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Descriptive Finding

Sexual orientation on Zoe: A global analysis of a lesbian dating app

Francesco Rampazzo

Canton Winer

Milan Kovačič

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Francesco Rampazzo[1]

Canton Winer[2]

Milan Kovačič[3]

Abstract

BACKGROUND
The global LGBTQIA+ population is growing, especially among younger generations. However, most research on sexual orientation focuses on wealthy anglophone Western countries, limiting understanding of emerging identities, such as asexuality, in a global context. This study addresses this gap by analyzing a diverse international sample.

OBJECTIVE
This study examines how sexual orientation is expressed globally, exploring variations across regions and age groups. It also acknowledges that social and cultural environments may influence identity diversity and disclosure.

METHODS
Using data from Zoe, a queer women and nonbinary dating app, the study analyzes 913,253 users from 122 countries between January 2023 and May 2025. It examines self-reported sexual identities and their distribution across geography and age.

RESULTS
Lesbian and bisexual identities are the most common worldwide, while countries in the Global North show greater diversity. Younger generations display more heterogeneity, with higher proportions identifying as bisexual or queer. High rates of missing data in some regions may indicate contextual differences in users' willingness or ability to disclose their identities.

CONCLUSIONS
Patterns in sexual identity expression appear to be associated with sociocultural contexts.

[1] Department of Social Statistics, Cathie Marsh Institute, University of Manchester, UK.
Email: Francesco.rampazzo@manchester.ac.uk.
[2] Northern Illinois University, DeKalb, IL, USA.
[3] Former Cosmic Latte CEO, Praha, Czech Republic.

Greater diversity in wealthier nations and among younger generations suggests that societal acceptance and generational change may influence identity expression.

CONTRIBUTION

By leveraging a large-scale global dataset, this study provides descriptive evidence of LGBTQIA+ identities beyond Anglo-Saxon contexts. The findings highlight the value of integrating digital trace data and regional diversity into more inclusive approaches to global demographic research on sexuality.

1. Introduction

The number of individuals openly identifying as lesbian, gay, bisexual, transgender, queer, intersex, and asexual (LGBTQIA+) is steadily increasing (Brown 2023; Ipsos 2024). However, most evidence for this trend comes from countries where sexual orientation and gender identity are measured in censuses or large-scale surveys, such as wealthy anglophone contexts (e.g., the United States, the United Kingdom, Canada, and Australia) (Stacey 2024; Office for National Statistics 2023a; Shalley and Wilson 2025), as well as parts of Europe (Caprinali and Vitali 2025) and parts of Latin America, for example Mexico (Bercovich Szulmajster 2025). Globally, few data sources collect information on sexual orientation, and survey samples for sexual minorities are often small (e.g., 455 LGB respondents in the UK Understanding Society survey) (Ophir, Boertien, and Vidal 2023).

The 2021 census for England and Wales estimated that 3.3% of adults identified as LGB, up from 2.1% in 2017 (Office for National Statistics 2023b). In the United States, 7% of adults identify as LGB, with younger age groups showing even higher rates: 9.2% of those aged 16 to 24 in England and Wales and 17% of those aged 18 to 29 in the United States (Brown 2023; Office for National Statistics 2023a). Globally, an Ipsos survey found that 11% of millennials and 17% of Gen Z identify as LGBTQ+ (Ipsos 2024). These findings highlight the growing openness of younger generations, yet information remains limited on (1) the diversity of sexual orientations, including emergent identities such as asexuality (Winer 2024), and (2) global perspectives. Online dating apps collect information on sexual orientation as part of user registration, offering novel data for demographic research (Kashyap 2021; Breen and Feehan 2024). This study draws on anonymized, aggregated data from Zoe, a queer women and nonbinary dating app, to provide a global perspective on sexual orientation.

Online dating has become increasingly popular, especially among younger people seeking partners (Rosenfeld, Thomas, and Hausen 2019). Yet most research comes from high-income contexts, such as Germany (Danielsbacka, Tanskanen, and Billari 2020), or

focuses narrowly on gay and lesbian users (Potârcă, Mills, and Neberich 2015). A comprehensive description of the broader spectrum of orientations remains missing.

