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International student diversity in Chinese higher education: Structural conditions for cross-cultural communication, inclusive learning, and sustainable internationalization

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Abstract: Background: While international student mobility can contribute to intercultural contact, intercultural competence and inclusive learning are not indicated by the presence of a diverse group of students. The study aims to investigate the structure and regional distribution of international students in China's higher education institutions and to explain the limitations of using administrative diversity as an indicator of international student enrolment. **Materials and Methods:** Data from the Ministry of Education of the People's Republic of China (PRC) on worldwide statistics of international students in China (ISC) for 2018 were analysed; the data included 492,185 international students from 196 countries and areas in 31 provincial-level regions. Verified counts, percentage shares, cumulative shares and concentration ratios were used to evaluate the continental composition, top countries of origin and the provincial concentration. **Findings:** Asia accounted for 59.95 % of enrolment. The 15 leading countries of origin accounted for 56.63 % of the total, while the top five provincial-level destinations accounted for 51.61 % and the top 15 for 86.43 % of enrolment. The results reveal widespread recruitment outreach and a strong spatiotemporal focus. **Conclusions:** These indicators provide evidence of the potential for intercultural contact in terms of its structure and distribution but do not measure actual intercultural contact, competence, inclusion or causal educational outcomes. The study provides a replicable macro-level framework which distinguishes between structural diversity and institutional mediation and realised learning. Distributional monitoring, multilingual support, structured intercultural learning, faculty development, and direct assessment of student experience and outcomes should be combined in order to enhance the development of a culture of language and media competence in authorities and universities.

Keywords: student mobility; demographic composition; geographic inequality; concentration ratio; internationalization at home; institutional mediation; educational equity

1. Introduction

China has become a great international student attraction. In 2018, there were 1004 higher education institutions in China's 31 provincial-level regions that hosted international students, who totaled 492,185 from 196 countries and areas [1]. The importance of international student education becomes the focal point of discussions on the internationalisation of higher education, access and the educational utilization of culturally diverse learning environments.

International student enrolment inevitably leads to culturally and linguistically diverse campus settings where students are likely to experience other values, communication styles, and understandings of academic and social contexts [2,3]. This exposure may allow opportunities for intercultural competence to be developed, which is defined as the ability to communicate with others in a culturally competent way

[2,4]. However, conscious institutional design, curriculum design and learning atmosphere are needed to make these opportunities possible [5,6].

Demographic diversity does not necessarily translate into achieved intercultural competence. The co-presence of students from various national backgrounds may raise the likelihood of contact to a higher level, but it does not imply either the presence or absence of interaction, or its meaningfulness or the resulting learning. Contact-based views suggest that educational value of intercultural contacts is influenced by equal status, common goals, interactions, and institutional support [4–6].

The notions of cross-cultural communication, intercultural competence, inclusive learning, and educational sustainability have close connections and links but are analytically different terms. Cross-cultural communication involves communication between individuals who have evolved their communication practices and frames of reference in different cultures. Intercultural competence is a personal competence that encompasses knowledge, attitude, interpretation and appropriate and effective cross-cultural communication [2–4]. Inclusive learning is a pedagogical and institutional process that ensures that students with diverse linguistic, cultural and educational backgrounds are able to engage and participate in learning and academic processes in a meaningful and equitable manner [5,6]. In this context, educational sustainability is understood as the ability of institutions to sustain equitable, resilient and socially responsive internationalization processes beyond the short-term push for higher enrolment numbers [7–9]

These ideas should not be confused with each other. Student diversity may enhance opportunities for intercultural contact, but it does not predict that students will contact, that contact will be educationally productive, or that competence will be acquired. Institutional mediation (curriculum design, mixed group learning, language support, faculty preparation, student services, norms of inclusion, etc.), links demographic diversity with potential educational outcomes. The present study only captures the structural dimension of international enrolment; the actual communication practices, institutional mediation, competence, and learning outcomes are not part of the data set.

