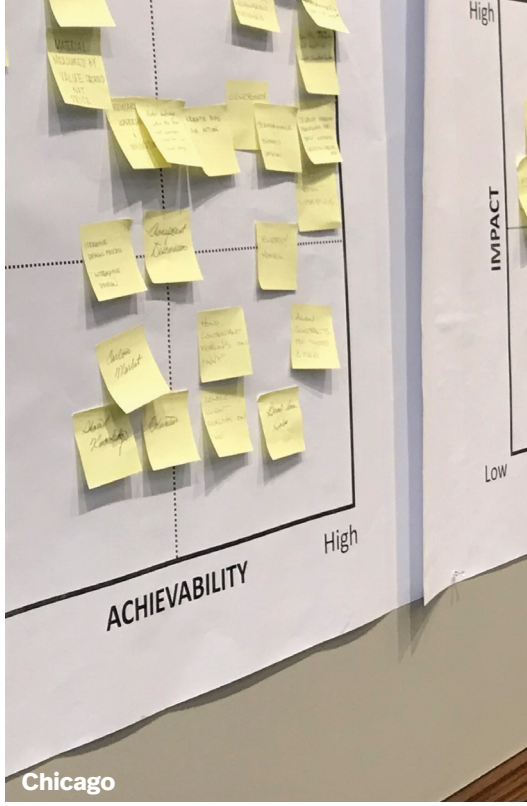

VirginiaTech

New York

Los Angeles


Chicago


Los Angeles



Chicago

# DI Research℠

## Action Forums: From Sustainable, to Resilient, to Regenerative Design

Q2 2018 Chicago, Los Angeles and New York


Los Angeles


Los Angeles


Chicago


ACHIEVABILITY


New York


Los Angeles


19TH c.
20TH c.
21ST c.
New York


Chicago

# “This firm isn’t going anywhere until the leadership team starts working together!”

“Are you sure we’re chasing the same success?”

For when your team needs help with alignment, common focus, and a unifying strategy.

di/strategic advisors℠

whenstrategymatters.com
678.785.3359

# Q2 2018



DesignIntelligence® Quarterly