Demographers increasingly call for refining measurement practices for LGBTQIA+ populations (Julian, Manning, and Kamp Dush 2024; Mittleman 2023), incorporating emergent identities like asexuality (Winer 2024; Winer et al. 2024), and addressing the Global South's underrepresentation (Jung 2024). Reflecting the value of descriptive findings in understanding gender and sexual diversity (Stacey 2024), this research note leverages large-scale, cross-national data to advance more inclusive and global approaches to studying LGBTQIA+ populations.

2. Data

This project uses data from Zoe, a "Dating App for Queer Womxn" with more than 7.2 million users. Founded in 2017, the app is available on both the App Store and Play Store. When new users register, they are asked to provide information about their gender, age, sexuality, bio, and goals. In addition to romantic connections, Zoe can also be used to build friendships and community networks, which broadens the scope of interactions represented in the data.

Zoe provides a rare opportunity to study sexual orientation globally through a large and diverse digital platform. While other apps, such as HER, also cater to lesbian and bisexual women, their data are not accessible for research. This study draws on a formal data-sharing agreement with Zoe, which provided anonymized user information in accordance with the platform's privacy policies. Access to the dataset was obtained directly from the company after the authors initiated contact with Zoe. The company shared anonymized, aggregated data in kind for research purposes. The dataset was not purchased, and the authors have no financial or employment ties with the company. Analyses are based on aggregated estimates derived from these anonymized records. The dataset spans 162 countries and includes 913,253 women and nonbinary users interested in women, enabling cross-national comparisons rarely possible in demographic research.

Between January 1, 2023, and May 31, 2025, 2.9 million users created accounts on the app. The analysis focuses on sexual orientation, which users select from six options: asexual, bisexual, gay, lesbian, pansexual, or queer. This variable includes 2,511,211 missing values. While specific orientations cannot be inferred, all users analyzed are known to be interested in women.

Zoe's categorical structure for sexual orientation reflects terminology common in Western LGBTQIA+ contexts but only partially aligns with international best practices. The US National Academies of Sciences, Engineering, and Medicine emphasize that measures of sex, gender, and sexuality should reflect linguistic and cultural variation

(National Academies of Sciences, Engineering, and Medicine 2022). According to recent scholarship, the measurement of sexual orientation, gender identity and expression, and sex characteristics (SOGIESC) is shaped by political and institutional contexts that influence which identities are recognized or rendered invisible (Budnick, Pao, and Velasco 2025). From this perspective, sexuality data are both methodological and political, reflecting broader debates about legitimacy and recognition. The Zoe dataset thus offers valuable within-community insights but does not capture the full range of identity expressions recognized across cultural or political settings.

After excluding users with missing sexual orientation data, the sample included 1,045,554 users. Users from countries where homosexuality is criminalized were then removed, resulting in a final dataset of 913,253 users. This exclusion aimed to prevent potential risks to individuals in those countries. The list of countries where homosexuality is criminalized was obtained from the Human Dignity Trust.[4] As with most large digital platforms, some inauthentic or inactive profiles may persist, but duplicate and suspicious accounts were removed, and analyses rely on aggregated patterns unlikely to be affected by isolated anomalies.