Higher education institutions' long-term capacity to offer equitable and culturally responsive learning environments is increasingly considered as a governance and sustainable priority [7–9]. The internationalization of China has been extensive but international enrollment is not equally spread among source regions or Chinese provincial level destinations [9,10]. This disparity poses questions regarding the geographic diffusion of internationalized learning environments, institutional capacity and the adaptability of the national internationalization model.

Past studies have focused primarily on the individual student experience, institutional case studies, student choice and national policy [11–13]. While these studies offer important insight into engagement and adjustment, as well as institutional practice, they do not capture the distribution of international enrolment by source regions and by provincial-level destinations. A macro-level distributional analysis can therefore be helpful to identify where opportunities for intercultural contact are more or less structurally located, but it is not meant to be an indicator of student outcomes.

Recent scholarship has advanced beyond the notion that the mere presence of culturally diverse students will lead to intercultural learning. Studies conducted in

China demonstrate the importance of the quality, frequency and institutional settings of contact on the effectiveness of communication and intercultural relations [4,6,14]. Other research suggests that in the absence of intentional interaction, international student education can continue to be socially or academically distinct from the rest of the institution [9,15]. International research also reveals that pedagogical and partnership interventions are effective in promoting intercultural development, while being scaffolded by proximity alone, limited evidence of learning can be provided [16,17]. The difference between these two shows the difference here: Experience and outcome studies are micro-level studies, whereas macro-level administrative data are used to identify the distributional conditions in which such experiences might occur.

This study aims to fill a gap at the macro-level of distribution by combining three types of evidence related to the distribution: Continental composition, country of origin distribution in the top countries of origin, and geographic distribution across the Chinese provincial-level areas. Its novelty is not in using demographic data as indicators as intercultural competence. Rather, it separates the national scope of students' recruitment abroad from the geographic scope of intercultural contact opportunities. This offers a clear picture as to the extent of internationalisation, both geographically and institutionally, or the extent of its concentration into a specific region or sector of a higher education system.

The study is based on four research questions:

RQ1: What were the distribution characteristics of international students in China in 2018?

RQ2: What is the structure of international student diversity as shown by country-level shares of enrollee and cumulative concentration in the top countries of origin?

RQ3: How was international student enrollment geographically distributed in the 31 provincial-level regions in China?

RQ4: What do the structures mean when the country-of-origin and provincial distributions are combined in terms of intercultural contact and equitable internationalization?

The study is a structural macro level approach. Concentrations and enrollment figures are used as approximate proxies for the concentration of distributional conditions that can facilitate or hinder the opportunities for intercultural contact. They are not construed as direct indicators of cross-cultural communication, intercultural competence, inclusive learning or educational sustainability. This division between measured structural indicators, institutional mediation, and unmeasured educational outcomes is illustrated in **Figure 1**.

The framework distinguishes the constructs measured using administrative data from the institutional processes and educational outcomes that remain theoretically relevant but empirically unobserved.

2. Materials and methods

2.1. Research design

This study was conducted using a descriptive quantitative secondary data design to analyze the composition and geographical distribution of the international students

in China's higher education in 2018 [18]. An aggregated geographic unit, such as continent, country or area of origin, or Chinese provincial-level region, was used as the unit of analysis, instead of the individual student. As a result, the analysis does not investigate the causal relationships or educational outcomes at the individual level, and does not detect distributional patterns at the individual level.

