Survey on the Growth and Development of Global Early-Career Young Scientists 2025

WYSS 2025

世界青年科学家联合会
2025 年 10 月

World Association of Young Scientists
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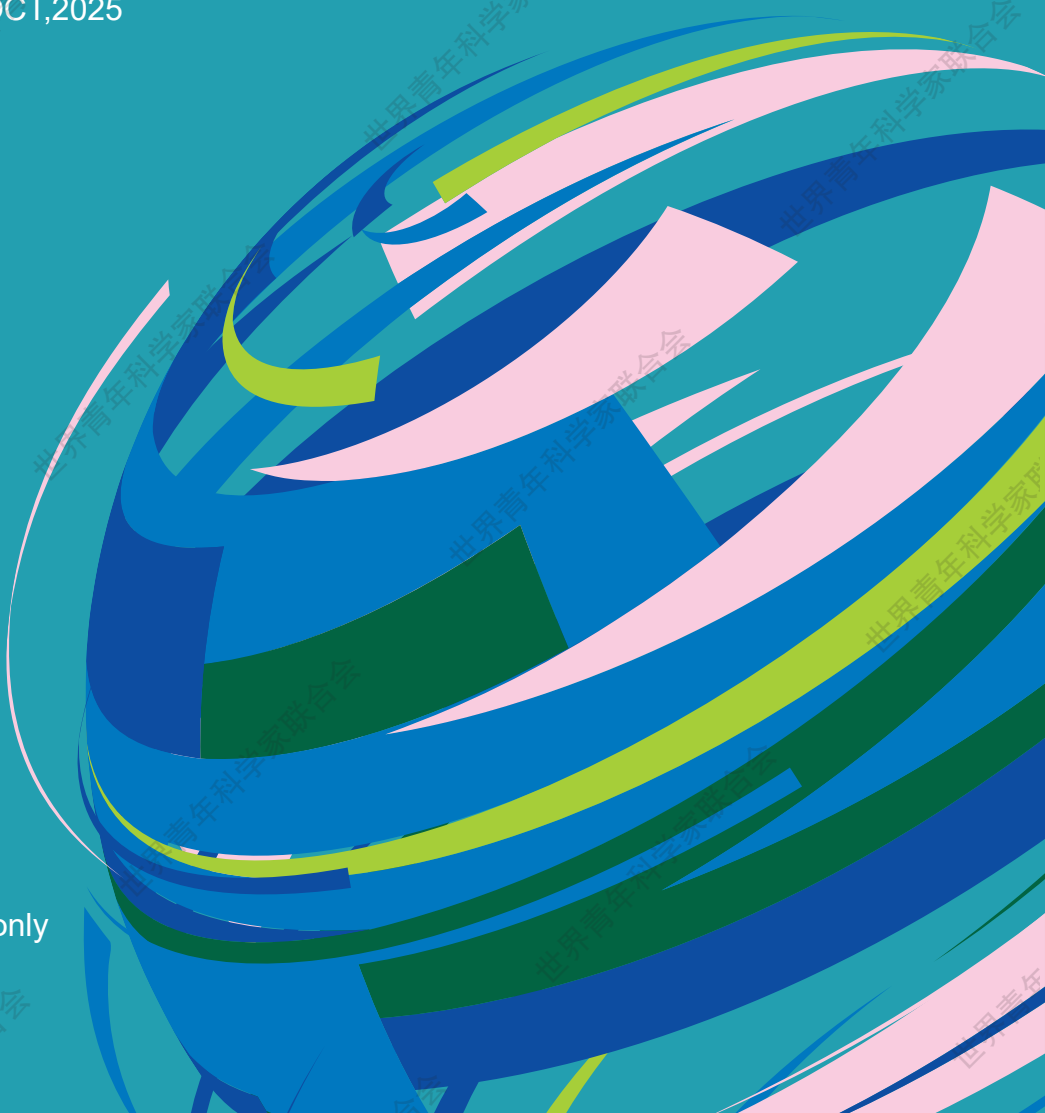

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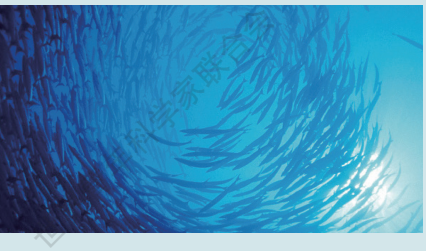
世界青年科学家联合会



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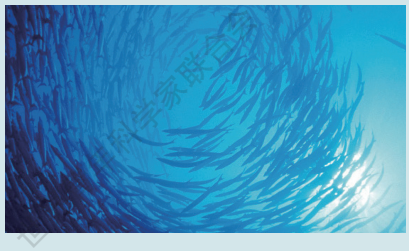


Introduction

Young scientists represent the most dynamic and creative core of the global scientific and technological innovation system, serving as a critical factor in shaping the future of scientific development. Connecting young scientists worldwide and supporting their growth has consistently been the fundamental mission of the World Association of Young Scientists (WAYS). To this end, WAYS conducted this global survey on the career growth and development of early-career young scientists. Its aim is to reveal the current realities of young scientists' professional lives and progression by collecting authentic feedback directly from frontline researchers.

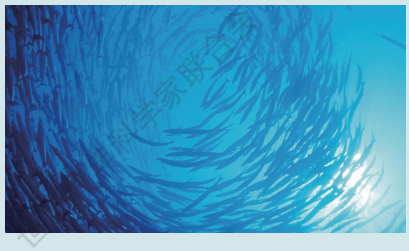
The report translates the genuine experiences of young scientists globally into tangible, "visible" data, revealing issues that warrant serious reflection. Despite being driven by a passion for scientific exploration, these scientists commonly grapple with insufficient funding, the burden of administrative tasks, and the pressure of short-term evaluations. Their anxieties primarily revolve around compensation and career stability, while their calls are for consistent support, autonomous research environments, and equitable conditions.

To meet the latest round of technological revolution and industrial transformation, and to find innovative solutions to global challenges, a thriving scientific landscape and more active innovation are essential. Nations must collaborate to drive a profound transformation of research culture and a reshaping of the scientific ecosystem. This involves providing young scientists with better research platforms, greater trust, more patient support, and a more accommodating atmosphere, thereby fully unleashing their innovative vitality and fostering their comprehensive growth and development.

Only by clearly articulating the demands of young scientists and effectively implementing systemic support measures can we truly create a conducive environment for global young scientists to immerse themselves in research and pursue excellence. This

will, in turn, secure a brighter future for global scientific and technological innovation and lay a more solid foundation for the common well-being of humanity.

This report is expected to spark deeper concern and discussion regarding the global environment for the growth and development of young scientists, enabling us to collectively nurture and safeguard the future and hope of human scientific and technological innovation.



Key Findings

Career Motivation: Balancing Idealism and Pragmatism

Early-career young scientists' professional choices are primarily driven by intrinsic interest and values, while also considering job stability and social value. Data reveals that "passion for scientific exploration" (40.26%) and "desire for a stable and respected profession" (39.65%) are the two main motivations reported by respondents for pursuing research. Notably, this career choice exhibits significant differences across dimensions such as gender, region, and research field, suggesting that relevant support policies must adequately consider the diverse demands of different groups to enhance their specificity and effectiveness.

Resource Status: Funding Pressure and Compact Team Structures

Early-career young scientists commonly face funding shortages, with predominantly limited funding channels that rely mainly on domestic government departments and their host institutions. A significant 69.69% of respondents reported "insufficient" or "no" funding while only 30.31% considered their funding "abundant." Regarding team

composition, most early-career young scientists work in small teams of fewer than 10 members; 81.30% of respondents belonged to teams of fewer than 10 members, with ultra-small teams of 1~3 individuals making up the largest proportion (41.66%).

Career Growth: Optimal Age Range of 30~35 and Reliance on External Resources

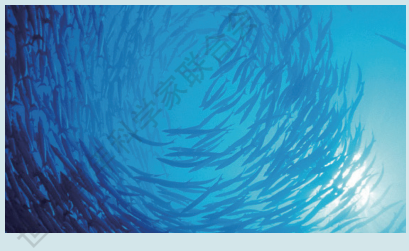
The survey reveals that 82.90% of respondents have not yet become independent Principal Investigators (PIs) in their early-career stage. Among those who have achieved PI status, 61.43% are concentrated between 30 and 35 years old, with 35 being the peak (16.50%). The data further highlight that "highly cited papers or high H-index" (39.63%) and "obtained academic awards/honors" (38.85%) are considered the two primary indicators for becoming a PI, indicating that academic promotion is still predominantly driven by quantitative publication metrics and peer-recognized accolades. Simultaneously, "access to world-class institutions for study and research" (20.90%), "adequate and stable funding support" (19.75%), and "mentorship from leading scientists" (14.85%) are identified as crucial factors influencing career development, highlighting a strong reliance on the resources, opportunities, and a healthy research ecosystem provided by their employing institutions.

Pressures and Challenges: Financial Strain and Career Uncertainty Are Major Concerns

Early-career young scientists frequently contend with a multitude of pressures arising from both professional development and personal life. Statistics show that "lower salary" (33.92%), "job insecurity/lack of stable employment " (20.03%), and "interpersonal problems" (18.32%) constitute the top three pressures for these scientists, reflecting respondents' deep concerns regarding economic security and career prospects. Furthermore, 68.25% of respondents grapple with time allocation challenges, with primary issues centered on "excessive time spent on administrative tasks" (32.79%) and "insufficient time for personal learning and improvement" (31.18%). This data suggests that early-career young scientists broadly perceive non-research tasks as encroaching upon their core research activities.

Policy Demands: Funding Support, Research Autonomy, and Alleviating Non-Academic Burdens

The demands of early-career young scientists primarily center on core concerns such as financial security, academic autonomy, and control over their time. The data indicates that "guaranteed stable research funding" (23.32%), "research autonomy" (17.22%), and "reduced administration burdens" (15.81%) are the top three policy priorities for young researchers. This collectively reflects early-career scientists' shared expectation for a research environment with stable resources, one that respects scientific principles and allows for focused investigation. It also directly addresses deep-seated contradictions within the current research ecosystem, such as intense resource competition and administrative overreach.



Contents

1 Background and Objectives

Young scientists are the backbone of global scientific and technological innovation. Despite being a large and highly valued group, they frequently encounter numerous difficulties during their development, particularly in the early stages of their careers. These challenges not only impede the unleashing of their innovative vitality and the healthy progression of their careers but also diminish the overall performance of the scientific and technological innovation system.

Generally, the early career stage represents a golden period in a scientist's research life, characterized by their peak innovative capacity and creative vitality. A deep understanding of the importance of this early career phase, coupled with a thorough insight into the specific challenges and key demands of young scientists during this time, and the provision of appropriate support, are all vital for both individual scientific growth and the overall development of the research community.

WAYS is dedicated to building a sustainable community and support system for young scientists globally. To gain deep insight into the actual situations of frontline researchers, it conducted a specialized survey among researchers worldwide. This initiative aims to understand, at a micro-level, the current development, challenges, and demands of early-career young scientists, thereby providing factual evidence and data to optimize their growth environment.

This survey received 3,065 valid questionnaires, with respondents coming from diverse regions, disciplinary fields, and various research positions. It primarily centered on the following core questions:

- Their growth and resource acquisition during the early stages of their careers;
- The main pressures and unfavorable factors they encounter in their early careers;
- The key factors they perceive as vital for growth and their main requests for future policy support.

We hope to leverage this research as an opportunity to collaborate with the global scientific and industrial communities in building a platform that fosters the growth and development of young scientists.

2 Survey Design

2.1 Methodology

This survey was conducted online from June 15 to September 15, 2025, utilizing questionnaires available in both Chinese and English. These were distributed to researchers globally through various channels, including email and social media. The survey primarily consisted of structured quantitative questions, complemented by targeted open-ended questions. This combined approach allowed for the efficient statistical processing of data while also gathering qualitative content, thereby achieving a research outcome that balanced both breadth and depth.

2.2 Definition of Concepts

Throughout this survey, the following key concepts are defined:

- Early Career Researcher (ECR), also known as Early-Stage Researcher (ESR). The international academic community typically defines ECRs by the number of years a scholar has spent conducting research, often referred to as "research age." For the purpose of this survey, an ECR is defined as someone within the first seven years of acquiring a research position, including postdoctoral fellowships.
- Young Scientist: Generally refers to researchers aged 45 years (inclusive) or younger who are actively engaged in scientific research on the front lines.
- Principal Investigator (PI): A lead researcher who typically possesses independent research capabilities and is essentially the core leader and directly responsible individual for a research project.

2.3 Respondent Demographics

A total of 3,065 researchers participated in this survey. All respondents, hereafter referred to as the "sample," are distributed as follows.

- **Geographic Distribution:** The sample encompasses multiple countries across regions such as Europe, Asia-Pacific, and Africa. Respondents from China (including Hong Kong, Macao, and Taiwan)

constituted the largest proportion (84.51%), with those from other countries collectively accounting for 15.49%. This distribution is attributable to the survey being conducted in mainland China. Figure 2-1 illustrates the top ten countries/regions by respondent proportion.