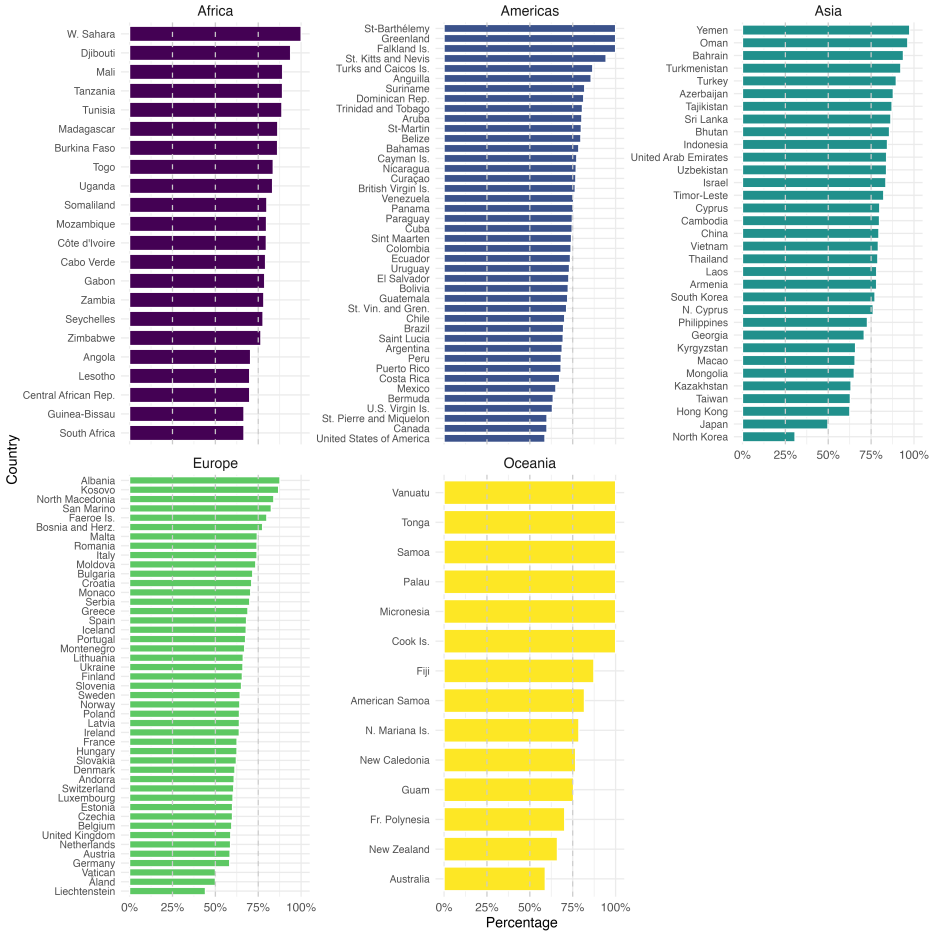
Of the 913,253 users included in the cleaned dataset, 649,570 (71.1%) identified as female. Missing gender information accounted for 189,815 users (20.8%), while the remaining responses included smaller proportions identifying as nonbinary (2.6%), fluid (1.6%), trans female (1.4%), bigender (1.0%), agender (0.5%), androgynous (0.5%), and pangender (0.4%). These categories correspond to the gender identity options available for selection within the app.

These data are not nationally representative, as Zoe users self-select into a digital platform requiring internet access. Nonetheless, few other sources provide comparable global coverage of queer women and nonbinary populations. The dataset thus offers valuable descriptive insights into identity disclosure and diversity among digitally connected populations, even if it cannot be generalized to national populations. Representation likely reflects broader patterns of digital inequality: Access to mobile and internet technologies varies by gender, age, and socioeconomic status, particularly in low- and middle-income contexts (Breen et al. 2025; Gray, Gainous, and Wagner 2016). As a result, users are likely younger, live in urban areas, and have a higher socioeconomic status – patterns also observed in Latin America, where connectivity and urban concentration shape the visibility of queer populations (Fortes de Lena 2022).

Figure 1 displays the proportion of missing data (NA) for sexual orientation across 162 countries, grouped by continent.

[4] Countries excluded from analysis are those where lesbian, gay, bisexual or transgender people are criminalised or where laws and state practices restrict LGBTQ+ expression or data collection, making reliable survey participation unsafe. These jurisdictions reflect the classifications provided by the Human Dignity Trust (https://www.humandignitytrust.org/lgbt-the-law/map-of-criminalisation/).

Figure 1: Percentage distribution of missing data (NA) for sexual orientation among Zoe users across 122 countries, grouped by continent, from January 2023 to May 2025



In Africa, several countries, such as Western Sahara and Djibouti, have nearly 100% missing data, suggesting major response gaps, while South Africa shows lower though still high proportions. The Americas show more variation, with the United States and Canada displaying lower missing rates than other countries. In Asia, countries such as Yemen and Oman exhibit extremely high missingness, while Japan and South Korea

show much lower levels. Europe demonstrates overall lower proportions, with countries like Liechtenstein and Austria having minimal gaps. In Oceania, smaller island nations show higher missingness, while Australia and New Zealand have much lower rates.

Figure 1 highlights regional disparities in data completeness, with Europe and Oceania showing the lowest missingness and Africa and Asia the highest. These gaps likely reflect cultural, societal, or legal factors shaping individuals' willingness to disclose personal information. High nonresponse rates can bias results and obscure regional trends.