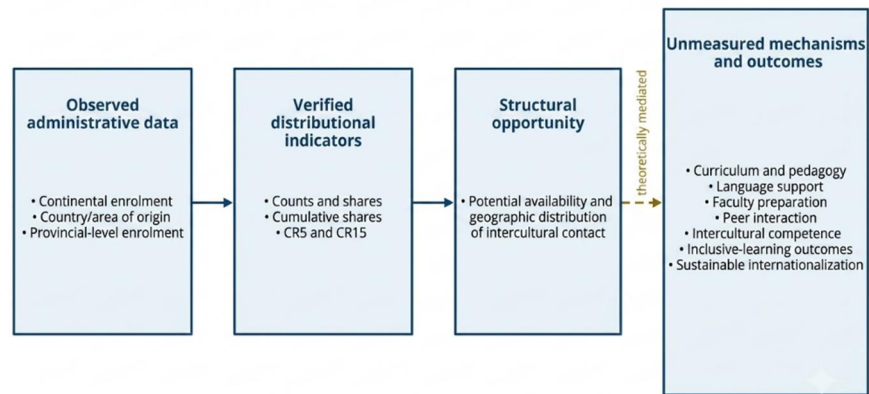


Figure 1. Conceptual distinction between measured structural diversity, institutional mediation, and unmeasured intercultural and educational outcomes. Solid arrows represent relationships described using the administrative dataset; the dashed arrow represents theoretically proposed relationships that were not directly tested.

2.2. Data source and analytical coverage

Publicly available statistics from the Ministry of Education of the People's Republic of China [1] and distributed in the cited Kaggle repository [19] were used for analysis. In 2018, the number of international students in the verified reference population totaled 492,185 from 196 countries and areas in 1004 higher education institutions in 31 provinces, autonomous regions and provincial level municipalities. The Ministry's international-student figure did not take into account students from Hong Kong, Macao, and Taiwan.

The continent-level file gives the number of enrolments on a continental basis, by the five world regions of origin; the country-level file includes the numbers of student enrolments by leading countries and areas of origin; and the provincial file includes the numbers of student enrolments in the Chinese PLDs by leading destinations. The files do not include personally identifiable information and only contain aggregated counts.

2.3. Data cleaning and validation

All files were imported with the same character encoding, category labels were consistent and enrolment fields were converted to a numeric format, following the removal of thousands separators. Before analysis the following problems with the labels were checked for: Duplicate labels, missing categories, nonnumeric entries, and negative counts, and the population total for the continent was compared with the official population of 492,185. The official population total covered all 196 countries and 31 provincial-level regions but was available only by the main categories, the other categories being summarized. Therefore, no SDI or HHI estimates were made

for each residual category and it was not considered as a country or region of the world. No imputation was carried out since the records do not refer to individual observations but rather to administrative counts.

2.4. Measures and Index construction

Four categories of structural indicators were used, as summarized in **Table 1**. Continental composition was described with counts and percentage shares. Country-of-origin and provincial concentration were described with ranks, individual shares, cumulative shares, and concentration ratios for the leading categories. These indicators describe variety and spatial concentration in enrolment distributions; they do not measure cultural distance, interaction frequency, communication quality, individual competence, institutional inclusiveness, or learning outcomes.

Table 1. Dataset structure, verified indicators, and interpretive boundaries.

Analysis level	Observed variable	Derived measure	Direct interpretation	Not measured
Continent	Enrolment count by continent	Count and percentage share	Broad regional composition	Cultural distance or interaction quality
Country/area	Enrolment count by origin	Rank, share, cumulative share, CR15	Distribution across leading origin countries	Intercultural competence
Province	Enrolment count by provincial-level region	Rank, share, cumulative share, CR5, CR15	Geographic distribution and concentration	Institutional inclusiveness
Integrated	Country and provincial indicators	Comparative structural profile	Distribution of potential contact opportunities	Actual interaction, learning, or sustainability outcomes

The cumulative concentration ratio for the m leading categories was calculated as shown in Equation (1):

$$CR_m = \sum_{i=1}^m p_i \quad (1)$$

where p_i is the share of total enrolment represented by category i . CR5 and CR15 therefore show the proportions accounted for by the five and fifteen leading destinations or source countries.

The Shannon Diversity Index (SDI) and Herfindahl-Hirschman Index (HHI) are mathematically appropriate when complete category-level counts are available because SDI summarizes variety and evenness, whereas HHI summarizes concentration [20].

Their valid estimation requires all categories to be represented individually; calculating either index from a top-category table combined with a residual group would not yield a population-level country or provincial index.

Accordingly, the previously reported SDI and HHI values were not retained as empirical evidence in the revised manuscript. The results and conclusions are based on verified counts, shares, cumulative shares, CR5, and CR15, all of which can be reproduced from the official summary data.

