

Measuring Irregular Migration

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The Irregular Migrant Population of Europe

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Executive Summary

This paper presents the findings of a multi-country assessment of irregular migration stocks, that is, the assessment of the estimated number of irregular migrants living in each country at a given point in time. The analysis covered the period between 2008 and 2023 and was undertaken as part of the Measuring Irregular Migration and related Policies (MIrreM) project, which looks at irregular migration in 20 countries. MIrreM is a follow-up to the Clandestino project, which carried out a similar exercise in 12 European countries between 2000 and 2008.

Some of the key findings of this Working Paper include:

- Based on the most recent estimates in the Database, there were between 2.6 million and 3.2 million estimated irregular migrants living in 12 European countries (Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, Netherlands, Poland, Spain and the UK) over the period 2016 and 2023.
- This figure represents less than 1% of the total population and between 8% and 10% of the population that was born in countries outside of the Schengen Area (for EU countries) and the Common Travel Area (for Ireland and the UK).
- Amongst the countries studied by the MIrreM project, the United States has the largest estimated irregular migration population not only in terms of absolute numbers, but relative to its total and foreign-born populations.
- Finland, meanwhile, has the smallest estimated irregular migration population in terms of its size and its share of the total and foreign-born populations amongst the countries we covered.
- Taking the 2008 estimates produced under the Clandestino project as a baseline, there was no definitive change in the estimated number of irregular migrants across the 12 European countries.¹
- At the individual country level, however, many of the estimated irregular migration populations across Europe appear to have changed: in three countries, estimates suggest greater numbers, in five countries, the estimated irregular migration population remained the same and, in five countries, it declined.
- The countries with the largest estimated irregular migrant populations in Europe (the UK and Germany) have some of the most outdated estimates and represent a significant gap in the knowledge base.

¹ That is, the new estimate's lower bound is higher than the 2008 estimate and its upper bound is lower; the updated estimate is more finessed but there is still a significant range which remains a numerical black box, within which we cannot say with any confidence whether there was an increase, decrease or no change in the aggregate estimate.

Readers are encouraged to explore the following resources, which were produced alongside and complement this paper:

- Discussion of the context, the underlying concepts, and the methodology used in the data collection and quality assessment of the estimates of irregular migration stocks and flows, in *Tools for collecting information on irregular migration estimates and indicators* (Vargas-Silva et al., 2024, forthcoming).
- The *MIRreM Public Database on Irregular Migration Stock Estimates (version 2)* and accompanying README file (version 2) (Kierans et al., 2024).
- The *MIRreM Public Database on Irregular Migration Flow Estimates and Indicators* (Siruno et al., 2024a) and accompanying analysis, *MIRreM Working Paper on Irregular Migration Flows* (Siruno et al., 2024b).

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THE MIRREM PROJECT

MIRreM examines estimates and statistical indicators on the irregular migrant population in Europe as well as related policies, including the regularisation of migrants in irregular situations.

MIRreM analyses policies defining migrant irregularity, stakeholders' data needs and usage, and assesses existing estimates and statistical indicators on irregular migration in the countries under study and at the EU level. Using several coordinated pilots, the project develops new and innovative methods for measuring irregular migration and explores if and how these instruments can be applied in other socio-economic or institutional contexts. Based on a broad mapping of regularisation practices in the EU as well as detailed case studies, MIRreM will develop 'regularisation scenarios' to better understand conditions under which regularisation should be considered as a policy option. Together with expert groups that will be set up on irregular migration data and regularisation, respectively, the project will synthesise findings into a Handbook on data on irregular migration and a Handbook on pathways out of irregularity. The project's research covers 20 countries, including 12 EU countries, the United Kingdom and the United States.

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Irregular Migration; Data; Migration; Immigration; Estimates.

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1. INTRODUCTION

1.1 MEASURING IRREGULAR MIGRATION

This paper documents the process and outcome of the compilation and assessment of irregular migration stock estimates – that is, the estimated number of irregular migrants living in a country at a given point in time – in European and North American countries between 2008 and 2023. This exercise was led by the team at the University of Oxford’s Centre on Migration, Policy and Society (COMPAS) as part of the Horizon Europe project, Measuring Irregular Migration and related Policies (MIrreM). The MIrreM project builds on similar work undertaken by the Clandestino project, which compiled and assessed the quality of irregular stock estimates between 2000 and 2008.

As was the case with Clandestino, MIrreM aims to contribute to the evidence base on irregular migration, which, given the salience of the phenomenon in policy circles and the public debate, is insufficient (Ambrosini and Hajer, 2023; Triandafyllidou; 2009). The barriers to better data on irregular migration are multiple and significant.

Terms and definitions

In the first instance, there is no universal agreement on who counts as an ‘irregular migrant’, complicating efforts to quantify the phenomenon. Terms such as ‘undocumented’, ‘illegal’, and ‘asylum-seeker’ can be deployed as synonyms, despite meaning different things, depending on the context, while other types of irregular migrants, such as visa over-stayers, may be excluded (Sumption, 2024: 50-55). This in turn affects what shows up in the data (Anderson and Blinder, 2024).

The MIrreM Public Database on Irregular Migration Stock Estimates (the Database) draws on estimates produced in a variety of contexts, and therefore presents and assesses estimates that make use of a range of terms.

Following Clandestino, the irregular migration population under the MIrreM project includes (Kraler and Ahrens, 2023):

- Those without any legal residence status in the country they are residing in.
- Those, although possessing an authorisation of some sort whose presence in the territory – if detected – may be subject to termination through an order to leave and/or an expulsion order because of their activities, such as international students working more than their visa permits.

In line with Homberger et al. (2022), MIrreM also includes people with ‘precarious statuses’ – i.e., those whose status situation resembles that of irregular migrants (Vargas-Silva et al., 2024), such as:

- EU citizens from other EU Member States who are at risk of being issued a removal order and/or residence ban on public order grounds or a criminal charge.
- EU citizens who do not meet the residence requirements of the Citizens Directive (Directive 2004/38/EC), notably the sufficient means requirements and who do not yet enjoy the right to permanent residence.
- Third-country nationals whose removal has been formally suspended (*‘Duldung’*/Toleration in DE).
- Victims of trafficking from third countries holding a temporary permit on grounds of trafficking.
- Unaccompanied migrants who may enjoy protection from expulsion despite an unsuccessful asylum claim.
- Individuals that may in principle be entitled to residence but have not obtained a residence title (e.g. children of legal migrants who have failed to renew their permits).

Therefore, when compiling stock data from across the MIrreM countries, we were interested in estimates of the following population groups, irrespective of the sometimes divergent terms used to describe them: (1) migrants in an irregular situation; (2) migrants with a provisional status or a reasonable claim to a provisional status, and (3) EU citizens from other EU Member States without a right to residence as explained in more detail in Table 1.

Table 1: MIRreM definitions of irregular migrants and related categories

Category	Definition	Examples
Migrants in an irregular situation	Includes: a) third-country nationals (i.e. non-nationals in CA, US, UK) without any legal residence status in the country they are residing in, and b) Persons engaged in an activity that violates the terms of their permission to remain in the country and if detected could result in the revocation of their permission to remain in the country and/or their expulsion from it.	Third-country nationals (non-nationals in CA, US, UK) without any status
		Students working more than allowed
		Unregistered persons with false papers and identities
		Persons issued with a return decision who are not removed.
Migrants with a provisional status or a reasonable claim to a provisional status	Third-country nationals (i.e. non-nationals in CA, US, UK) who enjoy a provisional right to stay subject to a review of their case.	Persons whose removal has been formally or informally suspended
		Individuals awaiting status determination
		Unaccompanied minors whose asylum claim has been rejected
		Third country (non-national) victims of trafficking with a provisional permit to stay
EU citizens from another EU MS without residence rights	EU nationals who do not or no longer enjoy the right to movement and/or settlement in the EU and are liable to be removed because they do not meet residence conditions or are subject to restrictions of free movement rights.	EU nationals with a residence ban on public order grounds or criminal charges
		EU citizens without long term residence and without sufficient means

In theory, all these population groups are within the scope of the Public Database on Irregular Migration Stock Estimates. In practice, however, the Database primarily reports estimates of migrants in an irregular situation and, to a lesser degree, migrants with a provisional status or a reasonable claim to a provisional status (e.g. asylum-seekers in PEW, 2019).

