

# Chilean miss-representation in the Dark Energy Science Collaboration: Current challenges and paths forward

**Bernardita Ried Guachalla**

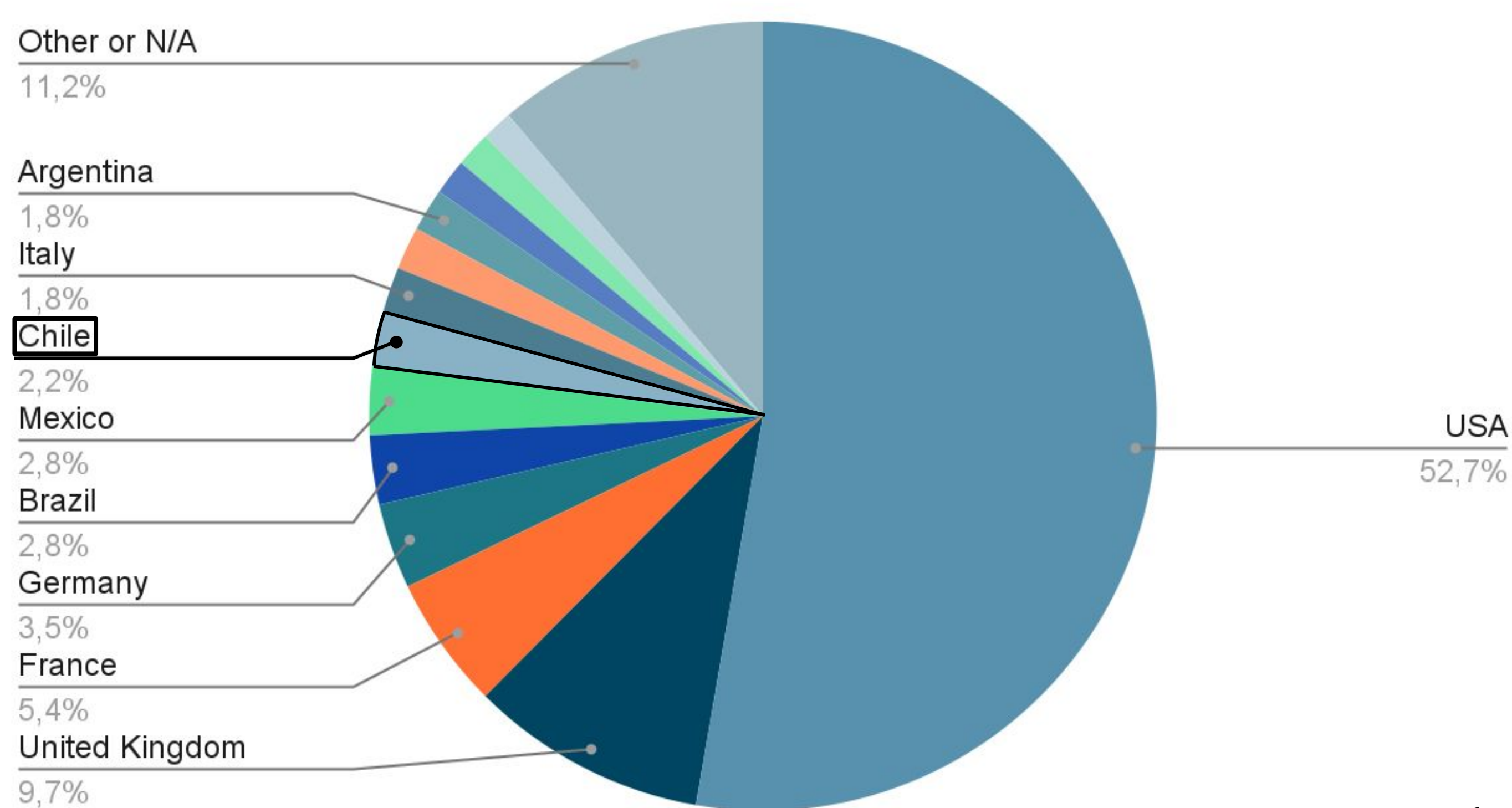
PhD(c) at Stanford University (bried@stanford.edu)