Throughout the manuscript, the verified indicators are interpreted only as measures of structural composition and concentration. A higher concentration ratio indicates that international enrolment is located within fewer leading categories, but it

does not establish whether intercultural interaction occurs, whether participation is inclusive, or whether competence develops.

2.5. Analytical procedure

The analysis was carried out in five stages. First, the internal consistency of the continent, country and provincial summaries was tested by comparing the total population with the official population. Second, the number of enrollees and percentages per continent were computed. Third, the country-of-origin composition was presented in three ways: Rank, individual share, and cumulative share of the 15 most important countries. Fourth, the concentration of provinces was analyzed with ranks, individual shares, CR5 and CR15. Fifth, the quantitative findings were analysed deductively using the conceptual framework by splitting the structural opportunity and the institutional mediation and educational outcomes. This final stage was not a qualitative thematic analysis, but an interpretation process that was guided by theory and quantitative evidence. Data management and calculation were done using Python, pandas and NumPy [21].

2.6. Scope of interpretation

The analysis supports statements about the breadth and geographic distribution of international enrolment and the unequal structural availability of potential contact. It does not support statements about actual interaction, communication effectiveness, student learning, intercultural competence, institutional inclusiveness, or causal effects. Such outcomes require individual- or institution-level measures that are absent from the dataset.

2.7. Ethical considerations

This study used only publicly available, aggregated, and de-identified administrative data. No individuals were recruited, no personal data were processed, and no intervention was conducted. Formal ethics review and informed consent were therefore not required.

3. Results and discussion

Results are reported in the sequence of the research questions: Continental composition, country-of-origin concentration, provincial concentration and a summary of the structural distribution. Participant quotations are not provided as the data is compiled from aggregated administrative data and not interview or open-ended responses, and would not be methodologically appropriate. Direct empirical evidence is thus presented in the form of count, percentage, cumulative shares and clear source notes. Discussion of institutional practice and educational outcomes should only be addressed in interpretation.

3.1. Continental distribution of international students

The actual distribution is given in **Table 2**. The Asia region had the highest number of students coming from the region with 295,043 (59.95 %). Larger shares were held by Africa (16.57 %) and Europe (14.96 %) with smaller shares held by the

Americas and Oceania. The same distribution as percentage shares and absolute counts is shown in **Figure 2**.

Table 2. Continental distribution of international students in China, 2018.

Continent	Student count	Share of total
Asia	295,043	59.95 %
Africa	81,562	16.57 %
Europe	73,618	14.96 %
Americas	35,733	7.26 %
Oceania	6,229	1.27 %
Total	492,185	100.00 %

Source: Authors' calculations based on the 2018 Ministry of Education international student statistics [1]. Percentages may differ marginally from 100 % because of rounding. The table describes continental composition only and does not measure within-continent cultural or linguistic diversity.

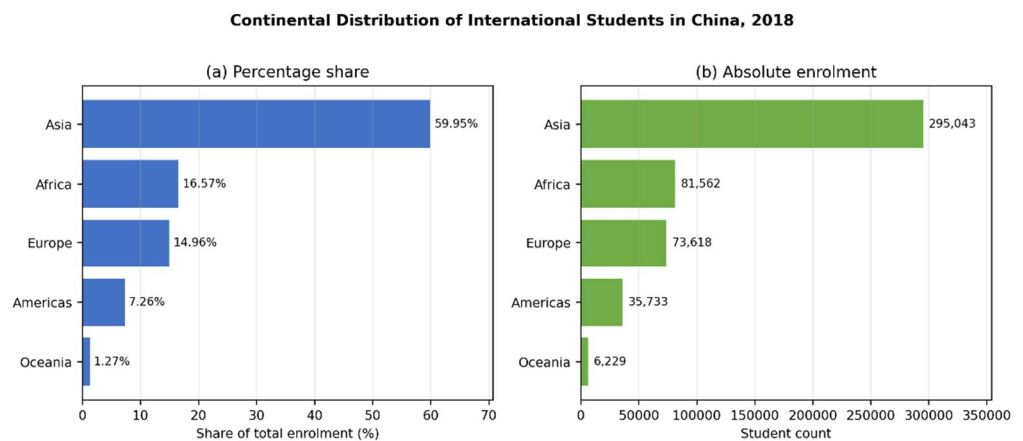


Figure 2. Continental distribution of international students in China (2018): (a) percentage share and (b) absolute enrolment.