Beyond technical adjustment, missingness also raises conceptual questions about visibility. Feminist data theory highlights that absences in data are meaningful. As D'Ignazio and Klein (2023) note, data are never neutral but situated within power relations that determine whose lives are visible. High levels of missing identity information on Zoe therefore reflect broader inequalities in safety and representation. Feminist approaches encourage reading data absences as social artifacts that trace structural conditions governing who can safely disclose. As Guyan (2025) argues, app design itself shapes which forms of gender and sexuality can be expressed, often narrowing recognition. Similarly, Campaioli (2023) shows how ostensibly inclusive affordances, such as an 'other' gender category, may still reproduce binary logics. Together, these perspectives underscore that both presence and absence in digital datasets arise from sociotechnical and cultural processes regulating queer self-representation online (D'Ignazio and Klein 2023; Guyan 2025; Campaioli 2023).

3. Results

Figure 2 shows the global distribution of sexual orientation among Zoe users who created an account between January 1, 2023, and May 31, 2025. Among 913,253 users analyzed, 48.3% identify as lesbian, 39.8% as bisexual, 6.6% as pansexual, 3.4% as queer, 1.2% as gay, and 0.7% as asexual.

Figure 3 breaks down these estimates by age, dividing users into five groups: 17 to 19, 20 to 29, 30 to 39, 40 to 49, and 50+. Over half of all users are aged 20 to 29, followed by those aged 30 to 39, 17 to 19, 40 to 49, and 50+. Users under 30 are less likely to identify as lesbian and more likely to identify as bisexual. The share of users identifying as queer decreases with age, while older users are more likely to identify as gay. Asexuality remains the least common identity, averaging just above 0.6% overall and peaking at 0.9% among users aged 20 to 29 and over 50.

Figure 2: Percentage distribution of Zoe users, disaggregated by sexual orientation into six categories (lesbian (48.3%), bisexual (39.8%), pansexual (6.6%), queer (3.4%), gay (1.2%), and asexual (0.7%)), based on users who created an account between January 2023 and May 2025

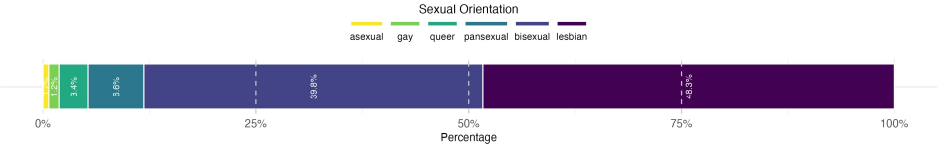
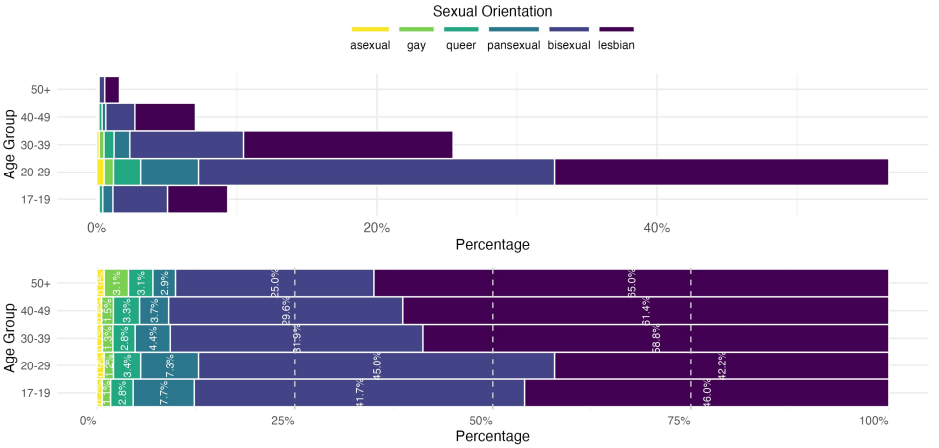