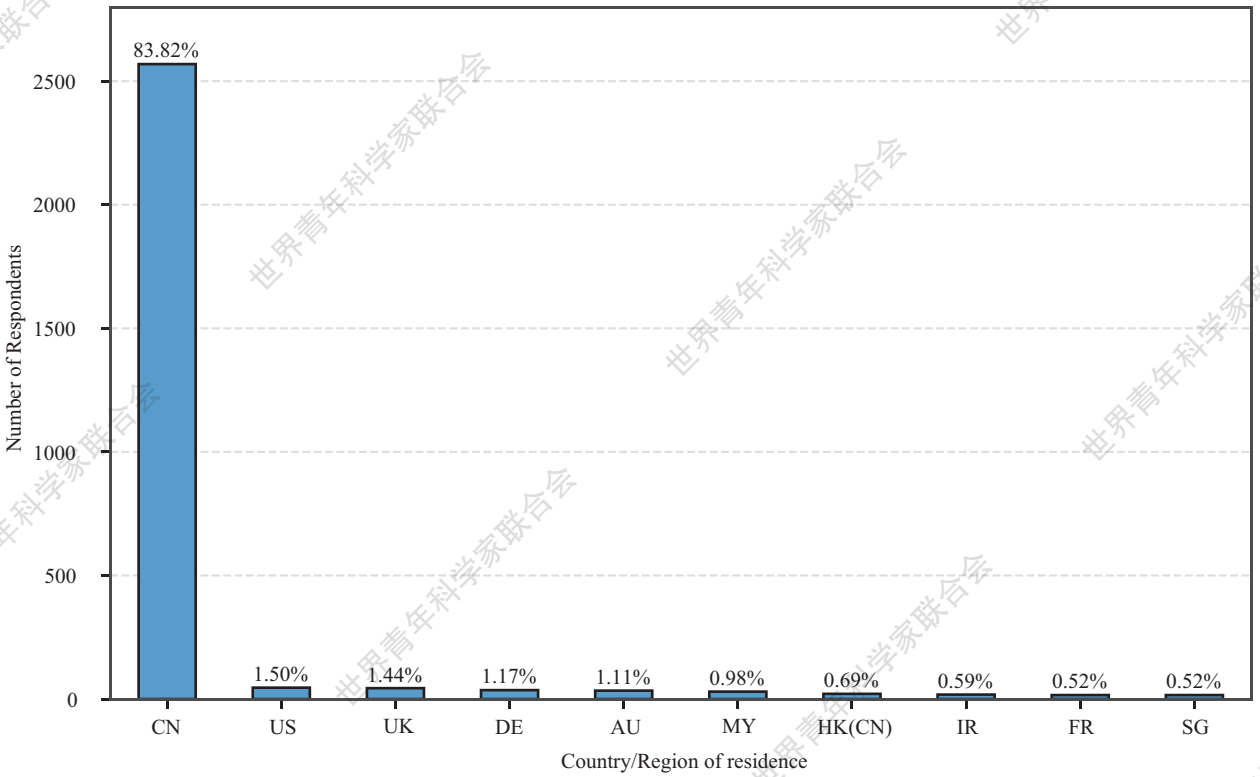


Figure 2-1 Distribution of Country/Region

- **Gender Distribution:** Among the respondents, males accounted for 61.21%, females for 37.26%, with "prefer not to say" and "other" categories collectively making up 1.53%. See Figure 2-2 for details.

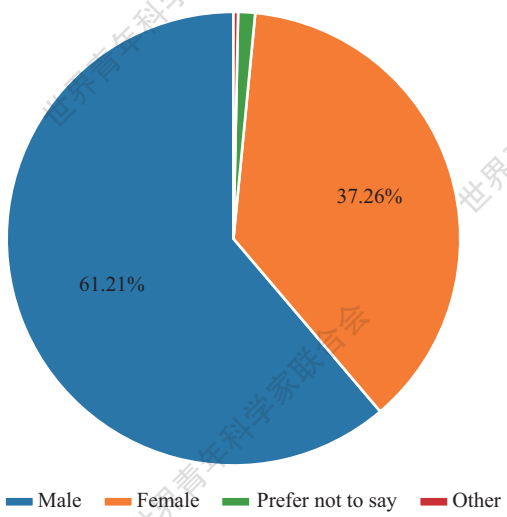


Figure 2-2 Distribution of Gender

- **Age Group Distribution:** Respondents under 45 years old comprised 88.74% of the total, with those under 35 years old collectively accounting for 54.71%. The 26~35 age range is a crucial stage for researchers, transitioning from initial career steps to gradual maturity, with most being in their "early career." The age range of the respondents suggests that this survey effectively captures the current situation of young scientists. See Figure 2-3 for details.

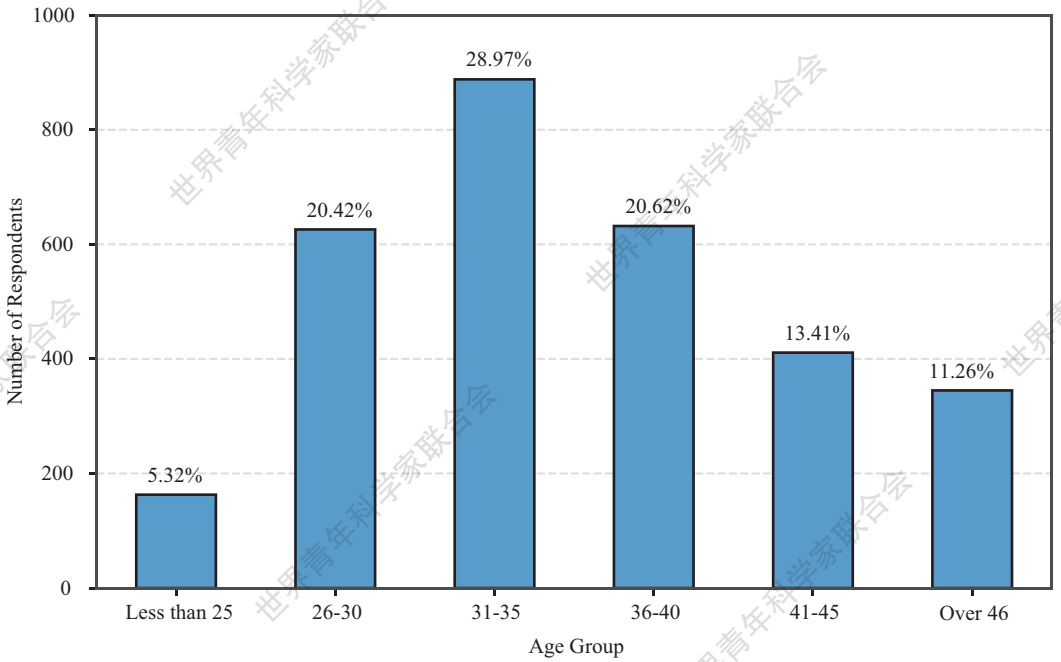


Figure 2-3 Distribution of Age

- **Educational Background Distribution:** The majority of respondents either hold a Ph.D. or are currently pursuing one. Specifically, 64.44% have obtained a doctoral degree, 16.84% are enrolled in a Ph.D. program, and only 18.73% do not possess a Ph.D. See Figure 2-4 for details.

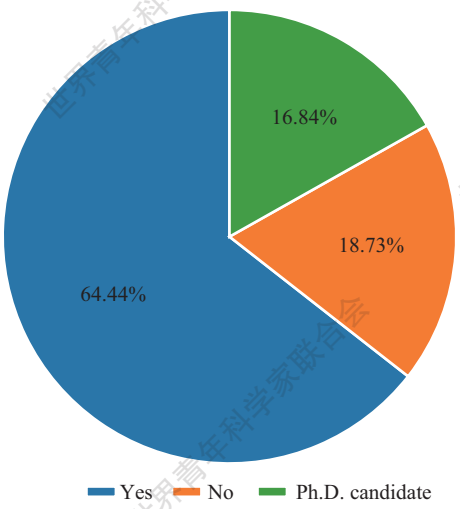


Figure 2-4 Distribution of PhD

- **Professional Title Distribution:** Respondents' professional titles are varied. Over 40% of the respondents are Associate Professors (23.52%) and Assistant Professors (20.00%), which suggests that many respondents are at a critical stage for tenure-track promotion. Postdoctoral researchers account for 13.02%, while the "other" category represents the largest proportion at 25.58%. See Figure 2-5 for details.

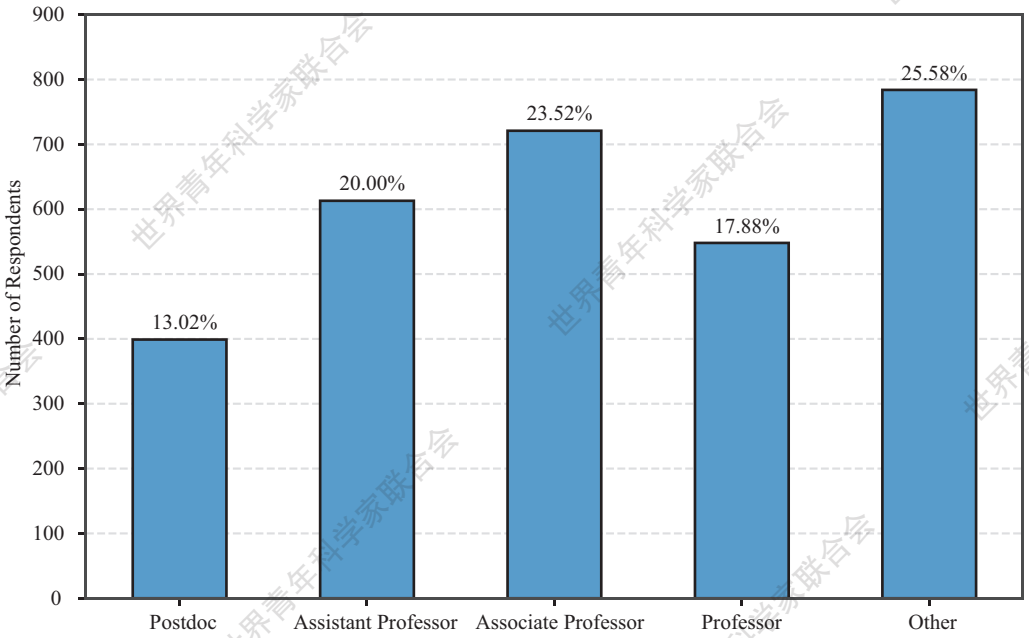


Figure 2-5 Professional Title Distribution

- **Distribution of Years in Research:** Over half (52.63%) of the respondents are in the first seven years of their research careers. Those with 8~15 years of experience account for 31.32%, while 16.05% have 16 or more years. This distribution aligns with the survey's focus on early-career scientists. For respondents with 16+ years of research experience, their answers reflect the recollections of more senior scientists regarding their early career stages. See Figure 2-6 for details.

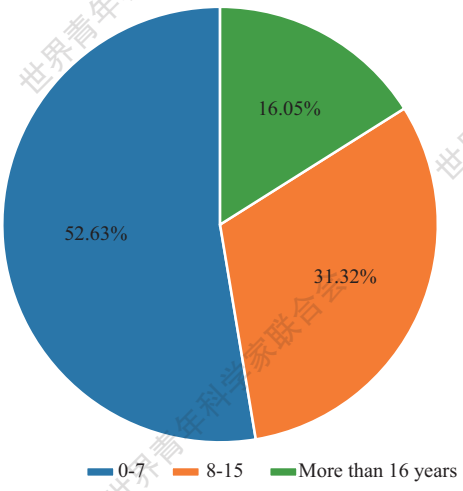


Figure 2-6 Distribution of Years in Research

- **Job Position Distribution:** Over 80% (83.68%) of respondents work in academia, primarily in combined teaching and research position in university (33.47%), university-hospital combined clinical and research position (17.06%), research-only position in university (13.21%), and research institute (11.88%). All other sectors individually account for less than 10%. The sample is highly concentrated within the higher education system and research institutions, with a relatively low proportion from industry. See Figure 2-7 for details.

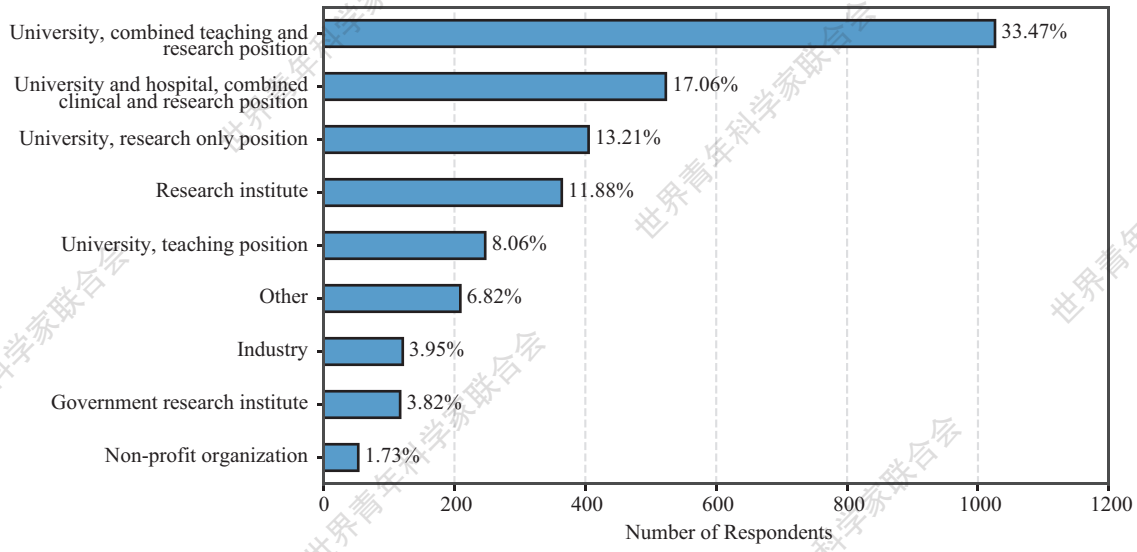


Figure 2-7 Distribution of Job Position

- **Research Field Distribution:** Biological Sciences (28.52%), Medical and Health Sciences (28.06%), Materials Science (11.48%), Engineering Sciences (9.59%), Chemical Sciences (7.41%), Management Sciences (3.78%), Information and Computer Sciences (3.43%), Earth Sciences (3.16%), Mathematical Sciences (2.77%), and Physical Sciences (1.79%). See Figure 2-8 for details.