The continental distribution shows a strong Asian majority, but this finding is descriptive rather than explanatory. The dataset does not contain measures of geographic proximity, scholarship policy, language, cost, or geopolitical preference; possible explanations for the pattern are therefore considered only in the Discussion and are supported by prior literature.

The results also do not establish the cultural similarity or heterogeneity of students within each continental group. Continental categories contain substantial internal diversity, and the share of a continent cannot be interpreted as a measure of the quality or breadth of intercultural interaction.

3.2. Country-of-origin diversity

Table 3 presents the 15 largest countries of origin. South Korea was the largest individual source country with 50,600 students (10.28 %), followed by Thailand, Pakistan, India, and the United States. The table reports direct counts and cumulative shares rather than treating the leading-country list as a complete 196-category distribution.

Table 3. Fifteen largest countries of origin of international students in China, 2018.

Rank	Country	Count	Share	Cumulative share
1	South Korea	50,600	10.28 %	10.28 %
2	Thailand	28,608	5.81 %	16.09 %
3	Pakistan	28,023	5.69 %	21.79 %
4	India	23,198	4.71 %	26.50 %
5	United States	20,996	4.27 %	30.77 %
6	Russia	19,239	3.91 %	34.67 %
7	Indonesia	15,050	3.06 %	37.73 %
8	Laos	14,645	2.98 %	40.71 %
9	Japan	14,230	2.89 %	43.60 %
10	Kazakhstan	11,784	2.39 %	45.99 %
11	Vietnam	11,299	2.30 %	48.29 %
12	Bangladesh	10,735	2.18 %	50.47 %
13	France	10,695	2.17 %	52.64 %
14	Mongolia	10,158	2.06 %	54.71 %
15	Malaysia	9479	1.93 %	56.63 %
—	Remaining countries/areas	213,446	43.37 %	100.00 %
—	Total	492,185	100.00 %	—

Source: Authors' calculations based on the 2018 Ministry of Education international student statistics [1]. The residual row combines all countries and areas outside the 15 largest sources and is not treated as a single country in interpretation.

In South Korea, the share was 10.28 % while in no other country single country exceeded 6 %. After the five biggest countries the share was 30.77 %, and after the 15 biggest countries, the share was 56.63 %. These figures suggest that student enrolments were not concentrated in any particular 'dominant' source country, but also indicate that a significant number were drawn from a small number of leading countries.

Total enrolment in the other countries and areas accounted for 43.37 % of total enrolment. This residual share represents additional recruitment to the top sources but cannot be used to develop a country-level SDI or HHI without individual counts for each component category.

The top countries tended to be in the Asian region. The pattern recognises that there can be a distinction between international recruitment and neighbouring or regionally connected sources of recruitment: A system may recruit students from numerous countries, but have a large proportion of students from neighbouring countries or from countries which are regionally connected to the system. It does not, however, define what sort of interaction is taking place in universities.

3.3. Provincial distribution of international students

Table 4 shows the distribution of international students across provinces. A total of 15 top provincial-level destinations are listed in **Table 4**, along with their

cumulative shares. The corresponding number of counts and concentration curve are shown in **Figure 3**. The analysis is based on the geographic distribution and the provinces are not classified as “urbanized” or “institutional quality”.

Table 4. Fifteen leading provincial-level destinations for international students in China, 2018.