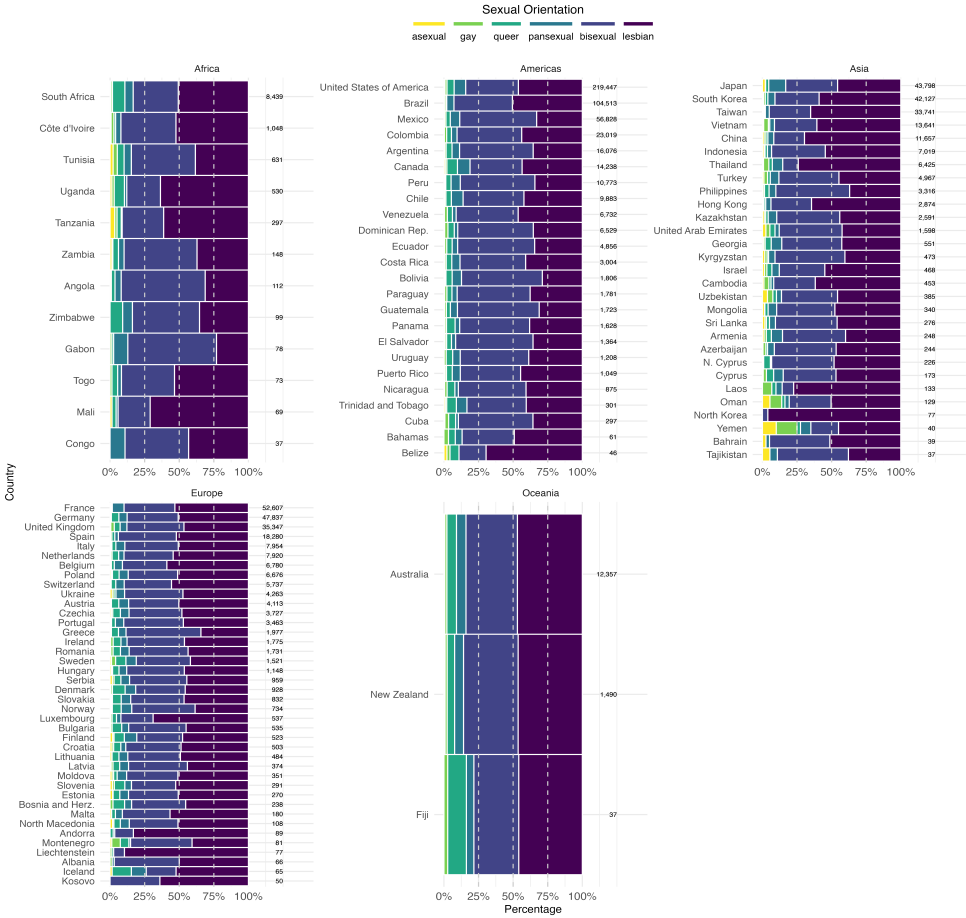
Figure 3: Percentage distribution of Zoe users, disaggregated by sexual orientation into six categories (lesbian, bisexual, pansexual, queer, gay, and asexual) and by five age groups (17–19, 20–29, 30–39, 40–49, and 50+)



Notes: The top figure presents percentages computed over the full population, showing the overall distribution of sexual orientations. The bottom figure illustrates percentages of sexual orientation calculated within each age group, highlighting variations in sexual orientation distribution by age.

Figure 4 presents the distribution of sexual orientations by country, grouped into five continents: Africa, the Americas, Asia, Europe, and Oceania. It includes 109 countries with more than 30 users, out of a total of 162 countries in the dataset. The numbers at the end of each bar show country-level sample sizes.

Figure 4: Percentage distribution of Zoe users, disaggregated by sexual orientation into six categories (lesbian, bisexual, pansexual, queer, gay, and asexual), by country (only countries with more than 30 new users and where homosexuality is not criminalized are included), grouped by continents (Africa (13 countries), Americas (24 countries), Asia (29 countries), Europe (40 countries), and Oceania (3 countries)) from January 2023 to May 2025



Note: The numbers at the end of each bar represent the number of users in each country.

In Africa, distributions are relatively homogeneous, with lesbian identity predominant in most countries. South Africa, with the largest user base, shows greater diversity across categories.

In the Americas, sexual orientations are more varied: bisexual, lesbian, and queer identities are prominent in the United States and Canada, while Brazil also displays broad diversity but with lesbian and bisexual users most common.

In Asia, patterns range from highly concentrated (e.g., Kazakhstan, Bahrain) to diverse (e.g., Israel, Taiwan). Queer and pansexual identities are more visible in countries with larger user bases, such as Israel and Taiwan, whereas asexuality appears minimally.

In Europe, sexual orientation is generally more evenly distributed, with Switzerland and the Netherlands showing balance across lesbian, bisexual, and pansexual categories, while smaller countries, such as Luxembourg, show more concentrated patterns.

In Oceania, Australia and New Zealand display broad distributions similar to Europe, while Fiji's smaller sample is largely composed of lesbian users.