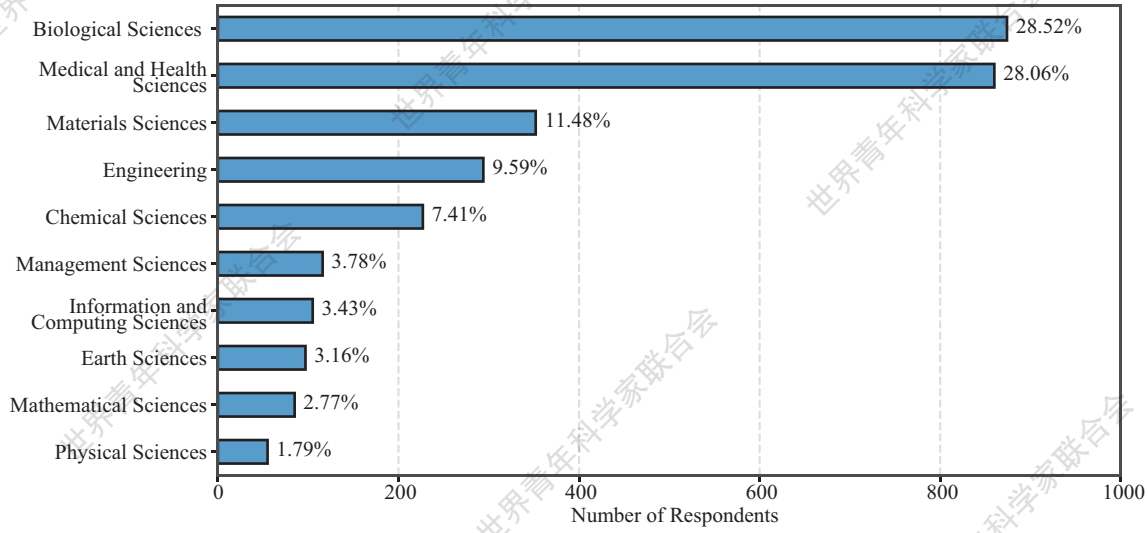


Figure 2-8 Distribution of Research Field

3 Main Findings

3.1 Research Motivation and Career Choices

3.1.1 Early-career young scientists' research motivations characterized by a balance of idealism and pragmatism

The career choices of early-career young scientists are driven by both intrinsic interest and external career security. Based on an analysis of 4,065 responses regarding motivations for scientific research, "passion for scientific exploration" (40.26%) and "desire for a stable and respected profession" (39.65%) are identified as the two core options, collectively accounting for 79.91%. The data indicates that the primary motivation for most scientists to pursue research stems from a love for science itself, while a stable and respected job also serves as a significant motivation based on practical considerations. In comparison, factors such as "recommendation from mentors/family/friends" and "helping vulnerable groups and promoting social progress" carry significantly less weight within the overall motivational structure. See Figure 3-1 for details.

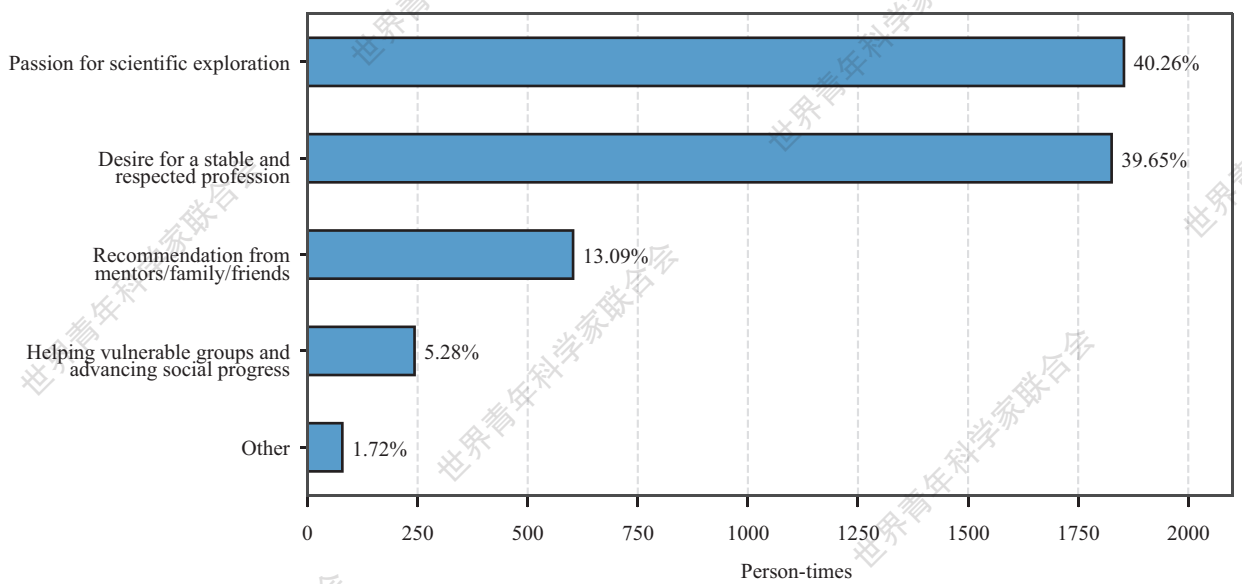


Figure 3-1 Distribution of Research Motivation

The word cloud for the "Other" option reveals an interplay between "external institutional drivers" and "internal path dependence." Responses such as "needs for promotion," "hospital requirements," and "do not know much about other jobs" plainly illustrate the phenomenon of gravitating towards research due to habitual thinking, indicating that many individuals "passively" remain on the research track due to inertia or restricted choices. See Figure 3-2 for details.

Figure 3-2 "Other" Research Motivations

3.1.2 Differences in research motivation across regions, genders, and research fields

A statistically significant association ($p<0.05$) exists between scientists' choices of research motivation and their region of affiliation (China/foreign countries). For the motivation of "desire for a stable and respected profession," Chinese respondents constituted the overwhelming majority (88.83%). In contrast, the proportion of foreign respondents driven by "helping vulnerable groups and promoting social progress" (27.57%) was considerably higher than their proportion for "desire for a stable and respected profession" (11.17%). See Figure 3-3 for details.

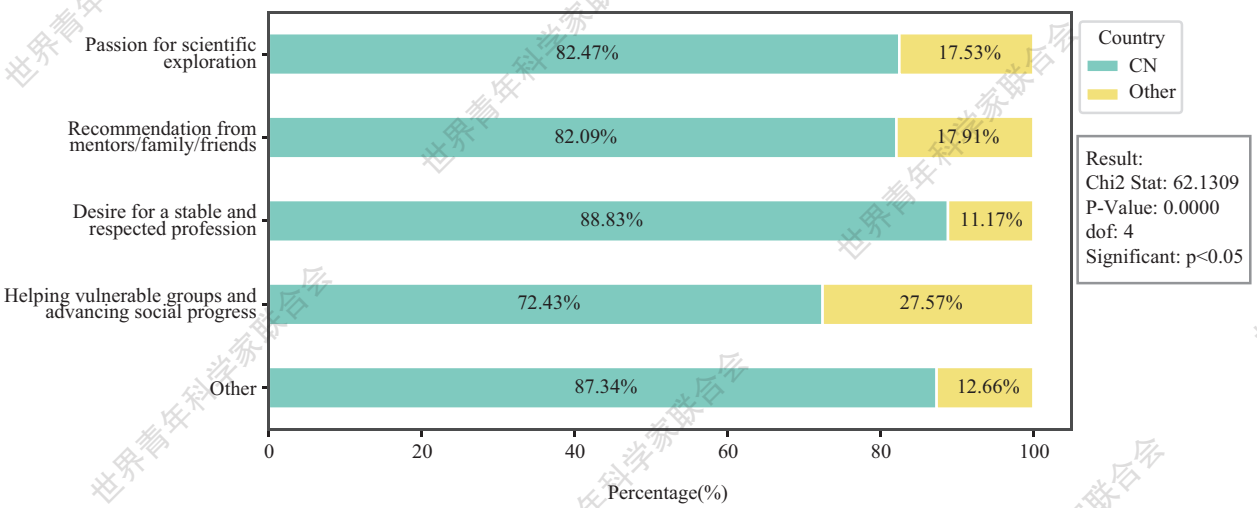


Figure 3-3 Relationship Between Research Motivation and Region

A statistically significant association ($p<0.05$) exists between research motivation choice and the gender of scientists. Male respondents displayed a stronger intrinsic interest orientation in their professional motivations, primarily evidenced by a significantly higher proportion (67.14%) of male scientists citing "passion for scientific exploration". Female respondents' motivations, conversely, were relatively more diverse, showing proportionally higher rates for "recommendation from mentors/family/friends" and "other" motivations. The data suggests that women may be influenced by more complex or diverse factors when choosing their career paths. See Figure 3-4 for details.

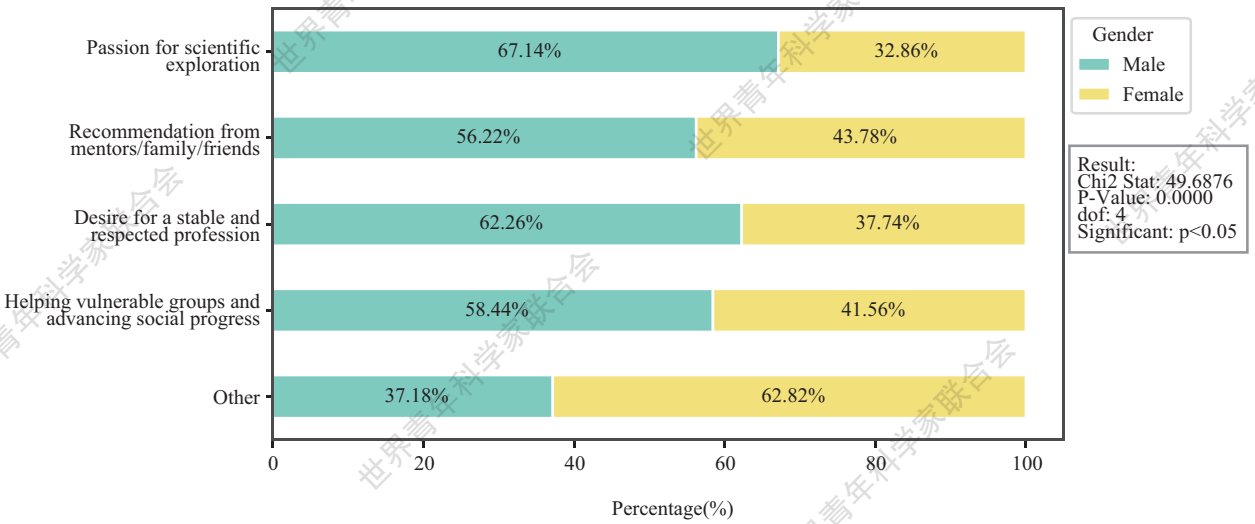


Figure 3-4 Relationship Between Research Motivation and Gender

A statistically significant association ($p<0.05$) was also found between research motivations and scientists' fields of study. The data indicates that respondents who chose "recommendation from mentors/family/friends" were predominantly concentrated in biological sciences (30.51%), mathematical sciences (4.64%) and physical sciences (3.15%) etc., suggesting that scholars in these disciplines are more susceptible to influence from their predecessors. Chemical sciences, materials science, and engineering sciences, conversely, accounted for a prominent proportion among respondents driven by "passion for scientific exploration." Furthermore, respondents in the medical and health sciences were the main group (41.15%) motivated by " helping vulnerable groups and promoting social progress," underscoring the unique social value mission characteristic of their discipline. See Figure 3-5 for details.

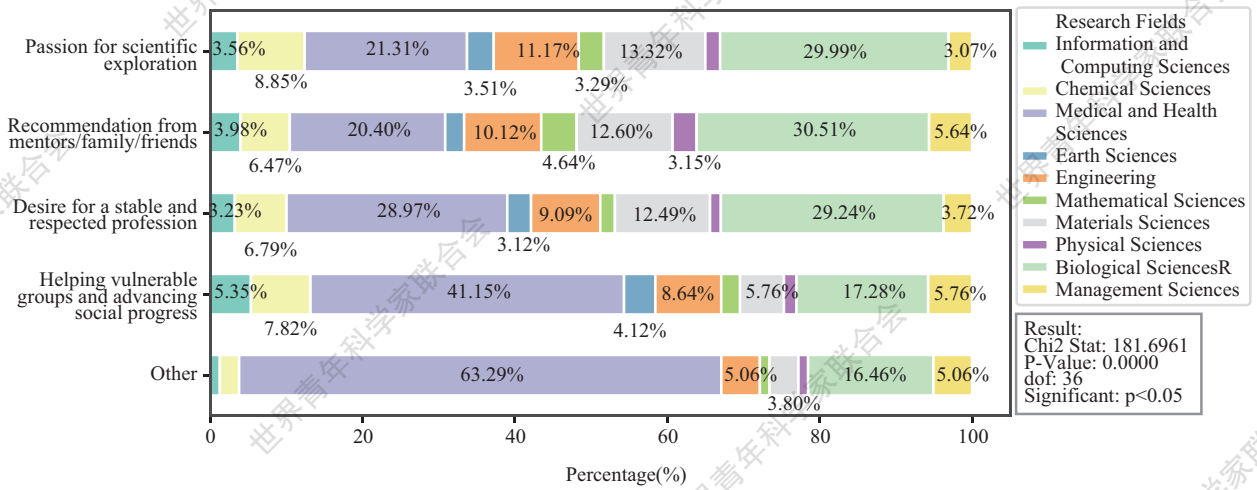


Figure 3-5 Relationship Between Research Motivation and Research Field

3.2 Resource Status and Academic Recognition of Early-Career Young Scientists

3.2.1 Seventy percent of early-career young scientists face funding shortages

The survey reveals that six-tenths (60.03%) of respondents have already received some form of funding, while nearly four-tenths (39.97%) of scientists have not secured any grants. This unfunded cohort may struggle with a lack of seed or project funding early in their careers, posing potential risks to their research autonomy and job stability. See Figure 3-6 for details.

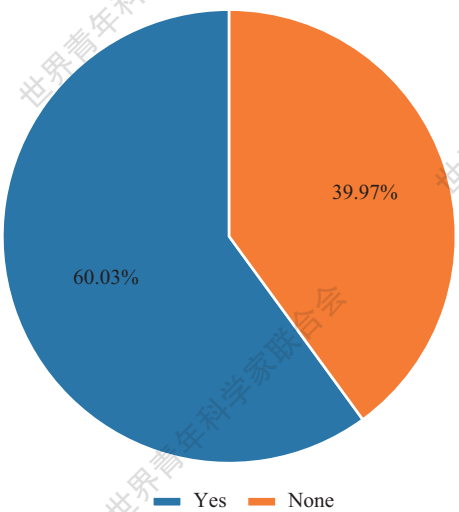


Figure 3-6 Receipt of Funding/Grants

Early-career young scientists rely on a rather limited funding channels, relying primarily on domestic government departments and their host institutions. An analysis of the 2,791 responses to the "funding types" option indicates that funding/grants from "government entities in your own country" (47.65%) and "your own institution" (39.05%) account for the vast majority, totaling nearly 90% (86.70%). Funding from other channels, such as "businesses or industry," "non-profit organizations, private not for profit," and "international entities," constitutes a very small proportion. See Figure 3-7 for details.