Estimating 'hidden populations'

In addition to the problem of slippery terms and definitions, a central issue plaguing efforts to produce reliable estimates on irregular migration is the difficulty of observing the phenomenon of irregular migration itself. Clandestine entry is by its very nature deliberately hidden from view and instances of illegal residence or work and other violations of visa terms are challenging to identify. Irregular migrants have incentives to keep out of sight, particularly of authorities, with detection and enforcement measures at times having the effect of pushing them further away from the state and its institutions, such as health services (Essex et al., 2022). For the same reasons, they are less

likely to participate in surveys, censuses and other overt statistical activities. As Jandl puts it (2011:54):

“Thus, the number of irregular migrants that are documented at any one time in official statistics is inevitably only a subset of the total population of irregular migrants. To know more about the total population, we need to obtain an estimate of the “dark figure”, that is, that part of the irregular migrant population that is not documented in the data but is likely to constitute the major part of it.”

Furthermore, the population of irregular migrants is not static. Individuals move between regular, precarious and irregular immigration statuses without necessarily physically moving (for example, by beginning to work more hours per week than their visa allows), creating a moving demographic target.

Methods developed to estimate irregular migration do their best to take these challenges into account, however, all come with their own advantages and limitations. Work Package 6 of the MIrreM project examines 21 of these methods against the following dimensions (Rodríguez Sánchez and Tjaden, 2024):

Table 2: Main dimensions for the review of methodological approaches in Estimating Irregular migration – a review of traditional and innovative data and methods

Dimension	Description
Main idea	Main underlying rationale of the methodological approach
Data source	Main data source (e.g. administrative, survey, mixed)
Coverage / Definition	Comprehensiveness of the coverage, which population groups are and are not included in the estimate.
Assumptions	Quantity and quality of assumptions the method relies on.
Reliability	Extent to which the approach can be repeated and provide consistent results.
Scalability	Degree to which the approach can be applied in other countries.
Ethical issues	Potential ethical concerns for researchers when applying each method.
Examples	Selection of published works relevant to each approach.

Source: Adapted from Rodríguez Sánchez and Tjaden (2024).

Categorising the methods under review as either ‘traditional’ or ‘innovative’², Rodríguez Sánchez and Tjaden report that innovative approaches to estimating irregular migration over the last 10 years have done well to overcome some of the constraints of traditional methods. At the same time, however (Ibid.:3):

² ‘Innovative’ methods in this review were characterised by either using novel data sources (e.g., digital data) or applying a new estimation method to standard data sources. The authors identified these innovative approaches through literature review and discussions with experts (i.e., Albert Kraler; Migration Policy Institute staff; Ettore Recchi; and the participants to the MIrreM expert workshop “Innovative approaches to measuring irregular migration”, which took place on the 25th of April 2022 in Brussels). See Rodríguez Sánchez and Tjaden (2024: 9) for more information.

“Approaches remain highly fragmented depending on the type of data source used for the estimation. Some approaches can only be applied in specific countries due to data limitations. Any evaluation of the relative performance of various approaches is still missing due to the absence of comparative assessments testing various approaches for the same context.”

Similar to Rodríguez Sánchez and Tjaden’s Working Paper, the aim of this paper and the accompanying database on irregular migrant stocks is to go some way towards making sense of the state-of-play around irregular migration stock estimates and how it has changed since 2008. Where the above authors contributed to this goal by compiling and assessing the quality of different types of methodologies, we are concerned with assembling and evaluating as many individual stock estimates as was feasible under the terms of the MIrreM project. As such, we bring together a greater number of estimates with fewer details on the details of their methodologies. Section two of this paper explains this process and section three presents our findings.

2. METHODOLOGY

2.1 BACKGROUND AND SCOPE

The aim of our work was to develop a publicly accessible database containing as complete an inventory and critical appraisal of irregular migration stock estimates as possible for the 20 countries covered by the MIRreM project over the period 2008 to 2023.

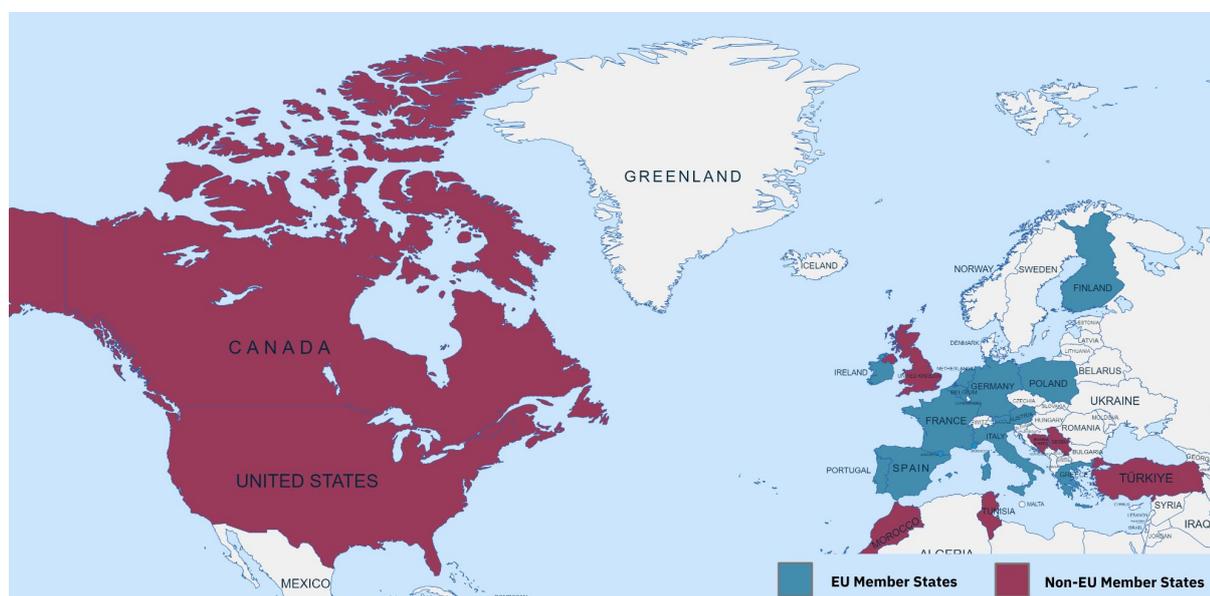


Figure 1: Geographical overview of countries covered by the MIRreM Project

Source: Hendow et al., 2024.

The MIRreM approach to cataloguing and assessing the quality of irregular migration stocks builds on work pioneered under a previous EU funded project, *Clandestino*,³ although with some significant differences (Table 3).

³ See the *Clandestino* website, where some project results are available: <https://irregular-migration.net/>

Table 3: Comparative scopes of the Clandestino and MirreM projects' approach to irregular migration stock estimates

Project		Clandestino	MirreM
Period covered		2000 to 2008	2008 to 2023
Countries in scope	EU	Austria Czech Republic Germany Greece France Hungary Italy Netherlands Poland Slovakia Spain	Austria Belgium France Finland Germany Greece Ireland Italy Netherlands Poland Portugal Spain
	Non-EU	United Kingdom*	Bosnia and Herzegovina Canada Morocco Serbia Tunisia Türkiye United Kingdom United States
Number of countries in scope		12	20
Number of countries in scope with estimates		12 (all countries above)	14 (countries in bold above)
Stock estimates compiled		Yes	Yes
Quality of stock estimates assessed		Yes – against 3 criteria: documentation, validity and reliability.	Yes – against 5 criteria: accessibility, documentation, reliability, methodology and data.

Note: (*) At the time of Clandestino, the UK was a member of the EU.

2.2 DATA COLLECTION PROCESS

National-level rapporteurs with expertise in the irregular migration situation in the country for which they were responsible were tasked with compiling and providing an initial quality assessment of the MIrreM stock estimates.⁴ To ensure consistency across the 20 countries, the MIrreM teams at Danube University Krems (project lead), the University of Maastricht (irregular migration flows) and the University of Oxford (irregular migration stocks) developed data collection and quality assessment tables for the local research teams to populate (Table 4) and guidelines for how to go about collecting information and filling out the tables.