Sample sizes vary considerably across regions, from small numbers in countries like Luxembourg and Fiji to much larger user bases in the United States, Canada, Brazil, and South Africa. These differences partly reflect population size, as well as variation in platform reach and usage. Larger samples allow for finer distinctions across sexual orientations, whereas smaller samples produce more concentrated distributions.

Equivalent global datasets for comparison are unavailable. However, national data from the United States and the United Kingdom offer useful benchmarks. In the United States, the Generations and TransPop studies show that most LGBTQ adults identify as bisexual (51.2%), followed by lesbian (28.8%), queer (7.9%), and pansexual (4.6%) (Williams Institute 2023). Zoe data from 219,447 US users show a similar pattern: 45.5% lesbian, 38.7% bisexual, 8.1% pansexual, 5.1% queer, 1.4% gay, and 0.7% asexual. Both sources highlight the prominence of bisexual and lesbian identities, though bisexuality leads in population surveys and lesbian identity in Zoe.

In the United Kingdom, national data show that 3.4% of females identify as LGB, with 35.3% of them identifying as lesbian and 64.7% as bisexual (Office for National Statistics 2023b). Zoe data from 35,347 UK users provide a more detailed breakdown: 46.5% lesbian, 41.2% bisexual, 4.9% pansexual, 4.2% queer, 2.5% gay, and 0.5% asexual. While the Office for National Statistics figures reflect population-level estimates, Zoe offers a more granular view of LGBTQ+ women's identities, showing a near-even split between lesbian and bisexual users and visibility of pansexual and queer categories.

4. Conclusions

This study provides a descriptive foundation for developing more dynamic and inclusive approaches to demographic research on LGBTQIA+ populations.

Our findings show that sexual orientation is expressed in diverse ways across age groups, regions, and cultures. Lesbian and bisexual identities are most common globally, representing 48.3% and 39.8% of users, respectively. Younger generations, particularly those under 30, display greater identity diversity, being more likely to identify as bisexual or queer, while older users more often identify as lesbian or gay. Asexuality remains a small but visible category across all age groups.

Patterns also vary regionally. Countries in the Global North, such as the United States, Canada, and Switzerland, tend to exhibit greater diversity in sexual identities than those in the Global South, where lesbian or bisexual identities dominate. Yet exceptions such as South Africa and Israel show broader representation within their regions. Notably, asexuality appears in countries outside the Global North, including Tajikistan, Yemen, Oman, Uzbekistan, the United Arab Emirates, Tunisia, and Tanzania, suggesting the need to move beyond the overreliance on Western data when studying emerging identities.

Several limitations must be acknowledged. As a dating app for women, Zoe excludes men and nonusers of digital platforms. Sample sizes vary across countries, and missing data, especially in Africa and Asia, likely reflect social or cultural barriers to disclosure. Users can select only one sexual orientation, limiting representation of fluid or multiple identities, and the lack of longitudinal data precludes analysis of identity change over time (Mittleman 2023; Winer et al. 2024). The absence of write-in options also restricts visibility for less common or emerging labels (Julian, Manning, and Kamp Dush 2024). These design features shape what forms of sexual diversity can be expressed and who remains unseen.

Although not nationally representative, Zoe data offer a rare global perspective on sexual identity disclosure among queer women and nonbinary users. Like other digital data sources, they likely overrepresent younger, urban, and higher-income individuals due to persistent gender and socioeconomic gaps in mobile and internet access (Breen et al. 2025; Gray, Gainous, and Wagner 2016).

Generational and cultural shifts remain central to understanding LGBTQIA+ identification. Millennials and Gen Z users reveal expanding spectra of sexual identities, while older cohorts reflect more traditional categories. Expanding research frameworks to include emergent identities, such as asexuality and pansexuality, is critical to capturing this evolution. Despite its limitations, this study provides a global baseline for understanding patterns of sexual orientation disclosure and offers a foundation for future comparative research. Finally, data from dating apps and similar digital platforms can

complement traditional demographic surveys. The Generations and Gender Programme (GGP) wave 2, for instance, now includes a new module on sexual orientation (Rouvroye et al. 2024). This initiative can help validate findings from digital trace data and advance comparative research on sexual minorities, partnership formation, and family dynamics, contributing to a more comprehensive understanding of global LGBTQIA+ identities.

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