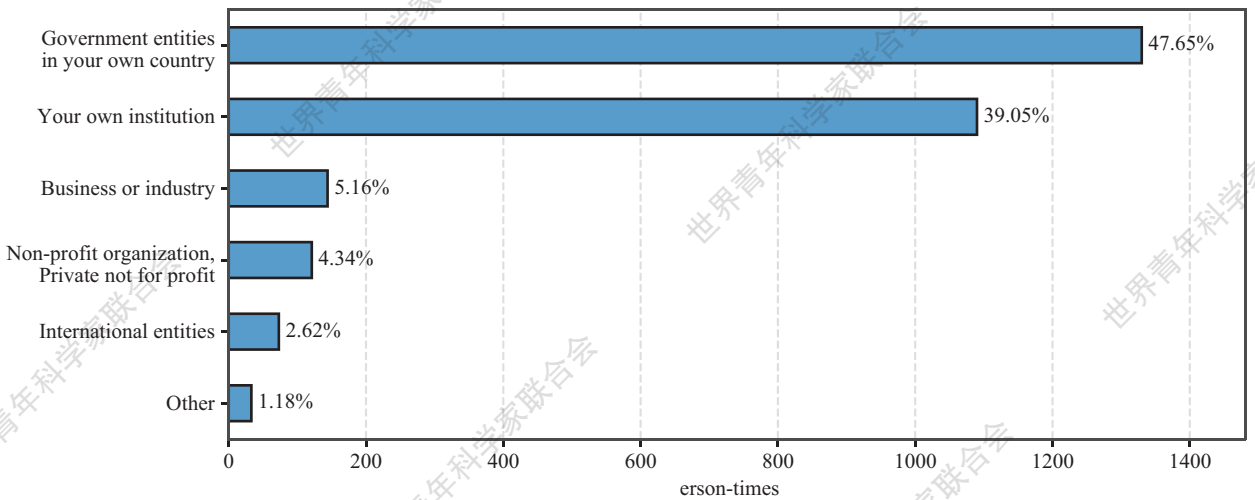


Figure 3-7 Distribution of Funding Types

Funding shortages are a widespread problem for early-career young scientists. Survey results show that over half (54.36%) of respondents struggle with "insufficient" funding, while an additional 15.33% have "no" funding at all. Only three out of ten (30.31%) respondents consider their funding to be "abundant." Funding shortages represent a central challenge for most early-career young scientists, potentially limiting the initiation, continuation, and scale of their research, and adversely affecting their career confidence and future prospects. See Figure 3-8 for details.

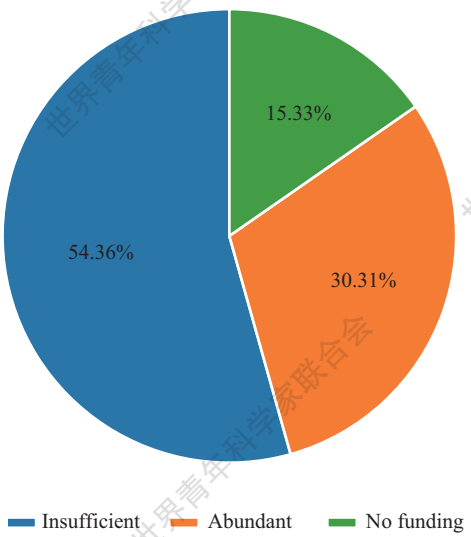


Figure 3-8 Sufficiency of Funding

3.2.2 Most early-career young scientists work in small teams of fewer than 10 members

Most early-career young scientists work in small research teams. Statistics reveal that over eight in ten (81.30%) of surveyed individuals belong to teams with fewer than 10 members. Micro-small teams of 1-3 people constitute the largest proportion (41.66%), followed by small teams of 4-10 members (39.64%). Medium-to-large teams of 11 or more account for less than 19%. While this "small team" structure promotes direct mentorship and flexible collaboration, it may restrict early-career young scientists' access to human resources and their accumulation of leadership experience. See Figure 3-9 for details.

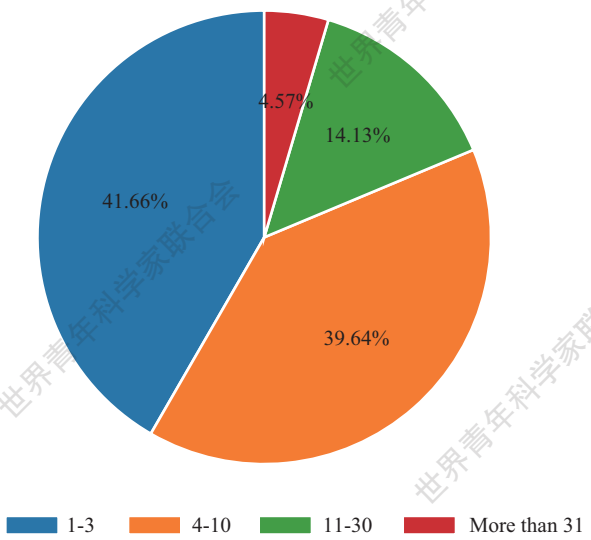


Figure 3-9 Team Size Distribution

There is a statistically significant association ($p<0.05$) between team size and the scientists' region of affiliation (China/foreign countries). Chinese respondents constitute the highest proportion in 1-3 member teams. As team size increases, the percentage of Chinese respondents declines (from 86.53% in 1-3 person teams to 80.71% in teams of over 31 people), while the percentage of foreign respondents rises accordingly. See Figure 3-10 for details.

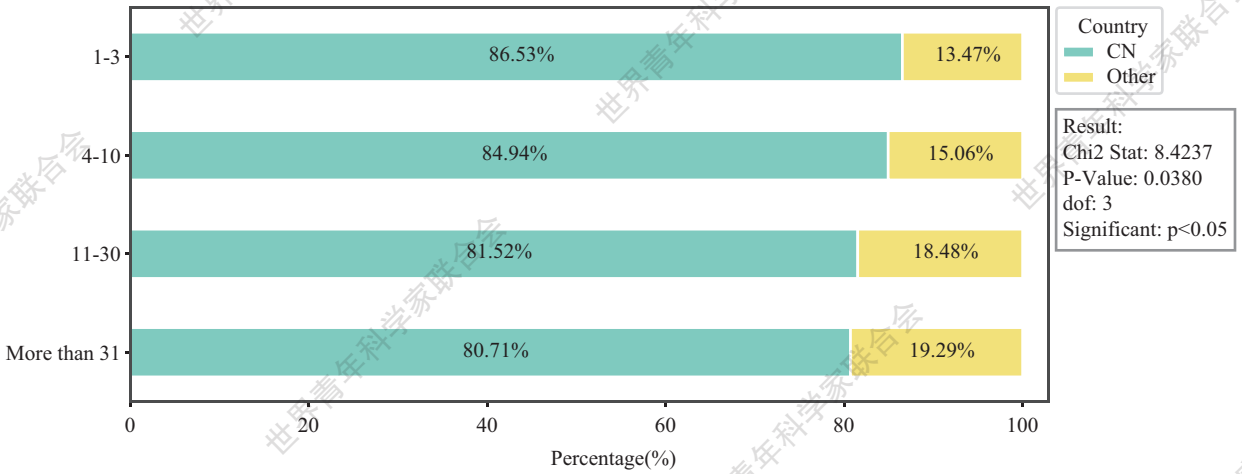


Figure 3-10 Relationship Between Team Size and Region of Affiliation

Further analysis reveals that the proportion of respondents reporting funding "insufficient " progressively decreased with increasing team size. In 1-3 person teams, "insufficient" funding stood at 59.83%, while "abundant" funding was merely 18.17%. For 4-10 person teams, "insufficient" funding remained high at 56.63%, but the percentage of "abundant" rose to 33.67%. In teams of 11 or more, "abundant" exceeded 50%. Overall, larger teams consistently had a higher proportion of abundant funding, suggesting that funding security might be more challenging for smaller teams. See Figure 3-11 for details.

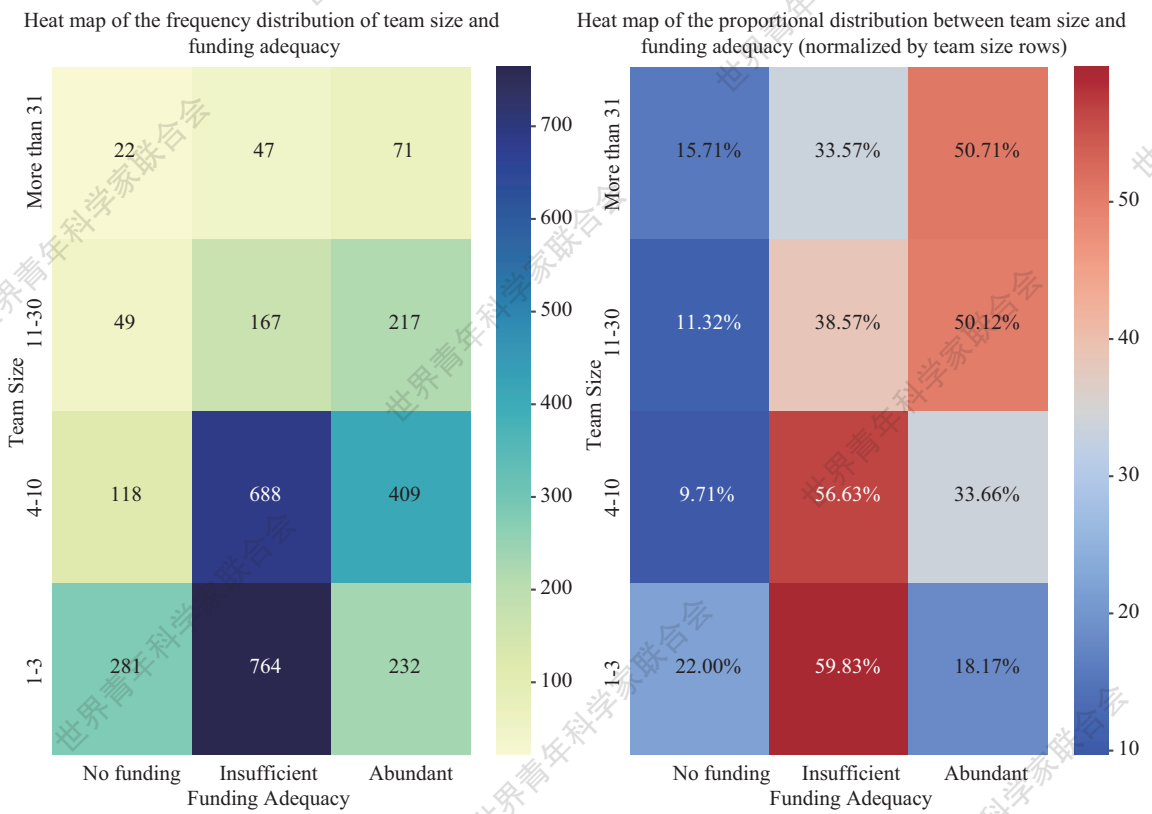


Figure 3-11 Relationship Between Team Size and Funding Sufficiency

3.2.3 Nearly six out of ten early-career young scientists have not received scientific awards or academic honors

The survey reveals that nearly six in ten (56.93%) respondents have never received any form of scientific and technological award or academic honor. This indicates that such recognition is not widespread during the early stages of one's career, and scientific achievements require time to accumulate. Concurrently, over four in ten (43.07%) scientists have already obtained some form of honor. See Figure 3-12 for details.

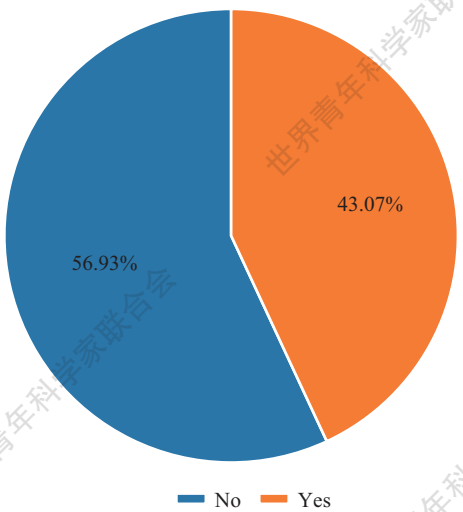


Figure 3-12 Receipt of Scientific Awards/Academic Honors

An analysis of the 1,922 responses to the "award types" option reveals that "awards/honors from my institution" (38.92%) and "provincial/state/municipal awards/honors" (38.24%) were particularly prominent, totaling nearly 80%. Conversely, "national awards/honors" and "international prestigious awards" collectively made up less than 10%. This data indicates that the academic influence and recognition of early-career young scientists are currently primarily confined to local and institutional levels, with recognition on national and international academic stages remaining highly limited. See Figure 3-13 for details.

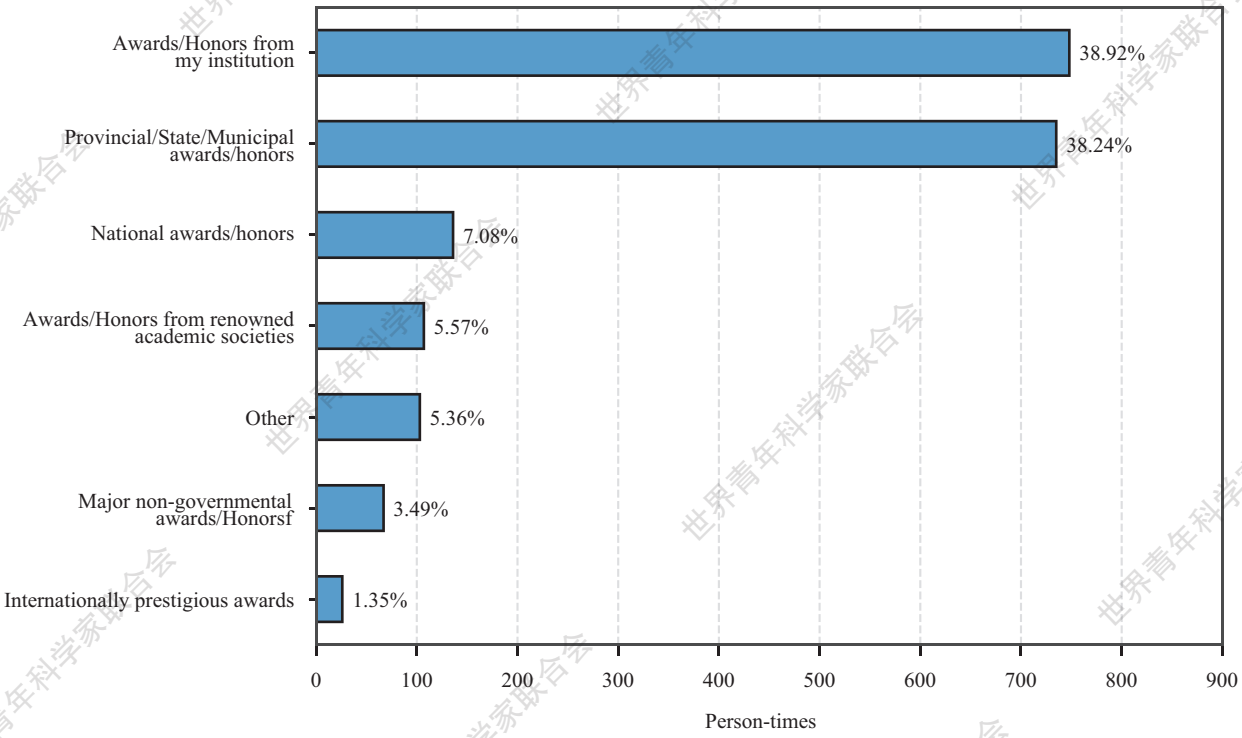


Figure 3-13 Distribution of Award Types

3.3 Career Development of Early-Career Young Scientists and Its Key Factors

3.3.1 Early-career young scientists typically obtain PI status between the ages of 30 and 35

The survey reveals that over eight in ten (82.90%) of respondents have not yet become PIs in their early-career, with only 17.10% having attained independent PI status. This highly aligns with the "early career" designation. See Figure 3-14 for details.