Typically, the estimates rapporteurs reported came from academic articles, government statements and reports, think-tank and NGO outputs and media articles. In some cases, rapporteurs conducted interviews and held workshops with data producers and users to gather additional estimates and verify the results of their desk research.

Table 4: Reporting matrix for estimates of irregular migration stocks and flows, with explanation of the type of information to be filled out

Type	Period (and frequency)	Central estimate	Range	Group	Datasets used
Quality assessment rubric					
	1 to 3 points each	Explanation			
Accessibility					
Documentation					
Reliability					
Methodology					
Data					
Background information:					
Link:					
Use in policymaking:					

Source: Vargas-Silva et al., 2024. Note: an additional table was produced by partners at Maastricht University to collect information on irregular migration flows.

To make the most out of the data collection, and provide support to the rapporteurs, the teams at Maastricht and Oxford also developed a ‘Country Context’ document, which elicited qualitative

⁴ See Annex 1 for a list of the national-level rapporteurs.

information from the rapporteurs about the irregular migration data situation in their country. It included questions such as, ‘What were the main gaps in the evidence base (i.e., unmet user needs) that emerged during your data collection process?’ The two teams organised an explanatory webinar for the rapporteurs and made themselves available for queries from the rapporteurs on an ad hoc basis, in addition to coordinating regularly amongst themselves.

Type

To indicate if the estimate is of an irregular migrant stock or flow.⁵ Note that this paper is concerned with the collection and assessment of irregular migration stock estimates only; as such, the below discussion omits implications on reporting on flow estimates. For information about irregular migration flow estimates and indicators collected and analysed under the MIrreM project see Siruno et al., 2024b.

Period (and frequency)

When the estimate is for (typically the year at end of December/beginning of January) and how frequently the estimate is produced (e.g. annually, ad hoc). Where estimates covered multiple periods, rapporteurs imputed these figures into separate rows above the data assessment rubric. For example, estimates for 2012, 2013, 2015, 2020 could all be included in the same table, so long as the estimate for each year was assessed identically against each criterion of the rubric. As MIrreM’s scope is 2008 to 2023, estimates that only cover a period before 2008 were not included.

Central estimate

The central estimate (where a range is provided) or the single estimate (where only a single value is provided).

Range

Where there is a range of values, sometimes called a margin of error, the lower value represents the lowest likely number of irregular migrants and the higher represents the highest likely number of irregular migrants.

Groups

The population group that is being estimated. Typically, this is the total number of irregular migrants, but estimates are sometimes broken down by subgroup (e.g., adults and children).

So far as was reasonable, rapporteurs completed a separate table for each sub-group. For example, if an estimate was disaggregated by gender, separate tables were produced for the male and female populations. However, there were cases where the sub-groups were too numerous and similar to reasonably expect the rapporteurs to complete a separate table for each sub-estimate, especially when there was little to be gained scientifically (i.e., each sub-group estimate was assessed identically against the five criteria). In these situations, rapporteurs were able to explain which additional available sub-group estimates were available in the background information field.

As a result, in countries where rapporteurs more frequently consolidated sub-groups *and* there were high levels of disaggregation we expect to find relatively suppressed numbers of estimates. On the other hand, in countries where rapporteurs resisted consolidating multiple sub-group

⁵ Stocks pertain to a population of irregular migrants at a specific point in time while flows refer to changes in the stock of irregular migrants over time. For more information, see Vargas-Silva et al., 2024.

estimates into single tables *and* there were high levels of disaggregation, we expect decreasing marginal value of the estimates and the appearance of more estimation activities taking place than actually are. We will see later how this potential for bias in reporting affected the dataset and our analysis of it.

Datasets

The datasets that were used to construct the estimate, for example: census, survey data, regularisation data, enforcement data.

Quality assessment rubric

Informed by the Clandestino project and more recent developments (Bergdahl et al., 2007; Eurostat, 2019; Jandl et al., 2008; Wilkinson et al., 2016), rapporteurs were asked to assess the quality of each estimate against five criteria: accessibility, documentation, reliability, methodology, and data.

Every estimate accorded its own reporting table, therefore received five quality assessment scores – one for every criterium, which were classified as either 1 (low), 2 (medium) or 3 (high). Rapporteurs explained their scoring of each criteria under the corresponding free text field. Recognising the inherent subjectivity in assessing quality, we aimed to be as directive and specific as possible, as detailed in Table 5, which outlines the grounds for attributing points to the estimates against five criteria.

Table 5: Criteria for the M_{Irre}M quality evaluation of estimates

M _{Irre} M criteria	High (3 points)	Medium (2 points)	Low (1 point)
Accessibility	All raw data used to construct the estimate is publicly available and electronically accessible with no permissions required.	At least some of the raw data used to construct the estimate is only available on request from relevant authorities. If some of the data is not available at all, then give 1 point.	At least some of the raw data used to construct the estimate is not available for most potential users.
Documentation	Full documentation about data and methods are available and accessible. The level of information allows for replication of the estimates.	Limited information on data, estimation methods, and quality are available and accessible. Insufficient details to replicate the estimates.	Information on data and estimation methods is neither available nor accessible.
Reliability	Analysis includes demonstrated reliability indicators, with limitations clearly specified (e.g. ranges, alternative	Some discussion of reliability, but no indicators in quantitative terms.	Missing a discussion of reliability.

	calculations, characterisation as minimum or maximum estimate).		
Methodology	Methodology is adequate and comprehensive including, but not limited to, rigorously implemented multiplier or residual studies.	Methodology is adequate, even if not comprehensive, including but not limited to: (1) Simple multiplier calculations; (2) Simple residual estimates; (3) Adjustment of older estimates with partly insufficient data; (4) Aggregate estimates for different groups, partly relying on plausibility calculations.	Inadequate method and application of the method; resulting estimate lacks foundation
Data	The analysis relies on an adequate dataset not likely to have a considerable bias, including no bias for any group estimates. There are no strong assumptions regarding the data.	The analysis relies on a biased dataset. There are plausible adjustments and assumptions. This includes cases in which the dataset does not provide the information necessary or it is necessary to make strong assumptions.	The analysis relies on a biased dataset, without proper adjustments. The assumptions regarding data are not plausible.

Source: Vargas-Silva, 2024.

Background information

The person or institution responsible for the estimate and a citation to the work; a brief explanation of how the estimation was arrived at – e.g. the methodological approach; and other key details, such as additional sub-group estimates not allocated separate tables or previous estimates this estimate builds on.

Link

A link to the main document(s) related to the estimate(s) (e.g. report, academic paper, presentation) or a note that it is unavailable online.

Use in policymaking

A brief reflection the policy impact of the estimate, if indeed there was one.

A final word on the data collection process

Throughout the data collection exercise, and particularly following final submission of the data tables, the team at Oxford carried out quality checks, including through seeking clarifications from the rapporteurs and making efforts to harmonise inputs and formatting across the different countries, without losing the richness of the rapporteurs' insights or altering their meaning. Particular care was taken to extract as much detail as possible from the rapporteurs about the justifications of the quality assessments. Scores were revised when found to be inconsistent with the criteria of the quality assessment rubric.

Following checks and revisions, the data tables were consolidated into a single database, the *MIRreM Public Database on Irregular Migration Stock Estimates* (Kierans et al., 2024), to which we turn in the following section of this paper.

3. ANALYSIS OF THE DATABASE ON IRREGULAR MIGRANT STOCK ESTIMATES

3.1 THE MIRREM PUBLIC DATABASE ON IRREGULAR MIGRATION STOCK ESTIMATES

The *MIRREM Database on Irregular Migration Stock Estimates* ('the Database'; Kierans et al., 2024), brings together the stock estimates that were compiled and initially assessed by the national-level rapporteurs and then reviewed by the team at Oxford. Along with a README file, which includes a codebook and other descriptive material as reference for prospective users, the Database is freely available for download. The most recent version of the Database can be found at the DOI [10.5281/zenodo.10646738](https://doi.org/10.5281/zenodo.10646738).

In addition to reviewing the data tables produced by the rapporteurs – with particular attention paid to the five quality assessment scores and their corresponding explanations – the Oxford team developed an aggregate quality score.