Rank	Provincial-level region	Count	Share	Cumulative share
1	Beijing	80,786	16.41 %	16.41 %
2	Shanghai	61,400	12.47 %	28.89 %
3	Jiangsu	45,778	9.30 %	38.19 %
4	Zhejiang	38,190	7.76 %	45.95 %
5	Liaoning	27,879	5.66 %	51.61 %
6	Tianjin	23,691	4.81 %	56.43 %
7	Guangdong	22,034	4.48 %	60.90 %
8	Hubei	21,371	4.34 %	65.25 %
9	Yunnan	19,311	3.92 %	69.17 %
10	Shandong	19,078	3.88 %	73.05 %
11	Guangxi	15,217	3.09 %	76.14 %
12	Sichuan	13,990	2.84 %	78.98 %
13	Heilongjiang	13,429	2.73 %	81.71 %
14	Shaanxi	12,919	2.62 %	84.33 %
15	Fujian	10,340	2.10 %	86.43 %
—	Remaining 16 regions	66,772	13.57 %	100.00 %
—	Total	492,185	100.00 %	—

Source: Authors' calculations based on the 2018 Ministry of Education international student statistics [1]. Provincial-level counts describe geographic concentration and do not directly measure institutional inclusiveness or student experience.

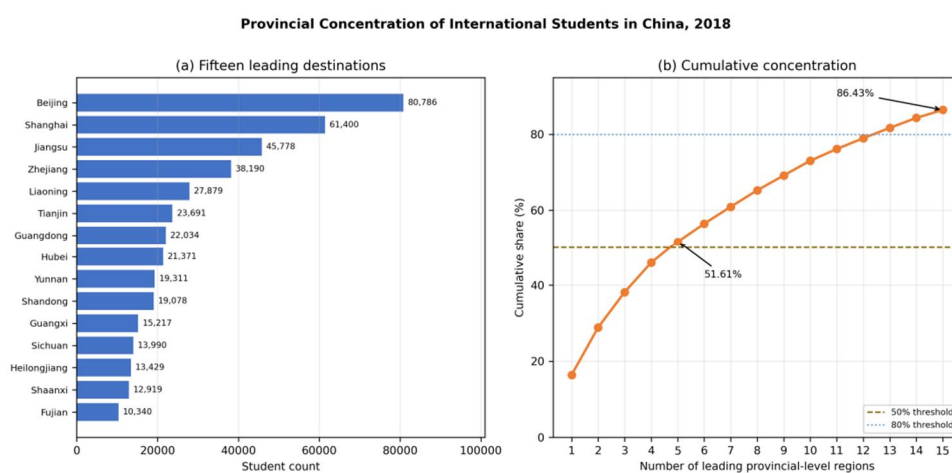


Figure 3. Provincial concentration of international students in China (top 15 provincial-level regions, 2018): **(a)** absolute enrolment and **(b)** cumulative share with 50 % and 80 % reference thresholds.

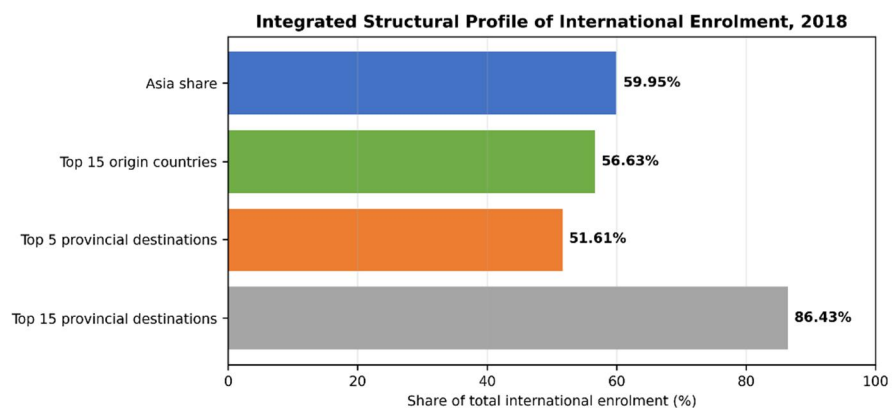
The provincial-level distribution was concentrated. Beijing hosted 80,786 students (16.41 %), and Beijing and Shanghai together accounted for 28.89 %. The five leading destinations—Beijing, Shanghai, Jiangsu, Zhejiang, and Liaoning—accounted for 51.61 % of all international students.