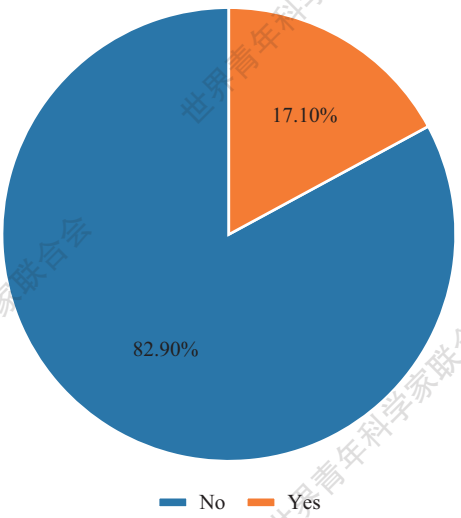


Figure 3-14 Attainment of PI Status

Among respondents who have become PIs, ages are concentrated between 30 and 35 (61.43%), with 35 being the peak age (16.50%), and 30 (14.71%) and 33 (10.41%) representing other smaller peaks. This distribution outlines a mainstream academic career timeline: after graduating with a Ph.D. (typically around 28-30 years old) and undergoing postdoctoral training, individuals successfully secure a PI position between 30 and 35. The data suggests that ages 30 to 35 may be the golden window for achieving academic independence, with 35 being a particularly critical age point. See Figure 3-15 for details.

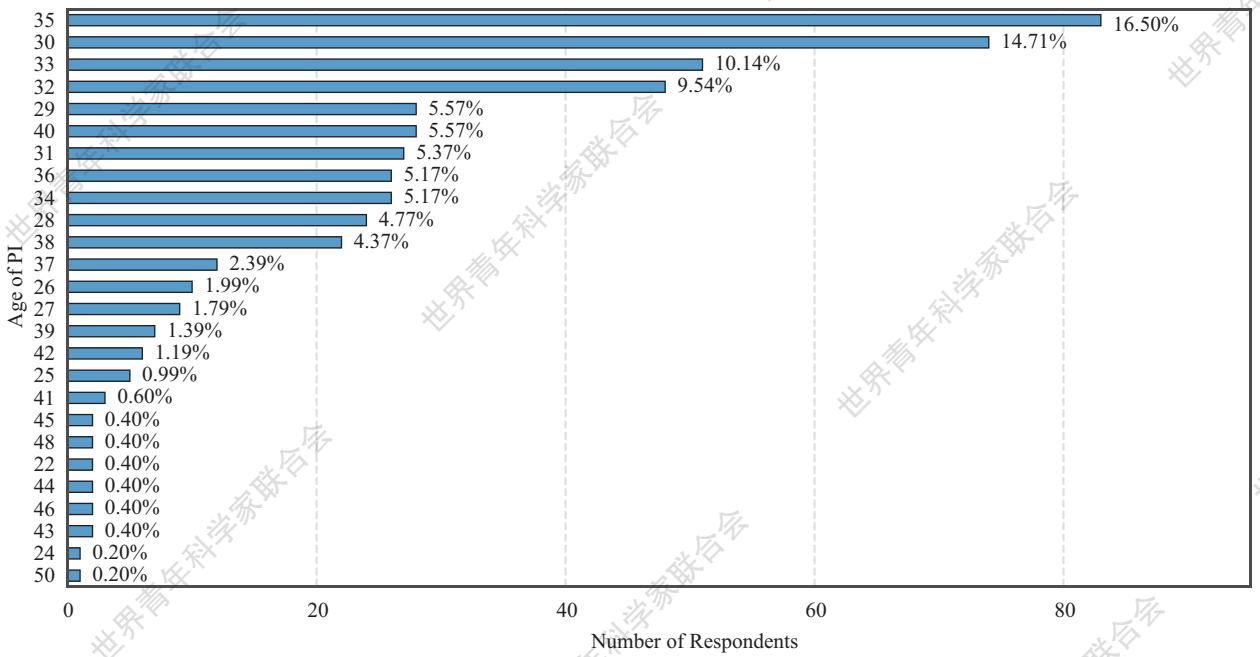


Figure 3-15 Age Distribution of PI Attainment

3.3.2 Quantitative publication metrics and honorary awards are key indicators for scientists seeking PI status

Based on an analysis of 5,503 responses from the sample regarding "key indicators for obtaining PI qualification," "highly cited papers or high H-index" (39.63%) and "obtained academic awards/honors" (38.85%) are considered two almost equally important indicators, together accounting for nearly 80%. The data shows that traditional evaluation metrics, such as quantitative publication metrics and academic awards or honors, remain core criteria for current academic promotion. Patent commercialization also holds some significance (18.06%). See Figure 3-16 for details.

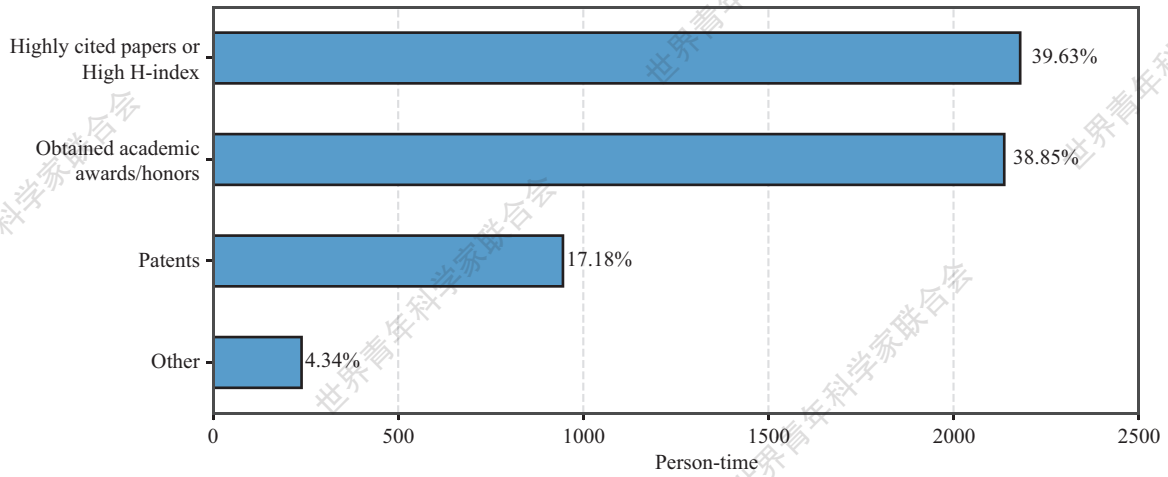


Figure 3-16 Key Indicators for Obtaining PI Qualification

Based on the "other" key factors for obtaining independent PI qualification identified by respondents, PI qualification can also be influenced by "funding," "projects," "innovation contributions," "administrative position," and "social connections." The term "connections" is notably prominent, reflecting, to some extent, researchers' perception of non-academic factors' role in resource acquisition. Overall, the success paradigm illustrated by the word cloud is: leading a team to complete projects and produce high-quality papers, underpinned by ample funding and exceptional professional competence. See Figure 3-17 for details.

Figure 3-17 "Other" Key Factors for Obtaining PI Qualification

3.3.3 Compensation and career development are the primary drivers of mobility among early-career young scientists

The findings reveal that nearly seven out of ten (68.74%) respondents have worked at only one institution. 29.40% have been employed by 2-3 institutions, while just 1.86% have worked at four or more. This data suggests that early-career young scientists tend to prioritize job stability. See Figure 3-18 for details.

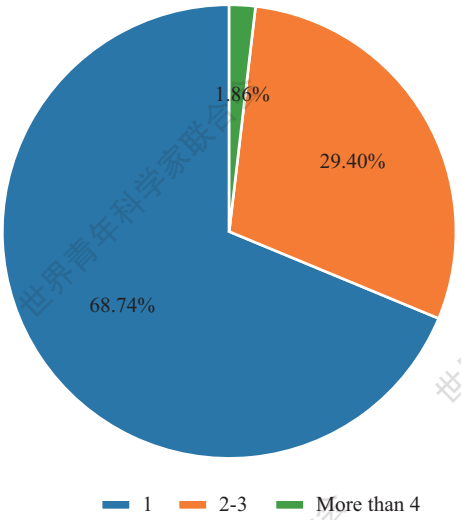


Figure 3-18 Distribution of Affiliated Institutions

Motivations for job changes among early-career young scientists are diverse, though a desire for higher compensation and career development are often the primary drivers. An analysis based on 6,485 responses to "reasons for changing jobs" reveals that "for better compensation/salary" (22.97%) is the most significant

factor. This is followed by "career progression/development" (20.70%) and "better suited to my interests/skills" (19.19%), with "better work-life balance" (17.58%) ranking fourth. These four main reasons collectively account for 80.44% of responses, indicating that this group's career decisions are generally rational and aim for optimal personal growth and lifestyle arrangements. See Figure 3-19 for details.

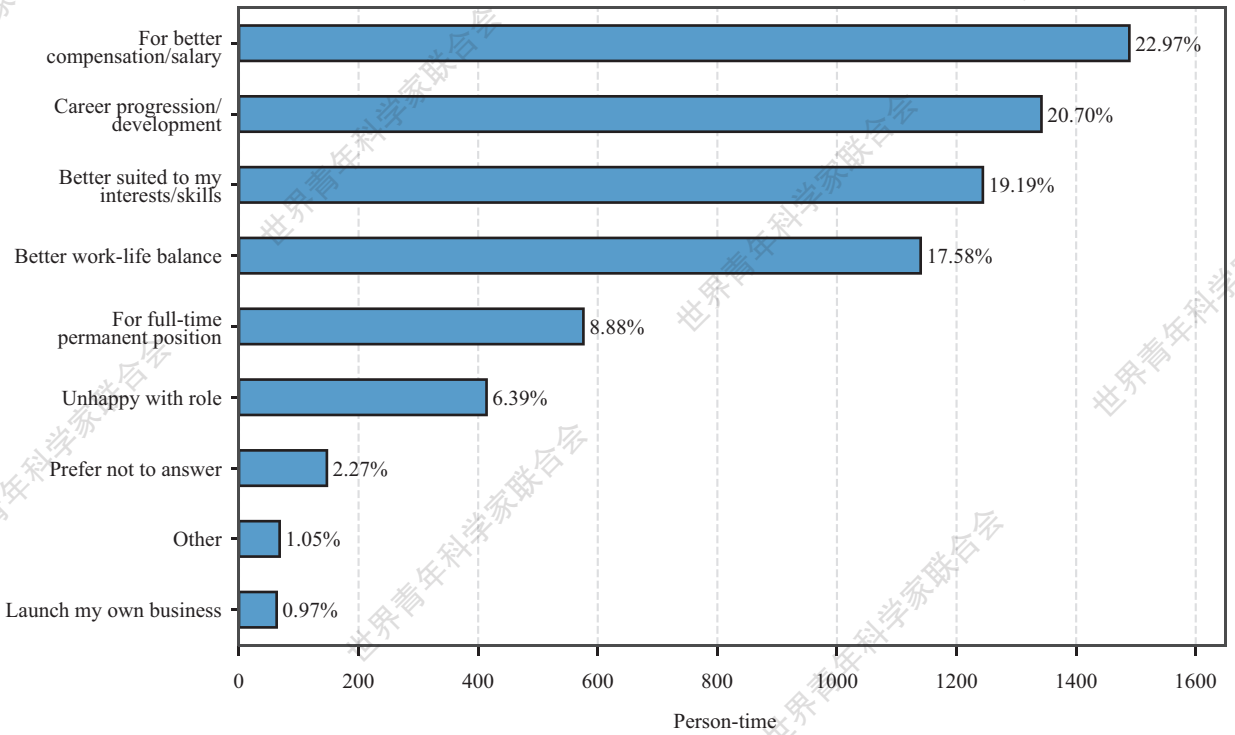


Figure 3-19 Distribution of Reasons for Job Change

3.3.4 External platforms and resources are critical factors in the development of early-career young scientists

The professional development of early-career young scientists heavily relies on external resources and the institutional environment. A percentage analysis of 9,010 responses from the sample regarding "key growth factors" reveals that "access to world-class institutions for study and research" (20.90%), "adequate and stable funding support" (19.75%), and "mentorship from leading scientist" (14.85%) are the top three key factors, collectively accounting for over 55%. The significance of "open, inclusive, and ethical research environment" (13.18%) and "fair and reasonable evaluation and promotion systems" (10.93%) outweighs "relatively of low financial and living pressure" (7.73%), underscoring the critical role of the research "enabling environment." See Figure 3-20 for details.