The aggregate quality score combines the scores allocated to the five criteria (access, documentation, reliability, methodology and data) into a single measure. Following others (e.g., Nurse et al. 2023), we recognised that not all the criteria bore equally on the overall quality of the estimate. As such, in our construction of the aggregate quality score, we interrogated the relative importance of each criterion vis-à-vis the estimate as a whole and, in response, introduced weights and thresholds to the calculation of the aggregate quality score, which we explain below.

We hope to provide an indicative score that reflects, to the best of our understanding, not only what is set out in the rubric assessment for the individual criteria formulated at the beginning of the project, but emerging findings from the MIRREM and other research projects to date. This means taking into account information from across the project's Work Packages, presentations delivered at workshops, panels and papers delivered at the 2024 IMISCOE Conference in Lisbon, and feedback from national- and local-level stakeholders.

We did our best to assess the import of the many viewpoints around this contested and developing research area and incorporate them into the logic behind our aggregate quality score and the broad categorisations into which composite scores are organised (i.e. low, medium and high quality). That being said, we recognise these scores are far from objective – indeed, they reflect the many subjective judgement calls we made throughout the process.

In full recognition of this, we have set out to make as transparent as possible our workings and the rationale behind them and we have made the raw data freely accessible and available for download. The aim is to invite others to interrogate this process, comment on it, and as a community finesse it over time.

The aggregate quality score is assembled as follows:

Access (A) to the raw data on a freely public basis, a requirement of a (high) score of 3 according to the MIRRreM assessment rubric, is ideal but not a requisite of a high-quality estimate. There are good reasons why some data are safeguarded. Certain barriers to access potentially sensitive data, such as applying to the data holder or completing a training course, are commonplace in the research community and should not negatively impact the quality of an estimate. Therefore, we give this criterion a half-weight of 0.5.

Documentation (D) is key to transparency and replicability – essential features of a high-quality estimate. However, for our purposes, some types of documentation are more important than others. The most critical type of documentation for our exercise concerns the methodology and reliability, which we expect to be picked up by those respective criteria. Therefore, we give (D) a standard weight of 1.

Reliability (R) and methodology (M) – both critical to the overall health of an estimate – are given a standard weight of 1.

While the underlying data (T) certainly affects the quality of the estimates they make up, we also accept that no data are entirely free of bias, particularly when it comes to irregular migration. Furthermore, as discussed by Rodríguez Sánchez and Tjaden (2024), advances in methods have the potential to overcome some of these limitations – if only in certain cases. Therefore, this criterion is given a half-weight of 0.5.

Thus, the initial formula for the aggregate quality score (Q) is as follows:

$$Q = \frac{A}{2} + D + R + M + \frac{T}{2}$$

$$\text{Therefore } 4 \leq Q \leq 12$$

Considering the 4 to 12 point range of the aggregate quality score, we adapt the three point traffic light scale of low, medium and high quality we made use of for the individual criteria:

Low quality when $4 \leq Q \leq 8$

Medium quality when $8 < Q \leq 10$

High quality when $10 < Q \leq 12$

The logic for these bands is similar to that found in criterion-based educational assessments with a set pass mark. Estimates are assessed against a fixed set of criteria, rather than in relation to other estimates, with those earning 50% or less of the potential points classified as low quality; those earning more than 50% to as much as 75% of potential points classified as medium quality; and estimates with more than 75% of potential points classified as high quality. This ensures a minimum standard, allows for some qualitative granularity, and accounts for variation in the estimates' strengths and weaknesses.

Finally, we make adjustments to our formula following Vogel and Kovacheva (2008) and stakeholders’ views expressed during M_{Irre}M workshops on the outsized importance of the reliability *R* and methodology *M* criteria on the overall quality of an estimate. Essentially, our view is that an estimate’s overall quality should be bound by the quality of its reliability and methodology.

To put this into action, we construct a threshold which limits *Q* based on *R* and *M*:

- If $R = 1$, then $Q = 4$ (low quality).
- If $M = 1$, then $Q = 4$ (low quality).
- If $R = M = 2$, then $Q \leq 8$ (low quality).
- If $R = 2, M = 3$ then $Q \leq 10$ (low or medium quality).
- If $R = 3, M = 2$ then $Q \leq 10$ (low or medium quality).
- If $R = M = 3$, then $Q \leq 12$ (low, medium or high quality).

In plain language, the aggregate quality score adds together the scores given each to the estimate’s five criteria (either 1, 2 or 3 points each), remembering that the scores given to documentation and data are first divided by two. This means the aggregate quality score can be as low as 4 points and as high as 12 points.

We ensure the overall quality of an estimate cannot exceed the quality of its method and reliability as per Table 6.

Table 6: Rubric for scoring the reliability and method threshold.

		Method (M)		
(R) and (M) quality score		Low quality – 1 pt	Med. quality – 2 pts	High quality – 3 pts
Reliability (R)	Low quality – 1 pt	4	4	4
	Med. quality – 2 pts	4	8	10
	High quality – 3 pts	4	10	12

Revisiting the traffic light system, estimates are categorised as:

- **Low quality** when the aggregate quality score is as low as 4 points to as high as 8 points;
- **Medium quality** when the aggregate quality score is more than 8 points to as high as 10 points;
- **High quality** when the aggregate quality score is more than 10 points to as high as 12 points.

To illustrate how the five criteria translate into an aggregate assessment in practice, consider the following two examples from the Database.

1. A 2022 estimate of size of the irregular migration population in Austria was assessed against the five quality criteria accordingly:

Access (A): 3 points (high); documentation (D): 3 points (high); reliability (R): 2 points (medium); methodology (M): 3 points (high); data (T): 2 points (medium).

$$Q = \frac{A}{2} + D + R + M + \frac{T}{2}$$

$$Q = \frac{3}{2} + 3 + 2 + 3 + \frac{2}{2}$$

$$Q = 10.5$$

The above calculation results in an aggregate quality score (Q) of 10.5 points, which means the estimate is classified as high quality. However, we must take the reliability and methodology threshold into account. According to Table 6, above, an estimate with medium quality reliability and high-quality method yields a threshold of 10 points. As the aggregate quality score cannot exceed 10 points, we reclassify it from 10.5 points (high quality) to 10 points (medium quality).

2. A 2022 estimate of size of the irregular migration population in Italy was assessed against the five quality criteria accordingly:

Access (A): 1 point (low); documentation (D): 2 points (medium); reliability (R): 2 points (medium); methodology (M): 3 points (high); data (T): 3 points (high).

$$Q = \frac{A}{2} + D + R + M + \frac{T}{2}$$

$$Q = \frac{1}{2} + 2 + 2 + 3 + \frac{3}{2}$$

$$Q = 9$$

The above calculation results in an aggregate quality score (Q) of 9 points, which means the estimate is classified as medium quality. According to Table 6, above, an estimate with medium quality reliability and high-quality methodology yields a threshold of 10 points. However, due to the low and medium quality of the estimate's accessibility and documentation criteria, respectively, the score falls below the threshold and the estimate retains its score of 9 points (medium quality).

3.2 TRENDS IN THE QUALITY AND QUANTITY OF IRREGULAR MIGRATION STOCK ESTIMATES

At the time of writing, the Database includes 259 estimates from 14 countries, covering every year within the MIRreM project's scope, 2008 to 2023.⁶ The overall quality of the estimates is fairly balanced, although high quality estimates account for the smallest share. This is a reflection of the scoring criteria, the aggregate score formula, and the quality bands, which themselves stem from judgements made about what constitutes quality in irregular migration estimates and how best to order and present these findings.

Table 7: Aggregate quality assessment of irregular migration stock estimates in the MIRreM Public Database on Irregular Migrant Stock Estimates

Aggregate quality assessment	Score (Q)	Number of estimates	Share of estimates
High	$10 < Q \leq 12$	75	29%
Medium	$8 < Q \leq 10$	96	37%
Low	$4 \leq Q \leq 8$	88	34%
All estimates	$4 \leq Q \leq 12$	259	100%

Source: Kierans et al., 2024.

The number and quality of irregular migration estimates varied year on year (Figure 2). The Clandestino project is largely responsible for the above average number of estimates observed in 2008 – specifically, the collection and adjustment of existing estimates and their assembly into an EU-wide estimate (Kovacheva and Vogel, 2009). Another notable spike in estimates is due to the work of PEW Research Centre, which, in 2019, produced annual estimates for European countries for the years 2014 to 2017 (Conner and Passel, 2019).