The cumulative share reached 86.43 % across the 15 leading provincial-level regions, leaving 13.57 % distributed across the remaining 16 regions. These verified concentration ratios provide direct evidence of an uneven geographic distribution without relying on an unvalidated provincial HHI.

The pattern supports a cautious statement that the structural availability of international student contact was more concentrated in leading destinations. It does not demonstrate that students or staff in lower-enrolment regions experienced poorer inclusion, weaker learning, or lower intercultural competence; those questions require institution- and individual-level evidence.

3.4. Integrated structural profile

Figure 4 integrates the principal verified indicators from the three levels of analysis: Continental composition, concentration among the 15 leading countries of origin, and concentration among the five and 15 leading provincial-level destinations.



The indicators describe composition and geographic concentration; they do not measure interaction quality, competence, or learning outcomes.

Figure 4. Integrated structural profile of international student enrolment in China, 2018. The percentages describe composition and concentration, not realised intercultural or educational outcomes.

The overall evidence shows two structural features. First, the international student population was regionally skewed towards Asia with the 15 top countries accounting for 56.63 % of the population. Second, places of enrolment were geographically focused, with 51.61 % of places of enrolment in the top five provincial-level destinations, and 86.43 % of places of enrolment in the top 15 provincial-level destinations.

These patterns contrast the changing nature of international recruitment with the spatial distribution of international enrolment. Students from across the nation participated in the national system with a range of countries and areas contributing the largest numbers of international students, and a relatively narrow set of countries accounting for the bulk of international students.

The results indicate potential positions for intercultural contact but do not reveal whether or not it took place, whether it was effectively mediated by institutions, whether it led to intercultural competence, inclusive learning, or sustainable educational outcomes.

4. Discussion

The results highlight a general yet geographically heterogeneous structure of internationalization at the higher education level in China. The country of origin composition reveals that students are recruited from a wide number of countries, while the provincial results indicate that enrollment from abroad was relatively large in a relatively small number of countries. These dimensions are to be understood together: A wide recruitment increases the number of potential intercultural contacts and a geographic concentration reduces the number of potential contacts spread throughout the higher education system.

4.1. National-origin diversity as structural potential

There was no one country of origin that predominated the population as reflected in the country-of-origin results, which showed that the 15 largest countries accounted for 56.63 % of the population. This helps to interpret the recruitment reach as being broad, but does not imply that students had frequent or meaningful cross-cultural exchanges. Contact quality, perceived threat, language, and institutional context are also found to be important factors in the effectiveness of communication and intercultural relationships in the Chinese context [4,6,14]. It should then be interpreted as a situation of structural opportunity to develop competence and not as a competence achievement.

The share of Asian countries in the top sources is similar to the official enrollee profile, as well as research that reports the partially segmented nature of international student education in China [1,15]. This composition may be explained by the geographic proximity, policy relations and educational mobility networks, which were not included in the administrative dataset and therefore could not be explored in this analysis.

4.2. Geographic concentration and unequal distribution of opportunity

The uneven distribution of structural opportunities created by international enrolment is reflected in provincial concentration. The top two destinations (Beijing and Shanghai) made up 28.89 % and the top five made up 51.61 % of all destinations. Some of the leading destinations may offer more exposure to internationally diverse student populations, but nothing can be concluded from counts at the province level regarding the exclusion and/or educational quality of institutions in other provinces. These findings need a higher level of university enrollment composition, curriculum, student services, and interaction.

The distribution is congruent with the existing evidences of the uneven distribution of internationalization and institutional capacity in Chinese higher education institutions [9,15]. However, the current evidence only relates to international student location. It doesn't explain the reasons for concentration,

compare institutional capacity and establish that a more widely-spread pattern would necessarily have better outcomes for students.