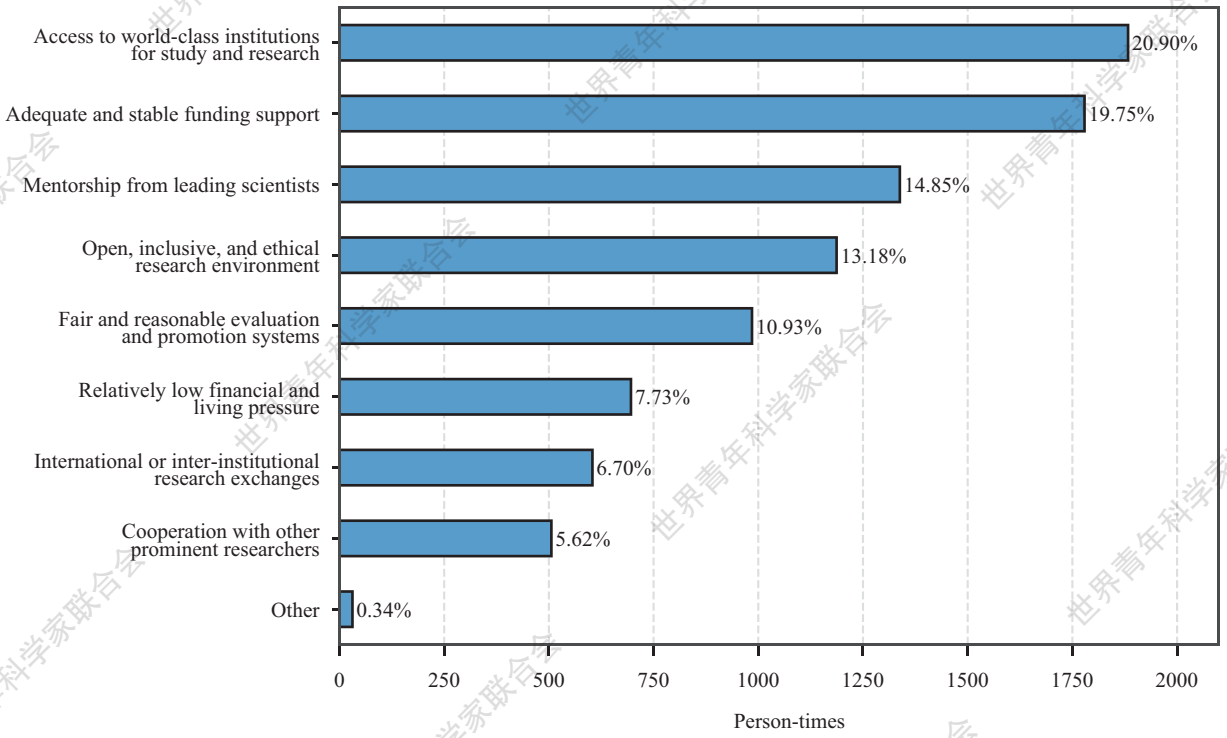


Figure 3-20 Distribution of Key Growth Factors

Beyond the factors mentioned above, some respondents also identified other influences on their professional development, including "personal effort," "survival pressures," "personal passion for scientific research," "mentor collaboration during graduate studies," and "recognition from leadership." This highlights the prevalent situation of respondents seeking to balance pressures with conviction, and individual endeavor with external resources and the institutional environment.

3.4 Pressures and Challenges Faced by Early-Career Young Scientists

3.4.1 Financial strain and career uncertainty represent major sources of pressure for early-career young scientists

Financial strain and career uncertainty represent the primary challenges for early-career young scientists. An analysis of the 6,253 responses concerning "pressure" indicates that "low salary" (33.92%) and "job insecurity/lack of stable employment" (20.03%) are the two most prominent stressors for respondents, followed by "interpersonal problems" (18.32%). Issues related to social security, such as household registration, healthcare, and children's education, account for a comparatively smaller proportion. Additionally, some

respondents cited other pressures, including "insufficient research resources," "inconsistent and opaque promotion mechanisms," "performance review pressure," and "difficulty in purchasing a house," collectively illustrating that young scientists at this career stage navigate manifold pressures in both their personal lives and professional development. See Figure 3-21 for details.

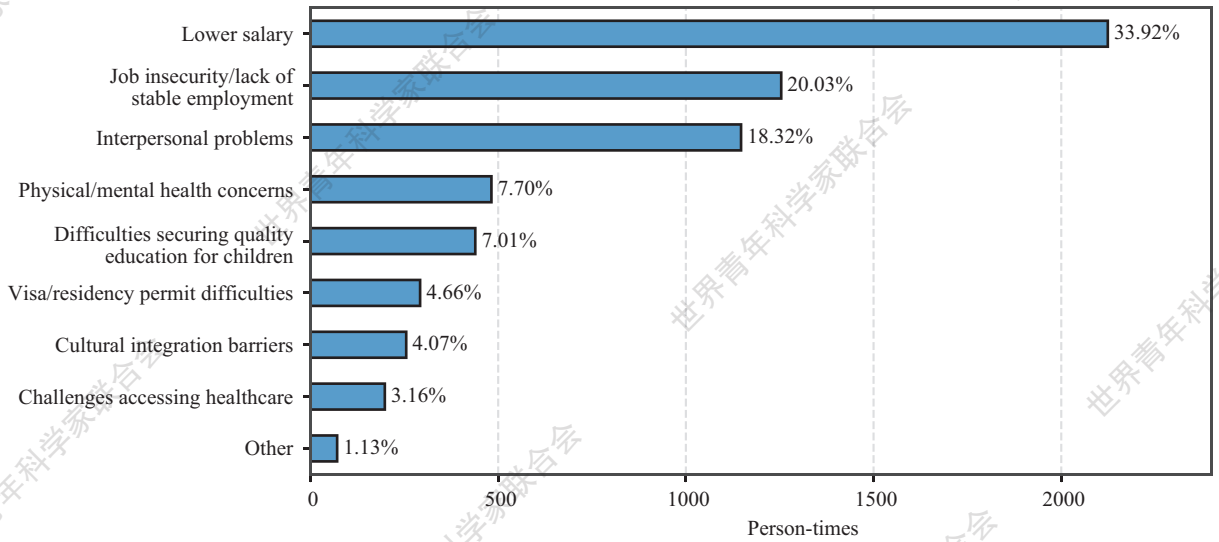


Figure 3-21 Distribution of Life Stress

A statistically significant association ($p<0.05$) was found between perceived life stress and the scientists' region of affiliation (China/foreign countries). Chinese respondents prominently cited difficulty in "interpersonal problems" (89.28%), "difficulties securing quality education for children" (88.84%), "low salary" (88.28%), and, indicating their marked stress related to family burdens, economic income, and the work environment. In contrast, foreign respondents reported relatively higher percentages for "visa/residency permit difficulties" (44.52%) and "cultural integration barriers" (29.80%). See Figure 3-22 for details.

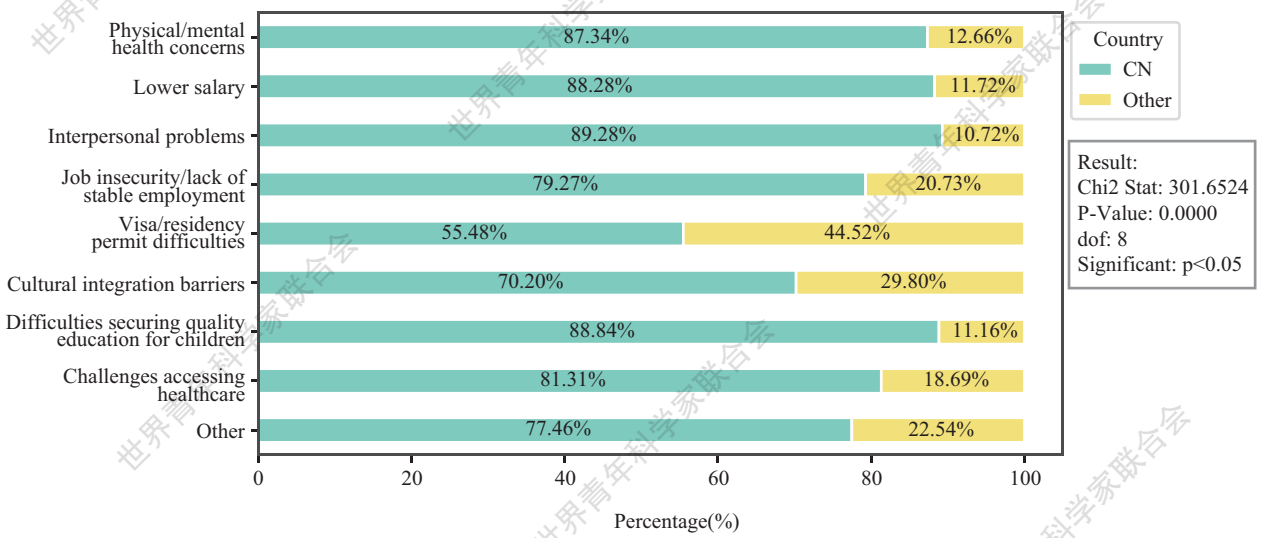


Figure 3-22 Relationship Between Life Stress and Region of Affiliation

3.4.2 Early-career young scientists commonly struggle with time allocation challenges, such as excessive administrative tasks

Nearly seven out of ten (68.25%) respondents perceived problems with their research time allocation, a figure more than double that of scientists (31.75%) who reported no such issues. See Figure 3-23.

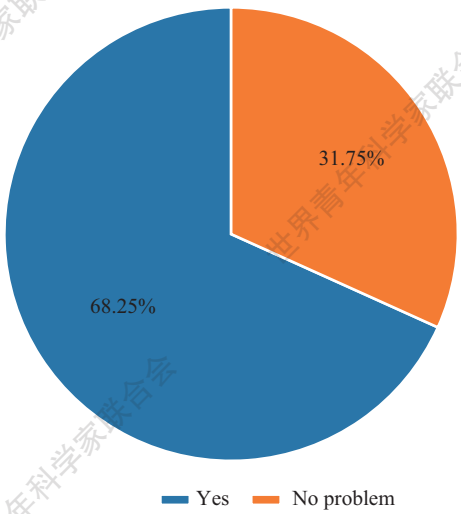


Figure 3-23 Issues with Research Time Allocation

Across the board, early-career young scientists struggle with time allocation challenges, such as excessive time spent on non-research tasks. An analysis of the 3,901 responses to the "time allocation issues" option revealed that "excessive time spent on administrative tasks" (32.79%) and "insufficient time for personal learning and development" (31.18%) were the primary time management challenges encountered by respondents, collectively accounting for 63.97%. In addition, "heavy teaching workloads" (18.15%) and "lack of time for leisure and entertainment activities" (16.72%) were also prominent issues. See Figure 3-24 for details.

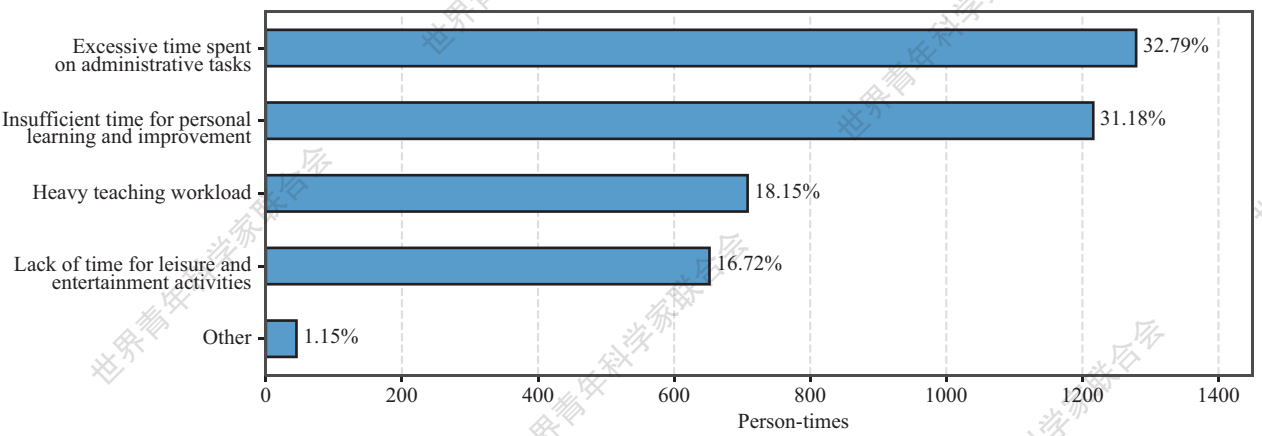


Figure 3-24 Distribution of Research Time Allocation Issues

Moreover, early-career young scientists also face numerous other challenges, such as heavy clinical workloads (for those with medical backgrounds), work-life balance issues, fragmented time, and parenting conflicts. These issues reflect the immense pressure and role conflicts they endure in both their professional and personal lives while fully dedicating themselves to research.

3.4.3 Average weekly research hours exhibit regional and gender disparities

The largest proportion of respondents (20.91%) reported an average weekly research workload of 41~50 hours. However, a combined 34.87% of respondents worked over 50 hours per week on research, with nearly 10% of them exceeding 70 hours. See Figure 3-25 for details.

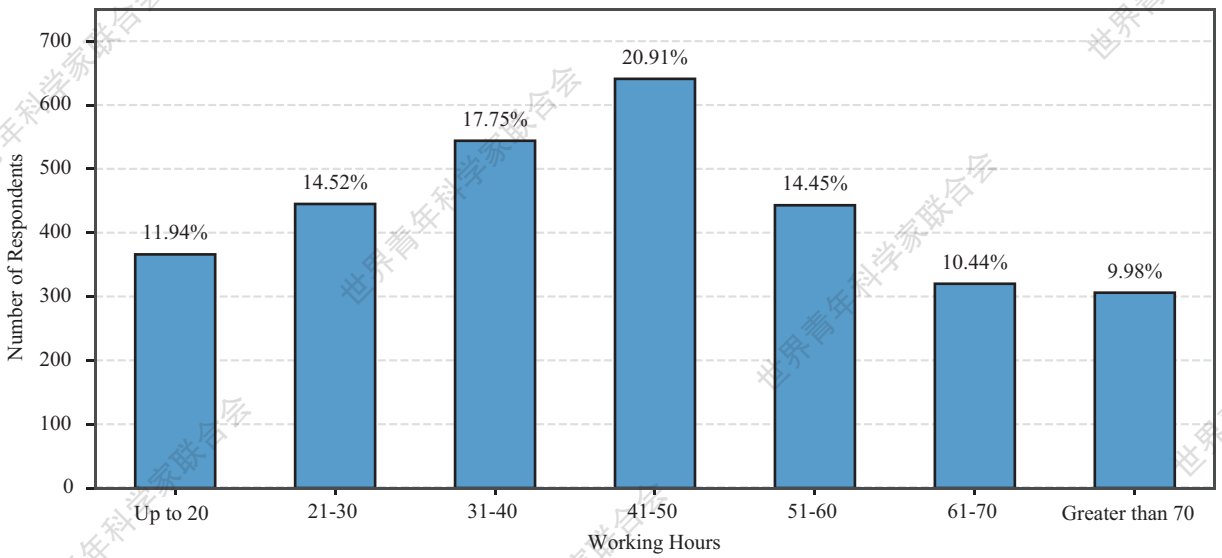


Figure 3-25 Distribution of Average Weekly Research Hours

A statistically significant association ($p<0.05$) was found between average weekly research hours and scientists' region of affiliation (China/foreign countries). Chinese respondents accounted for the highest percentages in the "up to 20 " (91.80%) and "greater than 70" (88.56%) hours categories, while foreign respondents showed the highest proportions in the "31-40 " and "41-50 " hours ranges. See Figure 3-26 for details.