⁶ We aim to continue to update the Database over the course of the MIRreM project, as we continue our work and receive feedback from the research and policy communities.

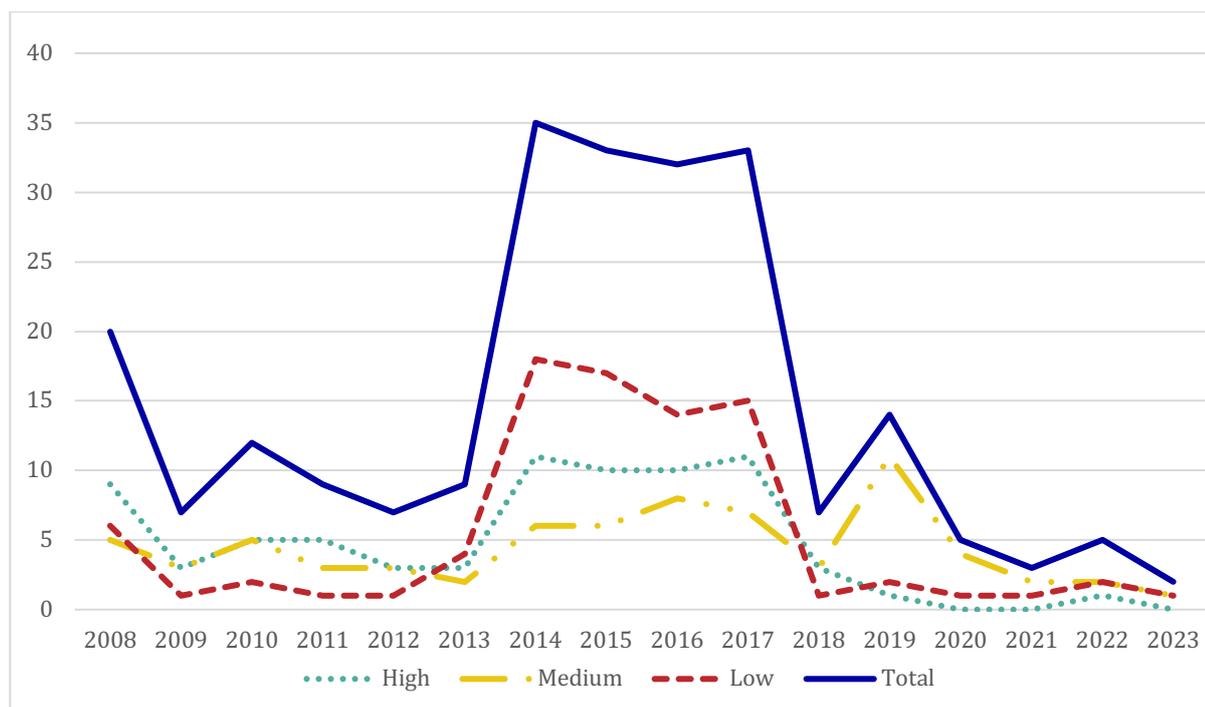


Figure 2: Irregular migration stock estimates, by quality type, 2008 to 2023

Source: Kierans et al., 2024. Note: Multi-year estimates are excluded.

Although few estimates were found for 2023, this should not necessarily be interpreted as a tapering off of efforts to quantify irregular immigration. Rather, it is a natural function of the data and research ecosystem – it takes time for data producers to publish the data that are used to make these estimates, and then there is a further lag as researchers develop and publish their findings. It is worth noting, however, that Work Package 6 of the MIRREM project has reported on, and is itself developing, new approaches that will have the effect of – among other things – improving the timeliness of irregular migration estimates (Rodríguez Sánchez and Tjaden, 2024).⁷

The relationship between increases in the availability of irregular migration estimates and the activities of the somewhat ad-hoc efforts of Clandestino and the European PEW report is clear. While this is due in large part to the low number of irregular migration estimates in the European context, it also shows the potential of sustained investment to significantly enhance the production and even the timeliness of irregular migration estimates.

However, we found some evidence of a trade-off between coverage and quality. The PEW estimates (2017) cover all European countries in the Database and account for an outsized share (48%) of the total number of European estimates in the Database. Their quality, however, is more variable vis-à-vis the quality bands than the other estimates, with a greater likelihood of estimates of low and high quality (Table 8). Partly, this reflects the inherent difficulties estimating the irregular migrant population in certain country contexts, where the underlying data to support traditional

⁷ An up-to-date repository of all MIRREM publications, including those produced under Work Package 6, can be found on the MIRREM website (<https://irregularmigration.eu/>) and the MIRREM Zenodo community (<https://zenodo.org/communities/101061314>).

estimation methods are difficult to access or unsuitable. It also appears to correlate with the efforts the authors of the PEW report made to elaborate on specific country contexts; Germany, Italy and the United Kingdom were explored in greater detail than other European countries and scored better against our quality criteria.

Table 8: Quality assessment of the European PEW and non-PEW estimates in the Database

Aggregate quality assessment	PEW	Non-PEW
Low	55%	25%
Medium	14%	48%
High	31%	26%
Total	100%	100%

Source: Kierans et al., 2024. Note: Includes multi-year estimates.

At a more granular level, the European PEW estimates that were assessed as low-quality scored better and adhered more closely to the average score than the non-PEW estimates that were assessed as low quality. This is an example of the diversity that sits behind the broader quality bands.

Table 9: Quality assessment scores of the European PEW and non-PEW estimates in the Database

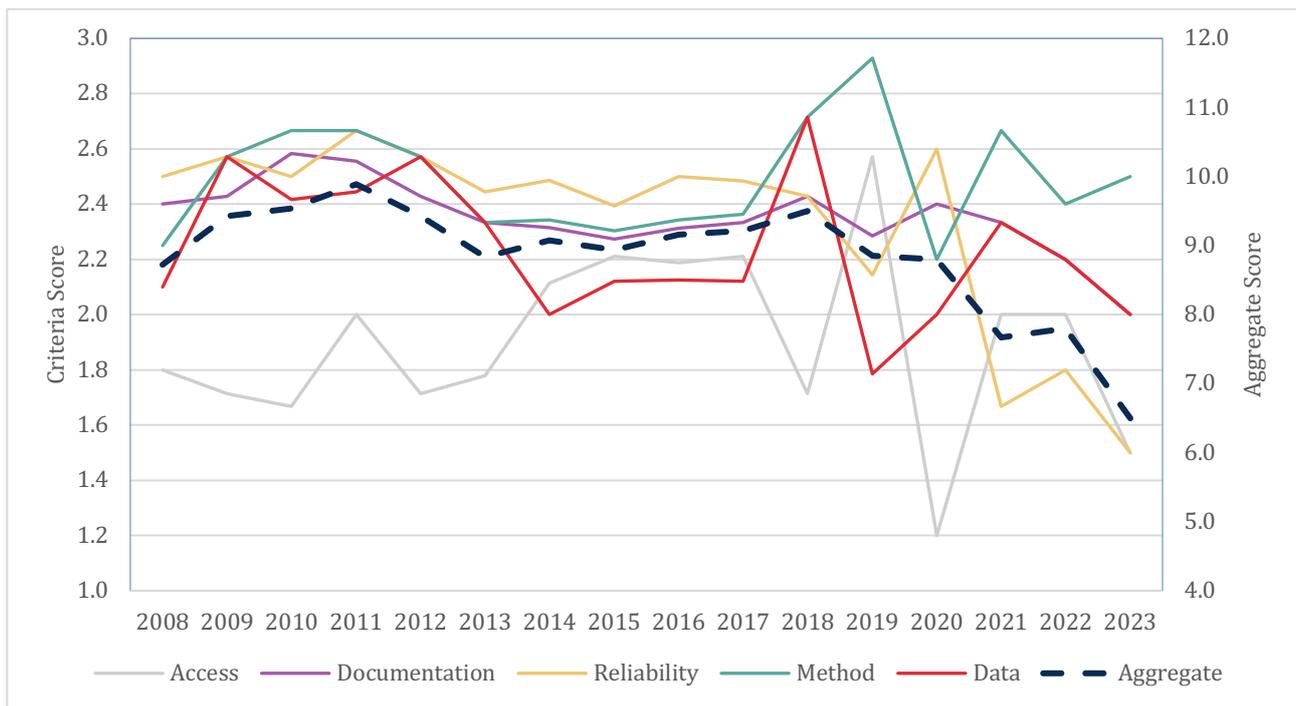
Aggregate quality assessment score	PEW	Non-PEW
Minimum	7	4
Average	9.1	8.8
Maximum	12	12
Standard Deviation	1.66	2.41

Source: Kierans et al., 2024. Note: Includes multi-year estimates.