4.3. Institutional mediation and intercultural outcomes

Contact perspectives and inclusive-pedagogy perspectives both suggest that there is a need for more than just demographic co-presence to develop competence. The conditions that determine the educational meaningfulness of contact are equal status, shared goals, cooperation, structured learning tasks, language support, and institutional commitment [4–6]. The **Figure 1** thus suggests that curriculum, faculty preparation, peer interaction, and student support are not the end result of the distributional indicators, but rather are seen as mediators.

Similarly, educational sustainability should be understood as the capacity of an institution and a system to keep up its internationalization in a socially responsible, equitable and resilient way [7,9,22]. The current data do not actually measure sustainability directly, but rather a distributional condition relevant to that capacity.

4.4. Comparison with previous international evidence

International evidence supports the separation of the concepts of demographic diversity and realised outcomes. The study by Hackett et al. [16] involved 108 students in two countries (the Netherlands and the United States) and they showed that the results of the COIL experience differed between the two countries, depending on the context in which students were placed and on the extent of their previous exposure to other countries. Dong et al. [17] reported positive results (although not consistent) in a United States study of 97 graduate students that involved a structured cultural-partner programme. The aim of deliberately engineered contact can have a positive impact on intercultural development, and these studies also raise important warnings about the lack of uniform impact of diversity.

This micro-level evidence complements the present study, which focused on identifying the macro-level distribution of potential contact. It confirms that opportunities are not equal across all geographical levels, extends prior work by quantifying concentration at different levels, and questions the interpretation of national enrolment diversity as competence and / or inclusion.

4.5. Practical implications

The findings lend support to a number of practical actions, but there was no testing of effectiveness of these actions in this study. In addition to aggregate enrolment, distributional indicators such as the continental shares and concentration in the leading countries, CR5 and CR15, and changes in participation from country to country over the years could be used to monitor internationalization at the national and provincial level. The support to international programmes for lower enrolment regions should be tied to the capacity of the institution, of which the key elements would be multi-lingual academic services, qualified faculty, student accommodation, safeguarding and integration support.

Relying on diversity alone is not enough to create intercultural learning within Universities. Formal teaching and student services should include mixed nationality

project teams, structured peer mentoring, assessment of intercultural tasks, dialogue and language support [5,6,16,17]. These initiatives should be appraised within institutions through the application of validated pre- and post-intervention assessments of intercultural competence, belonging, interaction frequency and inclusive participation.

5. Conclusion

In sum, the study reveals that internationalization has two dimensions – wide spread of international recruitment and geographical spread of enrolment – analytically distinct from each other. A higher education system can encourage students to come from a diverse group of countries and nurture the majority of the opportunities for intercultural interaction within a narrow range of destinations.

The principle theoretical contribution of this study is the distinction between structural opportunity as a result of administrative distribution, and structural opportunity as an outcome of institutional mediation and student-level evidence of learning or competency. Distributional indicators are therefore more apt to be used as diagnostic indicators of composition and concentration than as measures of educational achievement.

Concentration indicators can be used to identify where the internationalized learning environments might be more or less structurally accessible and where the institutional support to strengthen. Future research, both longitudinal and institution-level, as well as mixed research should relate these macro-level distributions with the curriculum, language support, peer interaction, student belonging, and validated measures of intercultural competence. This integration would enable researchers to explore the relationship between structural diversity and equitable and sustainable learning outcomes, as well as the failure to achieve it.

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Data availability statement: The underlying summary statistics are publicly available in the Ministry of Education of the People’s Republic of China statistical report [1] and in the Kaggle dataset “International students in China: Statistical data on international students in China for 2018” [19]. The revised tables report only values reproducible from these verified sources.

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and Kaggle platform for providing the analytical files. When preparing this manuscript, the authors used ChatGPT (OpenAI) to aid in polishing the language, structuring, organizing references and enhancing the clarity of the text. The authors have verified the data, calculations, sources cited, interpretations and conclusions independently, have reviewed and edited all AI-assisted content, and are fully responsible for the accuracy, integrity and content of the publication.

Conflict of interest: The authors declare no conflict of interest.

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