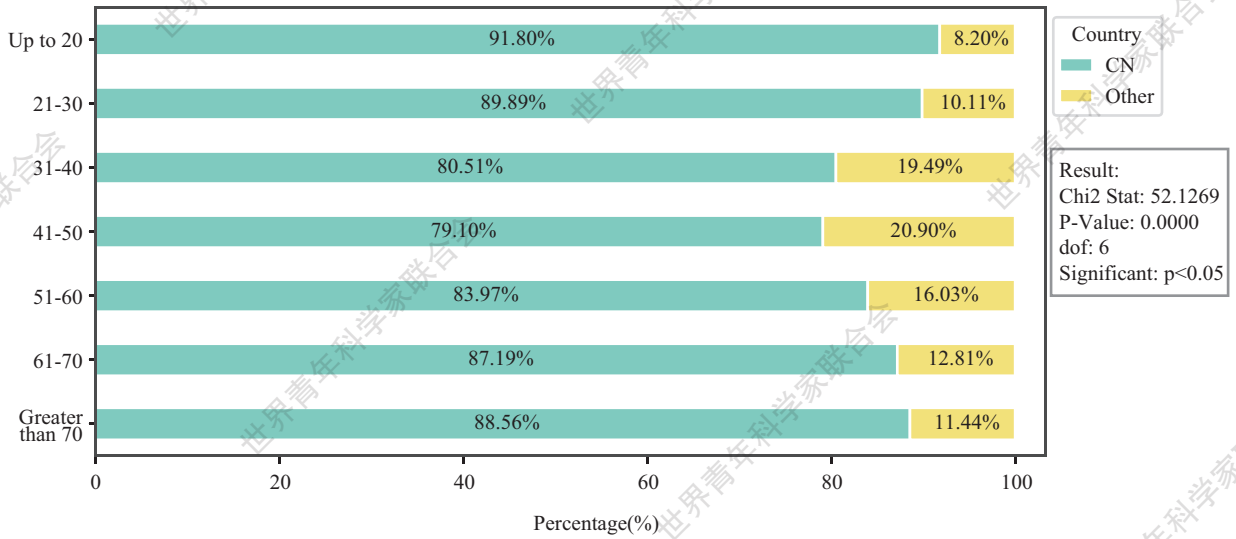


Figure 3-26 Relationship Between Average Weekly Research Hours and Region of Affiliation

A statistically significant association ($p<0.05$) was found between average weekly research hours and the gender of scientists. Among those working "up to 20 " hours per week, female respondents constituted a prominent proportion (53.22%). As working hours extended, the percentage of male respondents progressively increased, reaching 75.34% in the "greater than 70 " hours per week group, while the female proportion decreased to 24.66%. See Figure 3-27 for details.

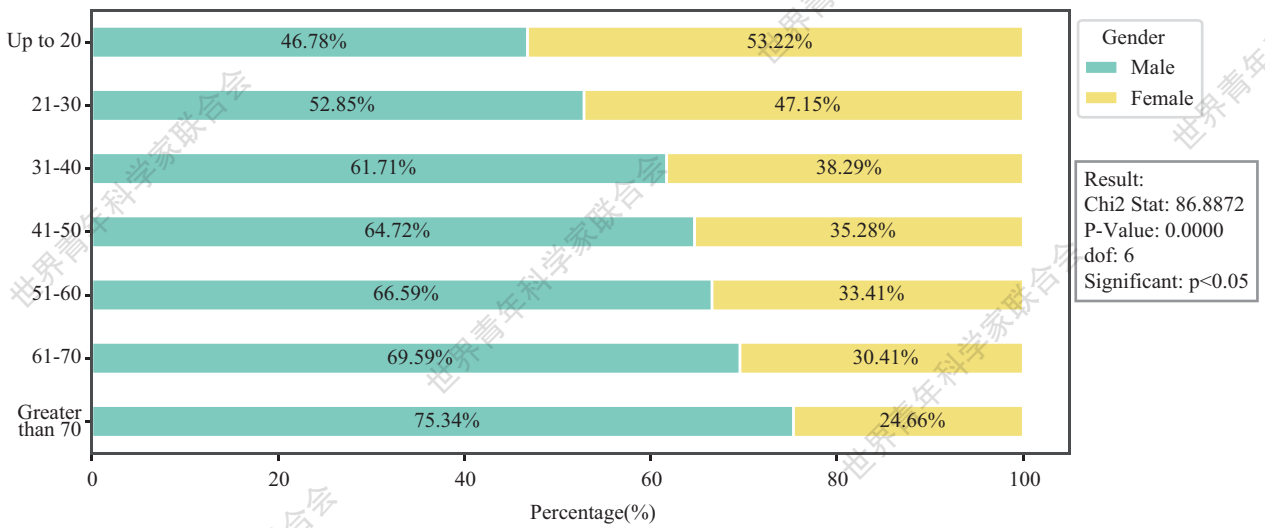


Figure 3-27 Relationship Between Average Weekly Research Hours and Gender

A statistically significant association ($p<0.05$) was observed between average weekly research hours and job type. As average weekly research hours increased, the proportion of respondents in "university, combined teaching and research position" steadily rose from 19.13% (for "up to 20 " hours per week) to 40.85% (for "greater than 70" hours per week). Conversely, the percentage of respondents in "university and hospital, combined clinical and research position" progressively decreased from 33.88% to 10.13%. See Figure 3-28 for details.

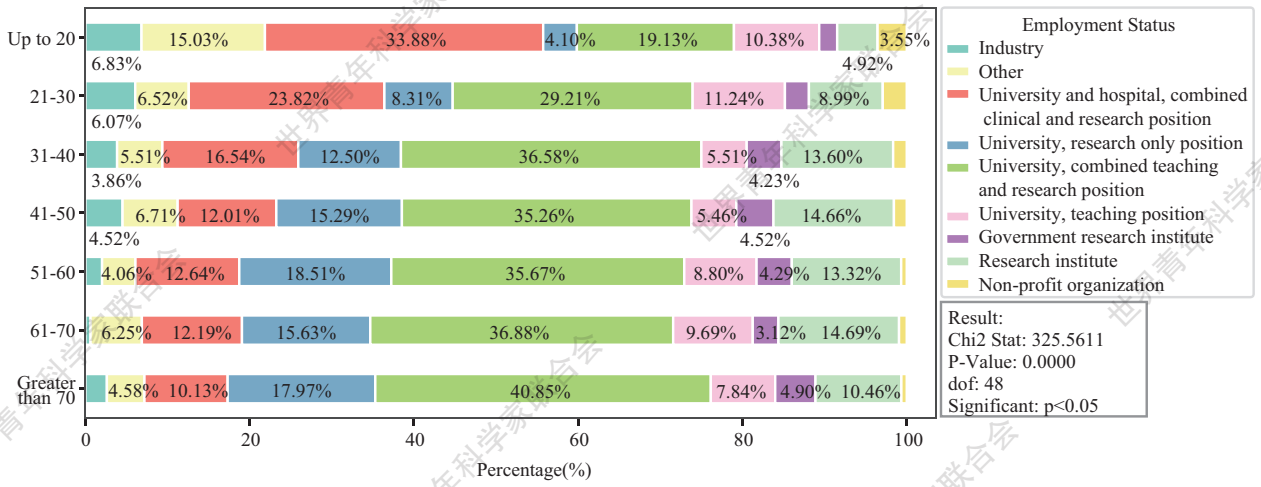


Figure 3-28 Relationship Between Average Weekly Research Hours and Position

3.5 Development Challenges and Policy Demands for Early-Career Young Scientists

3.5.1 Resource scarcity and evaluation pressure constitute core barriers to early-career development

Resource scarcity and an evaluation pressure are the primary obstacles to the career progression of early-career young scientists. An analysis of 7,991 responses to "obstacles to development" reveals three most prominent issues, collectively accounting for over 57%: "lack of opportunities/funding" (25.20%), "overly frequent evaluation that discourage innovative work" (16.55%), and "challenges in building research teams" (15.35%). See Figure 3-29 for details.

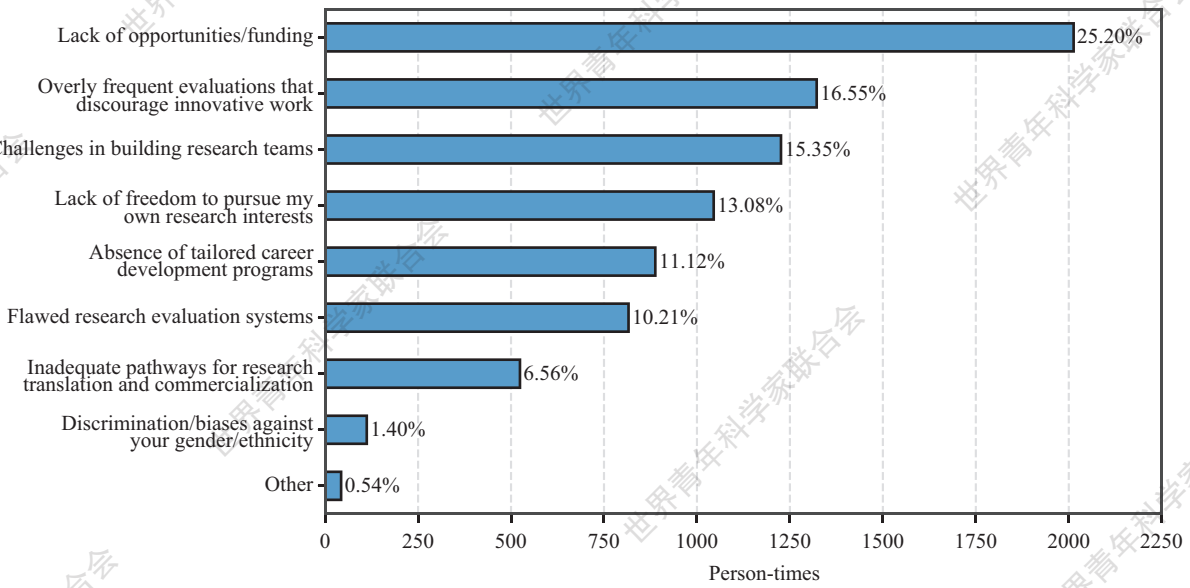


Figure 3-29 Distribution of Obstacles to Development

A minority of respondents also mentioned other developmental barriers. These included various systemic injustices such as "academic hegemony," "unfair academic promotion reviews," "institutional bias in national funding," and "seniority-based promotion," reflecting scientists' strong desire for research fairness and a healthy academic ecosystem.

3.5.2 Career development barriers vary by region and gender

There was a statistically significant association ($p<0.05$) between career development barriers and scientists' region of affiliation (China/foreign countries). Chinese respondents prominently identified "flawed research evaluation systems" (90.32%), "overly frequent evaluation that discourage innovative work" (90.54%), and "lack of freedom to pursue my own research interests" (87.46%) as major concerns. Foreign respondents, conversely, notably emphasized "discrimination/biases against your gender/ethnicity" (41.07%) as an obstacle. The data indicates that Chinese respondents are more concerned with institutional barriers, whereas their international counterparts focus more on challenges related to diversity, equity, and inclusion. See Figure 3-30 for details.

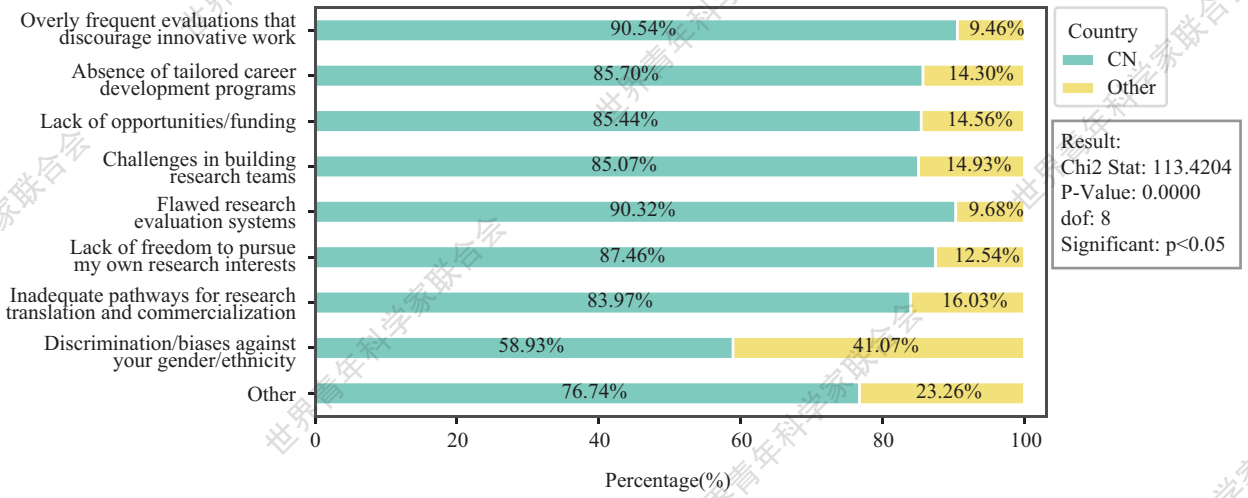


Figure 3-30 Relationship Between Obstacles to Development and Region of Affiliation

Career development barriers exhibited a statistically significant association ($p<0.05$) with scientists' gender. Male respondents prominently identified "flawed research evaluation systems" (65.55%) and "lack of opportunities/funding" (64.77%). Female respondents, in contrast, significantly highlighted "discrimination/ biases against your gender/ethnicity " (54.21%) and the undefined "other" (51.22%) adverse factors. The data shows that men are more likely to perceive pressures related to the external research environment and resource allocation, while women more directly perceive identity-based biases and other unaddressed challenges. See Figure 3-31 for details.