Note that the Database includes PEW estimates for the United States, which are produced regularly and, according to our assessment criteria, are of better quality on average than the European PEW estimates.

The overall quality of irregular migration estimates, stable between 2009 and 2018, has since tapered off. Over this period, however, this relative overall stability masked significant variability in the quality of the composite criteria (Figure 3).

Figure 3: Average quality scores of irregular migration stock estimates by criteria, 2008 to 2023



Source: Kierans et al., 2024. Note: The aggregate score line is fixed to the right axis; the aggregate scores pictured above average the aggregate scores from the respective year – they are not the result of applying the aggregate score calculation to the averaged criteria scores in a given year. Multi-year estimates are excluded.

There are significant differences in the number and quality of estimates on a country-by-country basis (Table 10). We were unable to locate a single irregular migration stock estimate over the period 2008 to 2023 for 5 of the 20 countries within the project’s scope. All of these were non-EU countries located on the periphery of Europe and conceptualised within the MIRREM project as countries of transit: Bosnia and Herzegovina, Morocco, Serbia, Tunisia and Türkiye.

The only country understood within the MIRREM project as a country of destination where irregular migration estimates were practically absent was Canada. While we were able to find an instance of the Canadian Government speaking to the estimated size of the country’s undocumented population, including the share of undocumented migrants residing in the Greater Toronto Area, there was no information beyond the figures themselves. The Canadian estimates received the lowest possible score when assessed against our criteria, due to their complete lack of detail, although they have been used in national media and political discourse.

Among the 14 remaining countries, the United States produced the greatest number of estimates over the period in question. Furthermore, these estimates were produced by several different institutions, using a range of methodologies, and with the most consistent level of output, year-on-year, of any of the countries considered.

The Belgian estimates are the second most numerous. They are primarily of medium quality and, in comparison to other countries in the Dataset, disproportionately made up of population subgroup breakdowns (e.g., Sub-Saharan African women over 20 years old) produced within the framework of (two) ad-hoc reports.

Italy, Spain and Germany have fewer estimates than Belgium, but they are typically of higher quality. The Finnish estimates, meanwhile, were universally assessed as low quality due to a range of factors, including an absence or near-absence of information about the method and data sources used.

Table 10: Irregular migration stock estimates, by country and quality type.

Country	Low	Medium	High	Total
United States	1	26	13	40
Belgium	8	26	0	34
Finland	23	2	0	25
Italy	0	17	9	25
Spain	3	5	13	21
Germany	0	1	18	19
Poland	9	8	0	17
United Kingdom	3	0	11	14
Ireland	11	2	0	13
Austria	7	4	1	12
Netherlands	8	0	2	10
Portugal	10	0	0	10
France	1	0	8	9
Greece	3	6	0	9
Canada	1	0	0	1
Total	88	96	75	259

Source: Kierans et al., 2024. Note: Includes multi-year estimates.

We should note that, although efforts were made by the authors to verify country-level reporting, it is difficult to determine the extent to which these findings reflect, on one hand, the actual state of the art in the countries under consideration and, on the other hand, differing levels of detail provided by the national rapporteurs.

Due to the way the aggregate quality assessment is tabulated, good practices in relation to meeting discrete criteria risk being obscured; at the same time, the aggregate quality assessments are an important tool for making sense of the bigger picture. By including both the aggregate scores and their constituent criteria scores in the Database, which is freely available for download, we hope to strike a balance between transparency and comprehensibility.

Here we briefly turn to a more granular examination of the point scores that sit behind the aggregate quality assessments, as well as the scores given to the criteria that inform them. This reveals further variations and commonalities in the quality of the estimates across countries (Table 11).

On average, estimates for Germany, France and the United States are – in that order – assessed most favourably in aggregate. Taking just these three countries, we see a greater accessibility in France than in Germany and the United States, although limitations of the underlying data are

notable. All three of these countries score well against the documentation, reliability and method criteria.

While the overall quality of the Austrian estimates are below average, they stand out as a good practice in terms of ensuring the raw data that sit behind their estimates are freely available.

Table 11: MIrreM quality point scores for irregular migration stock estimates, criteria and aggregate, by country.

Country	Access	Documentation	Reliability	Method	Data	Aggregate
Germany	2.0	2.9	3.0	3.0	2.5	11.1
France	2.8	2.8	2.8	2.8	1.9	10.7
United States	1.8	3.0	2.6	2.7	3.0	10.3
United Kingdom	1.9	3.0	2.7	2.7	2.0	10.1
Italy	1.7	2.4	2.4	3.0	3.0	10.1
Spain	2.6	2.0	2.9	2.6	2.5	10.0
Belgium	2.2	2.7	2.0	2.7	2.7	9.5
All countries	2.0	2.4	2.4	2.5	2.2	9.1
Greece	2.1	2.1	2.7	2.0	2.9	9.1
Austria	3.0	2.0	2.3	2.1	1.3	8.3
Netherlands	1.2	2.2	2.2	2.2	1.3	7.9
Ireland	1.6	2.2	2.4	1.9	1.6	7.8
Poland	2.4	1.9	2.1	2.4	1.0	7.6
Portugal	1.8	1.8	1.8	1.8	1.9	7.2
Finland	1.9	1.6	1.9	1.6	1.4	5.9
Canada	1.0	1.0	1.0	1.0	1.0	4.0

Source: Kierans et al., 2024. Note: The aggregate scores pictured above average the respective country's aggregate scores; they are not the result of applying the aggregate score calculation to the averaged criteria scores pictured above. Includes multi-year estimates.

3.3 TRENDS IN IRREGULAR MIGRATION

The big picture

Based on the most recent estimates in the Database of at least a medium aggregate quality, there were between 2.6 million and 3.2 million estimated irregular migrants living in 12 European countries over the period 2016 and 2022, compared to between 1.8 million and 3.8 million in 2008. This figure represents less than 1% of the total population and between 8% and 10% of the population that was born in countries outside of the Schengen Area (for EU countries) and the Common Travel Area (for Ireland and the UK) (Table 12).⁸

We are unable to provide an updated aggregate estimate for all EU-27 countries and the UK, as the Clandestino project did in 2008. However, the EU countries not covered under the MIrreM project make a relatively small contribution to the total population and the number of residents

⁸ MIrreM's definition of irregularity outlined in this paper and described in more detail in Kraler (2023) and Vargas-Silva et al. (2024) makes provisions to include certain residents covered by free movement arrangements. However, the definitions and methods used to estimate irregular migrant populations typically do not. This means that those who satisfy the MIrreM project's broader definition of irregularity are rarely, if at all, included in the Database.

born in countries outside of free movement protocols (less than 20% in 2020); in 2008, these countries accounted for between 5% and 9% of the estimated irregular migration population in the EU-27 and the UK.

Amongst the countries studied by the M^{IR}reM project, the United States has the largest estimated irregular migration population not only in terms of scale, but in relation to its total and foreign-born populations as well. Unlike the European countries in the Database, it is not part of a free movement agreement with any of its neighbours.

Around 15% of the population of the United States is foreign-born, compared to 8% of the foreign-born population not covered by free movement agreements across the 12 European countries – a higher share than any European country in our dataset. Austria and Spain have comparably high levels of non-EU born residents amongst their total populations but much lower estimated rates of irregularity than the United States.

Finland, meanwhile, has the smallest estimated irregular migration population in terms of its size and its share of the total and foreign-born populations amongst the countries we covered.

