IZA

RESEARCH REPORT SERIES

IZA Research Report No. 21

The Decade of Roma Inclusion: A Unifying Framework of Progress Measurement and Options for Data Collection

Martin Kahanec

April 2009

The Decade of Roma Inclusion:

A Unifying Framework of Progress Measurement and Options for Data Collection

Martin Kahanec*
(IZA)

* Institute for the Study of Labor (IZA), Schaumburg-Lippe-Str 5-9, 53113 Bonn, Germany, +49-228-3894-529, Kahanec@iza.org. I thank Anush Bezhanyan, Christian Bodewig, Tünde Buzetzky, Andrey Ivanov, Jaroslav Kling, Ross McRae, Susanne Milcher, Daniel Škobla, Andor Ürmös, the members of the Indicators Working Group (IWG), the participants of the IWG workshops and the Decade Secretariat for facilitating this study, as well as their useful comments and suggestions. I also thank the Decade Trust Fund of the Decade of Roma Inclusion 2005-2015 for the financial support.

Table of Contents

Non-technical excerpt		3
1.	Introduction	4
2.	Integration Measurement Methodology: A First Best	5
3.	Integration Indicators	7
4.	Monitoring Practice	8
5.	Policy Conclusions and Suggestions	11
Technical Report		13
1.	Introduction	14
2.	Integration Measurement Methodology: A First Best	17
3.	Integration Indicators	22
4.	The Issues Concerning Data Availability	24
5.	A Second Best Integration Measurement Methodology	27
6.	Some Third-Best Alternatives	32
7.	Monitoring Practice	35
8.	Policy Conclusions and Suggestions	38
References		40
Appendix I		42
Appendix II		45
Appendix III		46
Appendix IV		49

NON-TECHNICAL EXCERPT

This Non-Technical Excerpt accompanies the Technical Report that was prepared within the framework of the Decade of Roma Inclusion 2005-2015, in close cooperation with the Decade Secretariat, the World Bank and the Indicators Working Group. The views expressed are the author's alone and do not necessarily correspond to those of the aforementioned institutions.

1. Introduction

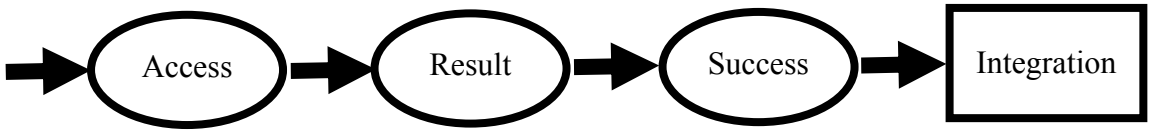
In February 2005 governments of Central and Southeastern Europe committed themselves to an unprecedented political movement – Decade of Roma Inclusion 2005-2015 – to improve the socio-economic status and social inclusion of Roma. The initiative aims to address the integration barriers that Roma, the largest European ethnic minority, face in all spheres of life by bringing together not only governments, intergovernmental and nongovernmental organizations, but the Romani civil society as well. Core areas in which special focus is applied are: education, employment, health and housing. **T**hree years into the Decade, there is still an absence of an effective outcome monitoring mechanism which would measure the results of government programs and help assess progress towards meeting the goals set at the inception of the Decade in 2005.

The objective of this report is to propose a mechanism which will enable the Decade countries to track and report on the results of the Roma inclusion policies in 2015 using a unified methodology across countries and time. This objective includes an analysis of the good practice in monitoring the integration of ethnic minorities and proposing measures to strengthen outcome monitoring for the Decade of Roma Inclusion – either at a national level or across the Decade countries. Specifically, this report (i) identifies suitable indicators for tracking the integration of Roma in the Decade countries in the four focus areas: education, employment, health and housing; (ii) discusses adequate first and second best mechanisms of the collection of data on Roma integration; and (iii) sets concrete proposals for strengthening the results framework for the Decade, including guidelines for how the suggested indicators should be applied with regards to the available data.