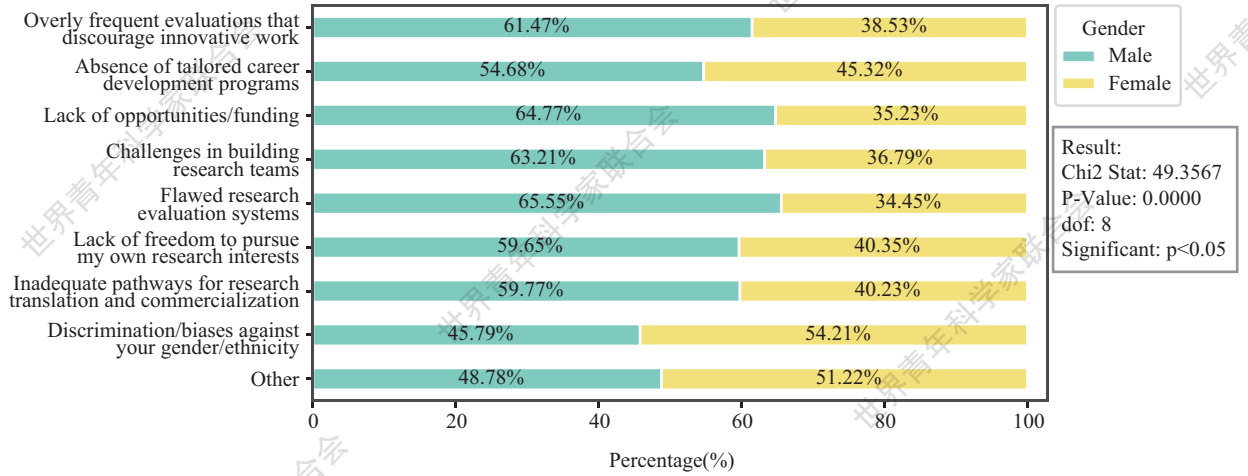


Figure 3-31 Relationship Between Obstacles to Development and Gender

3.5.3 Providing stable funding support is the top priority for early-career young scientists

An analysis of 9,274 responses concerning "policy demands" reveals that "guaranteed stable research funding" (23.32%) is the top priority, echoing the previously identified funding scarcity. "Research autonomy" (17.22%) and "reduced administration burdens" (15.81%) rank second and third, respectively. "better salary/compensation" (12.48%) reflects an aspiration for improved financial conditions. These demands directly address critical pain points in the current research ecosystem concerning resources, autonomy, and rewards. See Figure 3-32 for details. What's more, a few respondents expressed a desire to reform current appointment and compensation systems, advocating for measures such as abolishing the "up-or-out" system, resolving employment difficulties, and granting research positions greater economic rewards and social recognition.

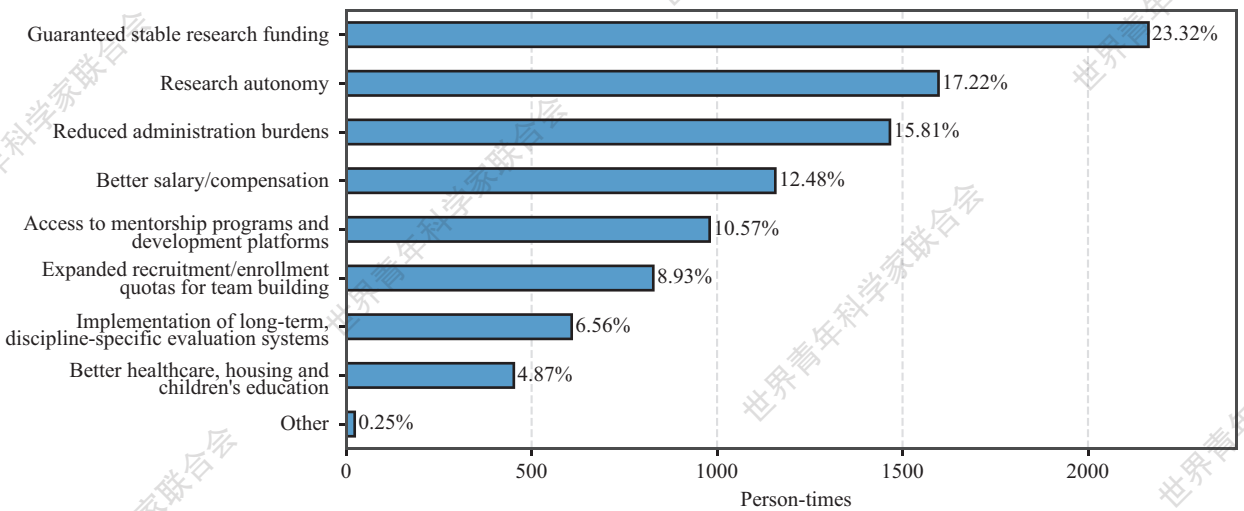


Figure 3-32 Distribution of Policy Demand

There is a statistically significant association ($p<0.05$) between policy demands and scientists' region of affiliation (China/foreign countries). Chinese respondents' demands were particularly prominent in "research autonomy" (88.17%), "reduced administration burdens" (87.31%), and "expanded recruitment/enrollment quotas for team building" (86.59%). Foreign respondents had the highest proportion for the "other" option (39.13%) and also showed relatively high demand for "better salary/compensation" and "access to mentorship programs and development platforms." See Figure 3-33 for details.

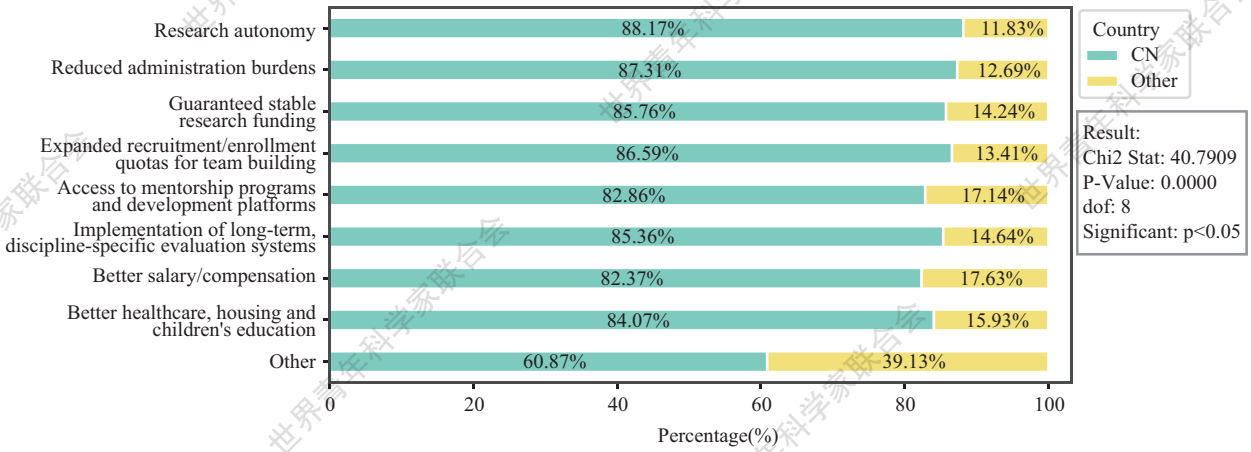


Figure 3-33 Relationship Between Policy Demands and Region of Affiliation

More than half (51.65%) of the respondents offered suggestions in open-ended questions, and the word cloud prominently displayed the core demands and predominant attitudes of early-career young scientists. Funding support emerged as the strongest call, with terms like "funding support" appearing with exceptionally high frequency. This was followed by "platform is important," and then "publishing more paper" were frequently mentioned. The answers to the open-ended questions reflected scientists' desire for external financial support and increased compensation, particularly under resource constraints and performance assessment pressures. See Figure 3-34 for details.

Figure 3-34 Recommendations from Respondents

Appendix

Survey Questionnaire

Global Survey on Early Career Development of Scientists

This survey is initiated by the World Association of Yong Scientist to explore the growth trajectories, challenges, and development needs of scientists in the early stages of their research careers (the first 7 years after obtaining a research position, including postdoctoral). The questionnaire is not limited to young scientists. Your responses will contribute significantly to the accuracy and depth of this research.

The survey is completely anonymous. We strictly adhere to the personal information protection laws of the People's Republic of China and international regulations such as the EU General Data Protection Regulation (GDPR) to ensure your data remains confidential. All responses will be used exclusively for research purposes.

It is expected to take about 5 minutes. Sincere thanks for your help.

I. Basic Information

1. What is your gender?
   ○ Male ○ Female ○ Other ○ Prefer not to say
2. What is your age?
   ○ Less than 25 ○ 26-30 ○ 31-35 ○ 36-40 ○ 41-45 ○ Over 46
3. Country/Region of residence: (Dropdown menu)
   Country: _____
4. Do you have a Ph.D. or doctoral qualification?
   ○ Yes ○ No ○ Ph.D. candidate
5. What is the number of years since beginning of research?
   ○ 0-7 ○ 8-15 ○ More than 16 years
6. What is the nature of your employment?
   ○ University, teaching position
   ○ University, research only position
   ○ University, combined teaching and research position
   ○ University and hospital, combined clinical and research position
   ○ Government research institute
   ○ Research institute
   ○ Industry

○ Non-profit organization

○ Other, please specify: _____

7. What's your current title?

○ Postdoc ○ Assistant Professor ○ Associate Professor ○ Professor

○ Other, please specify _____

8. What is your primary research discipline?

○ Mathematical Sciences ○ Physical Sciences ○ Chemical Sciences

○ Earth Sciences ○ Biological Sciences ○ Medical and Health Sciences

○ Information and Computing Sciences ○ Materials Sciences

○ Engineering ○ Management Sciences

II. Your Growth and Development

9. What motivated you to pursue a career in scientific research? (Select up to 2)

□ Passion for scientific exploration

□ Recommendation from mentors/family/friends

□ Desire for a stable and respected profession

□ Commitment to helping vulnerable groups and advancing social progress

□ Other, please specify _____

10. Have you received any scientific awards/academic honors?

○ Yes (If yes, select at least 1 option below)

□ Awards/Honors from my institution

□ Provincial/State/Municipal awards/honors

□ National awards/honors (e.g., Academician of Chinese Academy of Sciences)

□ Internationally prestigious awards (e.g., Nobel Prize, Fields Medal, Turing Award)

□ Awards/Honors from renowned academic societies (e.g., Fellow of the American Physical Society)

□ Major non-governmental awards/Honors (e.g., HHMI Investigator, New Cornerstone Investigator)

□ Other

○ No

11. From which of the following did you receive funding in your early career?

○ Yes (If yes, select at least 1 option below)

□ Your own institution

□ Government entities in your own country

□ Business or industry

□ Non-profit organization, Private not for profit

□ International entities

□ Other, please specify: _____

○ None

12. Did you serve as a Principal Investigator (PI) in your early career?

○ Yes (Age when you become a PI?_____) ○ No

13. What do you think are the key factors for becoming a PI?:

□ Obtained academic awards/honors

□ Highly cited papers or High H-index

□ Patents

□ Other, please specify _____

14. Size of your early career research team:

○ 1-3 ○ 4-10 ○ 11-30 ○ More than 31

15. Did you have adequate funding to carry out the research during your early career?

○ Abundant ○ Insufficient ○ No funding

16. On average, how many hours per week do you work?

○ Up to 20 ○ 21-30 ○ 31-40 ○ 41-50 ○ 51-60 ○ 61-70

○ Greater than 70

17. How many institutions have you worked for during your early career?

○ 1 ○ 2-3 ○ More than 4

18. what was the reason for leaving your institution?(Select up to 3):

□ Career progression / development

□ The new job is better suited to my interests / skills

□ For better compensation / salary

□ For full-time permanent position

□ Better work-life balance

□ Unhappy with role

□ Launch my own business

□ Prefer not to answer

□ Other, please specify _____

19. Key factors contributing to your early career development (Select up to 4):

□ Access to world-class institutions for study and research

□ Mentorship from leading scientists

□ Adequate and stable funding support

□ International or inter-institutional research exchanges

□ Fair and reasonable evaluation and promotion systems

□ Open, inclusive, and ethical research environment

□ Relatively low financial and living pressure

□ Cooperation with other prominent researchers

□ Other, please specify _____

III. Your Career Development Challenges and Demands

20. Did you experience challenges with research time allocation during your early career?

○ Yes (If yes, select at least 1 option below)

□ Excessive time spent on administrative tasks (preparing application materials, evaluations, expense reimbursements, etc.)

□ Heavy teaching workload

□ Insufficient time for personal learning and improvement

□ Lack of time for leisure and entertainment activities

□ Other, please specify _____

○ No problem

21. What are the following negative factors impacted your career development during your early career? (Select up to 4)

□ Lack of opportunities/funding

□ Challenges in building research teams

□ Overly frequent evaluations that discourage innovative work

□ Lack of freedom to pursue my own research interests

□ Absence of tailored career development programs

□ Flawed research evaluation systems

□ Inadequate pathways for research translation and commercialization

□ Discrimination/biases against your gender/ethnicity

□ Other, please specify _____

22. What personal challenges did you face during your early career? (Select up to 4)

□ Job insecurity/lack of stable employment

□ Visa/residency permit difficulties

□ Lower salary

□ Interpersonal problems

□ Challenges accessing healthcare

□ Difficulties securing quality education for children

□ Cultural integration barriers

□ Physical/mental health concerns

□ Other, please specify _____

23. What policy support would be most valuable for early-career researchers? (Select up to 4):

□ Research autonomy

□ Reduced administration burdens

□ Guaranteed stable research funding

□ Expanded recruitment/enrollment quotas for team building

□ Access to mentorship programs and development platforms

□ Implementation of long-term, discipline-specific evaluation systems

□ Better salary/compensation

□ Better healthcare, housing and children's education

□ Other, please specify _____

24. Additional suggestions for supporting early career scientists:

_____

25. Would you be willing to participate in follow-up interviews?

○ Yes (E-mail: _____) ○ No

For detailed reports, please contact World Association of Young Scientists
(email: secretariat@ways.science)