Table 12: Size and share of the estimated irregular migration population by country, multiple years

Country	Irregular migration estimate		MIrreM quality assessment	Year	As a share of the total population (%)		As a share of the foreign-born population not covered by free movement policies (%)	
	Min	Max			Min	Max	Min	Max
Austria	62,000	62,000	M	2022	0.7	0.7	6	6
Belgium	112,000	112,000	M	2016	1.0	1.0	11	11
Finland	700	5,000	M	2020	<0.1	0.1	<1	2
France	200,000	300,000	H	2017	0.3	0.4	3	5
Germany	600,000	700,000	H	2017	0.7	0.8	8	10
Greece	100,000	200,000	M	2017	0.9	1.9	11	22
Ireland	15,000	20,000	M	2020	0.3	0.4	6	8
Italy	458,000	458,000	M	2023	0.8	0.8	9	9
Netherlands	23,000	58,000	H	2018	0.1	0.3	1	4
Poland	6,000	48,000	M	2019	<0.1	0.1	1	10
Spain	391,000	469,000	H	2019	0.8	1.0	8	10
UK	594,000	745,000	H	2017	0.9	1.1	10	13
12 European countries above	2,560,000	3,180,000	N/A	2016-2023	0.6	0.8	8	9
US	11,080,000	11,620,000	H	2022	3.3	3.5	24	25

Source: [Beresewicz and Pawlukiewicz, 2020](#); [Camorota and Zeigler, 2022](#); [Connor and Passel, 2019](#); [Galvez, 2020](#); [Heinzel et al., 2021](#); [ISMU Foundation, 2023](#); [Jolly et al., 2020](#); [Kierans et al., 2024](#); [Migrant Rights Centre Ireland, 2022](#); [Statistics Austria, 2023](#); [Van der Heijden et al., 2020](#). Total and foreign-born population estimates for EU countries and the UK from EUROSTAT, 2024a and 2024b, and for the United States from Azari et al., 2024 and US Census Bureau, 2023.

Note: For each country, the most recent complete estimate of at least medium quality is pictured above; H = High quality estimate, M = medium quality estimate. Figures are rounded and therefore may not sum to total. Many of these estimates are not directly comparable because, for example, they use different methodologies, make different assumptions or cover different population groups. This in turn affects the aggregate figure.

How has the picture of irregular migration changed since Clandestino?

Taking the 2008 estimates produced under the Clandestino project as a baseline, it is not possible to say that there was definitive a change in the estimated number of irregular migrants across the 12 European countries pictured in Table 13. Although the lower bound is higher than before and the upper bound is lower, suggesting a more finessed estimate, it is conceivable – if unlikely – that the ‘true number’ remains unchanged.

At the individual country level, however, many of the estimated irregular migration populations across Europe appear to have changed: in three countries, estimates suggest greater numbers, in five countries, the estimated irregular migration population remained similar, and, in five countries,

it declined. The estimated size of the United States’ estimated irregular migration population does not appear to have changed between 2008 and 2022. Due to uncertainty around the estimates, we avoided quantifying these changes and have indicated the ‘direction of travel’ instead.

Table 13: Changes in the estimated population of irregular migrants between the Clandestino and MIrreM projects

Country	Project	Year	Est. Irregular Migrant Population		Change since Clandestino
			Min	Max	
Austria	MIrreM	2022	62,000	62,000	Increase
	Clandestino	2008	18,000	54,000	
Belgium	MIrreM	2016	112,000	112,000	No change
	Clandestino	2008	88,000	132,000	
Finland	MIrreM	2020	700	5,000	Decrease
	Clandestino	2008	8,000	12,000	
France	MIrreM	2017	200,000	300,000	No change
	Clandestino	2008	178,000	400,000	
Germany	MIrreM	2017	600,000	700,000	Increase
	Clandestino	2008	196,000	457,000	
Greece	MIrreM	2017	100,000	200,000	Decrease
	Clandestino	2008	172,000	209,000	
Ireland	MIrreM	2020	15,000	20,000	Decrease
	Clandestino	2008	30,000	62,000	
Italy	MIrreM	2023	458,000	458,000	No change
	Clandestino	2008	279,000	461,000	
Netherlands	MIrreM	2018	23,000	58,000	Decrease
	Clandestino	2008	62,000	131,000	
Poland	MIrreM	2019	6,000	48,000	Decrease
	Clandestino	2008	50,000	300,000	
Spain	MIrreM	2019	391,000	469,000	Increase
	Clandestino	2008	280,000	354,000	
UK	MIrreM	2017	594,000	745,000	No change
	Clandestino	2008	417,000	863,000	
12 European countries above	MIrreM	Various years (2016-2023)	2,560,000	3,180,000	No change
	Clandestino	2008	1,800,000	3,500,000	
US	MIrreM	2022	11,080,000	11,620,000	No change
	N/A*	2008	11,200,000	11,500,000	

Source: [Beresewicz and Pawlukiewicz, 2020](#); [Camorota and Zeigler, 2022](#); [Connor and Passel, 2019](#); [Galvez, 2020](#); [Heinzel et al., 2021](#); [ISMU Foundation, 2023](#); [Jolly et al., 2020](#); [Kovacheva and Vogel, 2009](#); [Migrant Rights Centre Ireland, 2022](#); [Statistics Austria, 2023](#); [Van der Heijden et al., 2020](#). Total and foreign-born population estimates for EU countries and the UK from EUROSTAT, 2024a and 2024b, and for the United States from Azari et al., 2024 and US Census Bureau, 2023. Table design conceived of by Maegan Hendow, ICMPD. Note: (*) The United States was not covered by the Clandestino project – an alternative 2008 estimate of good quality (Heinzel et al., 2021) was used instead. Figures are rounded and therefore may not sum to total. Many of these estimates (e.g., for Austria) are not directly comparable because, for example, they use different methodologies, make different assumptions or cover different population groups. This in turn affects the aggregate figure.

The estimated size of an irregular migrant population is one way to look at the phenomenon of irregular migration. It can also be useful to view this population group in relation to the total population and the broader foreign-born populations. Across the 12 European countries in Table 14, there was no major change in the percentage of estimated irregular migrants in the total population between the 2008 Clandestino estimates and the estimates compiled under the MIrreM project. On a country-by-country basis, changes in the ratio of the irregular migrant population to the total migrant population largely mirror those in the table above, with the exception of the United States, where the share of irregular migrants among the total population (and the foreign-born population – see Table 15) declined, despite no definitive change in the overall irregular migrant population. Essentially, this means that the overall population of the United States grew more than the irregular migration population between 2008 and 2022.

Table 14: Changes in the estimated population of irregular migrants between the Clandestino and MIrreM projects as a share of the total population

Country	Project	Year	% of total population		Change since Clandestino
			Min	Max	
Austria	MIrreM	2022	0.7%	0.7%	Increase
	Clandestino	2008	0.2%	0.6%	
Belgium	MIrreM	2016	1.0%	1.0%	No change
	Clandestino	2008	0.8%	1.2%	
Finland	MIrreM	2020	<0.1%	0.1%	Decrease
	Clandestino	2008	0.2%	0.2%	
France	MIrreM	2017	0.3%	0.4%	No change
	Clandestino	2008	0.3%	0.6%	
Germany	MIrreM	2017	0.7%	0.8%	Increase
	Clandestino	2008	0.2%	0.6%	
Greece	MIrreM	2017	0.9%	1.9%	Decrease
	Clandestino	2008	1.5%	1.9%	
Ireland	MIrreM	2020	0.3%	0.4%	Decrease
	Clandestino	2008	0.7%	1.4%	
Italy	MIrreM	2023	0.8%	0.8%	No change
	Clandestino	2008	0.5%	0.8%	
Netherlands	MIrreM	2018	0.1%	0.3%	Decrease

	Clandestino	2008	0.4%	0.8%	
Poland	MIRreM	2019	<0.1%	0.1%	Decrease
	Clandestino	2008	0.1%	0.8%	
Spain	MIRreM	2019	0.8%	1.0%	Increase
	Clandestino	2008	0.6%	0.8%	
UK	MIRreM	2017	0.9%	1.1%	No change
	Clandestino	2008	0.7%	1.4%	
12 European countries above	MIRreM	Various (2016 - 2023)	0.6%	0.8%	No change
	Clandestino	2008	0.4%	0.9%	
US	MIRreM	2022	3.3%	3.5%	Decrease
	N/A*	2008	3.7%	3.8%	

Source: [Beresewicz and Pawlukiewicz, 2020](#); [Camorota and Zeigler, 2022](#); [Connor and Passel, 2019](#); [Galvez, 2020](#); [Heinzel et al., 2021](#); [ISMU Foundation, 2023](#); [Jolly et al., 2020](#); [Kovacheva and Vogel, 2009](#); [Migrant Rights Centre Ireland, 2022](#); [Statistics Austria, 2023](#); [Van der Heijden et al., 2020](#). Total population estimates for EU countries and the UK from EUROSTAT, 2024a, and for the United States from US Census Bureau, 2023. Table design conceived of by Maegan Hendow, ICPMD. Note: (*) The United States was not covered by the Clandestino project – an alternative 2008 estimate of good quality (Heinzel et al., 2021) was used instead. Many of these estimates (e.g., for Austria) are not directly comparable because, for example, they use different methodologies, make different assumptions or cover different population groups. This in turn affects the aggregate figure.