## MOTIVATION

Only about 2% of scientists in the Dark Energy Science Collaboration (DESC) are Chilean or affiliated with Chilean institutions, despite Chile hosting the Rubin Observatory and holding data rights. This underrepresentation, seen across other collaborations in cosmology as well, is a significant concern to our community. While efforts are underway to address the imbalance, more action is needed. This poster explores the root causes, highlights current initiatives, and proposes strategies to strengthen Chilean participation in Rubin-related science.

## CONTEXT

DESC Members by Country



Chile is home to nearly 50% of the world's ground-based astronomical infrastructure. However, despite a growing number of astronomers in recent decades, local capacity still struggles to keep pace with the scale of international experiments, especially given the country's low science budget: **less than 0.4% of GDP**. Additionally, there is a common perception in other scientific fields that astronomy does not need further investment, often justified by the argument that **Chilean astronomers already have access to the telescopes**.

On a more historical side, Chilean researchers have focused on field-based observational work rather than participation in large international collaborations, which often **require travel to the northern hemisphere during summer there, midway through the Chilean academic year**. These timing conflicts, along with the high cost of international travel, present significant barriers to engagement, further limiting access for Chilean researchers. Currently, **only 12 Chilean faculty members are affiliated with DESC**, with fewer than half actively involved. This lack of representation makes it difficult for students to find local advisors in survey science and/or cosmology, often forcing them to look abroad without existing connections or support. Structural issues like **high application fees, as well as language and cultural differences, further hinder Chilean students' ability to access international academic opportunities**.

If you would like to contribute, please reach out to me through slack or email.

## RISKS OF LIMITED CHILEAN INCLUSION

### Undermining Rubin's Pillar of Inclusion

Failing to meaningfully include Chilean scientists contradicts one of Rubin Observatory's foundational values.

### Overlooking Exceptional Local Talent

The Chilean community includes skilled researchers uniquely connected to the local environment and observatories, a valuable perspective that is currently underutilized.

### Breach of Original Agreement

This trend risks violating the spirit of the 1998 agreement between the Chilean government and the telescope partners, which emphasized collaboration and mutual benefit.



### Negative Impact on Chilean Public and Political Perception

Limited local engagement may leave a lasting negative impression within Chile's political landscape, potentially affecting support for future astronomical projects.

### Loss of Key Local Allies

Chilean astronomers are among the strongest advocates for dark sky protection, crucial for the long-term success of local observatories.

## ONGOING EFFORTS

- **Cosmology in Chile:** Community of Chilean astronomers and physicists working in cosmology.



- **KIPAC-Chile Engagement Program:** Gives Stanford members access to specialized funds meant to visit institutions across Chile when visiting for work.



- **Targeted Mentoring for Chilean Early-Career Scientists:** Develop a focused mentoring program for advanced undergraduate and master's students who have recently joined DESC.

## RECOMMENDATIONS

### Host Scientific Meetings in Chile

Consider hosting a training school the week prior to support early-career scientists

### Engage with the Chilean Astronomical Society

Actively participate in the annual meeting of SOCHIAS (Sociedad Chilena de Astronomía) to build long-term relationships

### Reach Out When Advertising Opportunities

Ensure job postings and fellowship opportunities are shared with Chilean institutions and networks

### Be Mindful of Cultural and Language Barriers

Promote inclusive communication and see the recent Recommendations to overcome language barriers in the Rubin Observatory Research Ecosystem)



### Support the Development of Survey Science Expertise

Invest in forming the next generation of astronomers with expertise in large-scale survey science

### Engage Beyond the Observatory Summit

Take the opportunity to connect with local universities and research centers, and promote bilateral exchanges