The estimated irregular migration population as a share of the foreign-born population not covered under free movement policies in the 12 European countries as a whole is similar across the periods covered by Clandestino and MIRreM (Table 15). At the country level, however, there were interesting shifts over this period – the result of significant fluctuations in the numbers of irregular migrants and foreign-born residents outside of free movement policies with regular migration status. For example, over the periods in question, the estimated irregular migrant population in Belgium, France, Italy and the UK remained constant in both number and as a share of the total population, but declined as a share of the foreign-born population. Put another way, the number of authorised immigrants who were born in countries outside of relevant free movement protocols grew faster than the total population and the estimated irregular migrant population in these countries since 2008.

Table 15: Changes in the estimated population of irregular migrants between the Clandestino and MIRreM projects as a share of the foreign-born population not covered by free movement policies

Country	Project	Year	% of foreign-born population not covered by a free movement policy		Change since Clandestino
			Min	Max	
Austria	MIRreM	2022	5.6%	5.6%	No change
	Clandestino	2008	2.2%	6.5%	
Belgium	MIRreM	2016	11.4%	11.4%	No change

	Clandestino	2008	9.4%	14.2%	
Finland	MirreM	2020	0.2%	1.5%	Decrease
	Clandestino	2008	6.6%	9.9%	
France	MirreM	2017	3.4%	5.1%	Decrease
	Clandestino	2008	4.9%	11.0%	
Germany	MirreM	2017	8.3%	9.6%	Increase
	Clandestino	2008	2.7%	6.3%	
Greece	MirreM	2017	11.0%	22.1%	Decrease
	Clandestino	2008	19.4%	23.5%	
Ireland	MirreM	2020	6.4%	8.5%	Decrease
	Clandestino	2008	6.7%	13.8%	
Italy	MirreM	2023	9.4%	9.4%	Decrease
	Clandestino	2008	9.5%	15.7%	
Netherlands	MirreM	2018	1.4%	3.6%	Decrease
	Clandestino	2008	9.1%	19.2%	
Poland	MirreM	2019	1.2%	9.9%	Decrease
	Clandestino	2008	91.1%	546.6%	
Spain	MirreM	2019	8.5%	10.2%	Increase
	Clandestino	2008	6.1%	7.7%	
UK	MirreM	2017	10.5%	13.1%	Decrease
	Clandestino	2008	11.4%	23.6%	
12 European countries above	MirreM	Various (2016 - 2022)	7.5%	9.4%	No change
	Clandestino	2008	6.8%	13.9%	
US	MirreM	2022	24.0%	25.2%	Decrease
	N/A*	2008	28.1%	28.9%	

Source: [Beresewicz and Pawlukiewicz, 2020](#); [Camorota and Zeigler, 2022](#); [Connor and Passel, 2019](#); [Galvez, 2020](#); [Heinzel et al., 2021](#); [ISMU Foundation, 2023](#); [Jolly et al., 2020](#); [Kovacheva and Vogel, 2009](#); [Migrant Rights Centre Ireland, 2022](#); [Statistics Austria, 2023](#); [Van der Heijden et al., 2020](#). Foreign-born population estimates for EU countries and the UK from EUROSTAT, 2024a and 2024b, and for the United States from Azari et al., 2024. Table design conceived of by Maegan Hendow, ICMPD. Note: (*) The United States was not covered by the Clandestino project – an alternative 2008 estimate of good quality (Heinzel et al., 2021) was used instead. Many of these estimates (e.g., for Austria) are not directly comparable because, for example, they use different methodologies, make different assumptions or cover different population groups. This in turn affects the aggregate figure.

To conclude, the limitations of these comparisons bear repeating. Although all irregular migration stock estimates are uncertain, comparing estimates that were produced with different approaches compounds this uncertainty, making it exceedingly difficult to distinguish between actual changes in the numbers and errors in estimation and measurement. That several of the Clandestino estimates were assessed by the project team at the time as low-quality further limits confidence. As such, we decided to highlight the broader trend rather than make too much out of apparent differences between specific numbers.

Those wishing to explore these data are invited to download the version 2 of the Database at <https://doi.org/10.5281/zenodo.10646739>.

5. CONCLUSION

Under Work Package 4, the MIRreM project mobilised national rapporteurs from across the 22 countries within the project's scope to compile and assess the quality of irregular migration estimates. The rapporteurs were provided with templates and guidance to harmonise (so far as this is possible) the reporting and quality assessments. **This process yielded the compilation and assessment of more than 250 irregular migration estimates from 15 countries.** However, no estimates were located for the 'transit countries' (as conceptualised within the MIRreM project framework), and only a single estimate was found for Canada, which received the lowest possible score against our criteria.

Our analysis earlier in this paper looks at the characteristics of the estimates that comprise the Database before turning to the content of these estimates – i.e. the estimated stocks of irregular migrants across Europe – and how they changed since 2008.

The national rapporteurs assessed each estimate against five criteria (accessibility, documentation, reliability, method and data sources). Following in the footsteps of Clandestino, we felt a single, aggregate quality assessment would be useful for our analysis and communicating our findings. Inevitably, it was equally consequential as a catalyst to reflect on the significance of the five criteria and their interactions. We elaborate on this process and its results above and, while recognising the limits of such an approach, conclude it was a productive activity that could be built upon and refined over time.

The estimates were fairly evenly distributed in terms of their overall quality, with 34% of all estimates rated low quality, 37% rated medium quality and 29% rated high quality. This differed across countries and, in most cases, over time. The United States produced good quality, consistent irregular migration estimates year-on-year, whereas in Europe the picture is more varied. Mainly this appears to be due to the lack of institutional support in European countries for sustained work, although difficulties with the underlying data in certain national contexts is certainly part of the picture. As such, ad-hoc research projects such as Clandestino and the 2019 PEW report have an outsized impact on the availability and quality of estimates across Europe.

This highlights the potential for relatively modest but long-term investment to transform the production of European irregular migration estimates from something sporadic, poorly understood and often of low quality to an increasingly reliable resource for (and subject of) research and policy.

Turning to the second half of the analysis, which is focussed on the content of the estimates themselves, **there were an estimated 2.6 million to 3.2 million irregular migrants living in 12 European countries covered by MIRreM over the period 2016 and 2023.** In the United States, the

country with the largest irregular migrant population, one estimate in the MIrreM Database, which we assessed as high quality, puts the figure at an estimated 11.1 million to 11.6 million in 2022.

These are big numbers. **However, we see no definitive change in the estimated irregular migrant population across the 12 European countries since 2008.** This finding holds when considering the estimated irregular migrant population as a percentage of the total population and the foreign-born population not covered by free movement policies.

Different trends emerge at the country level: **since 2008, the estimated irregular migrant population increased in three countries** (Austria, Germany and Spain); **stayed the same in five countries** (Belgium, France, Italy, the UK and the US); **and decreased in four countries** (Finland, Greece, Ireland, Netherlands and Poland).

These findings, however, have their limitations. Taken in isolation, all of the estimates contain a significant amount of uncertainty, with several of the estimates that form the basis for our comparison assessed as poor quality in 2008. On top of this, we are comparing estimates of varying quality and approaches from 2008 with more recent estimates of at least medium quality, which come from different years (between 2016 and 2023) and employ a range of methods and definitions. As such, we urge caution among researchers who wish to explore the Database and take this work forward, but especially among non-academic audiences and the media when interpreting our findings for policy or public consumption.

We hope that by concluding with yet another articulation of the limitations of our findings we strengthen the case for long-term, sustained investment into irregular migration data across Europe.

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