2. Integration Measurement Methodology: A First Best

The proposed first-best methodology assumes that data availability does not pose any limitations on the measurement framework. Integration as a measurable variable is broadly understood as a process which leads to a positive social or economic outcome for the individual comparable to his or her majority counterpart. It consists of a number of sequential stages that all condition individual outcome and thus the degree of integration success. To begin with, the individual may or may not have the opportunity to *access* a particular institution and the opportunities and services it provides. If there is access, the individual may or may not be able to realize a positive *result* (e.g. some employment or some health care). If a positive result is accomplished, the chances of achieving *success*, i.e. make use of the high-quality opportunities and obtain a service of good quality, may differ (See Figure E1 for a depiction of *Three-stage Integration*).

Figure E1: *Three-stage Integration*



The rate of success in the access and result integration stages is a relevant measure of success of a group of people. The *success* stage measuring the quality of the outcome can be measured in terms of actual outcome or the chances of achieving an outcome above some threshold level, which should be defined in terms of majority's outcomes. To give an example, in the labor market one could compare Roma and non-Roma participation rates (access), employment rates (result), and average hourly wages

(success). An alternative success measure would be e.g. the share of workers with hourly wage above 3 EUR.

To measure overall integration level in certain dimension, we propose two alternative intuitive notions, corresponding to the two possible approaches to measure integration in the success stage. The first one is to calculate relative expected outcomes of Roma and non-Roma groups. The expected outcome of a certain social group is the product of the group success probabilities in each of the stages up to the final stage multiplied by the average outcome achieved by the group in the final stage. In the case of employment, this is computed as the participation rate multiplied by (one minus the unemployment rate) and by the average wage or occupational attainment of the social group.

The second notion is to compute the relative chance of success for Roma and non-Roma. This chance is computed as the product of the group members' success probabilities in each of the stages up to the final stage multiplied by the group members' probability to achieve a certain threshold outcome. In the case of employment, the chance of success is computed as the participation rate multiplied by the employment rate (one minus the unemployment rate) and then by the probability of achieving certain minimum earnings or occupational rank by the members of a group. In any case, integration (σ) is measured as the ratio of the minority and majority expected outcomes or chances to achieve certain outcome, $\sigma \equiv p_R / p_N$.

3. Integration Indicators

There are a number of potential indicators of integration within any given area, We suggest adopting one or two core indicators, such as paid-employment, which relate to the greatest share of relevant populations, and report a limited number of secondary indicators whenever available. Table E1 summarizes the methodology suggesting a number of usable indicators. We also suggest considering the total population as the benchmark case and report indicators by gender, age group, or region whenever available. The degree of geographical segregation in the country can serve as a yardstick for all the proposed integration indicators.

Table E1: *Three-stage Integration Indicators (Core indicators bold)*

	Employment	Education	Health	Housing
1. Access	**Labor force participation rate**	**Enrolment rate in primary education**, Enrolment rate in pre-primary education	**Possession of health insurance (rate)**	**Legal housing in a segregated neighborhood (as opposed to illegal housing) (rate)**
2. Result	**1 - unemployment rate (including self-employment),** 1 - unemployment rate (excluding self-employment)	**Integration at classroom level in primary education (index)**, 1- Special school incidence	**Registration with a general practitioner (rate)**, Registration with a gynecologist (rate), Vaccination rate	**Legal housing in a non-segregated neighborhood (rate)**
3. Success	**Average hourly wage**, Occupational status (ISCO-88)	**Share with (upper) secondary or tertiary education (ISCED 3+)**, Share with tertiary education (ISCED 5+), Mean educational achievement in standardized screenings and tests, Mean length of stay in pre-preprimary education	**Life expectancy at birth**, Infant mortality rate	**Mean net floor area (in m^2) per inhabitant (in legal housing in a non-segregated neighborhood),** Mean number of rooms per inhabitant (in legal housing in a non-segregated neighborhood)

Notes: For ISCO88 see ILO (1990), details on ISCED available in UNESCO (1997).

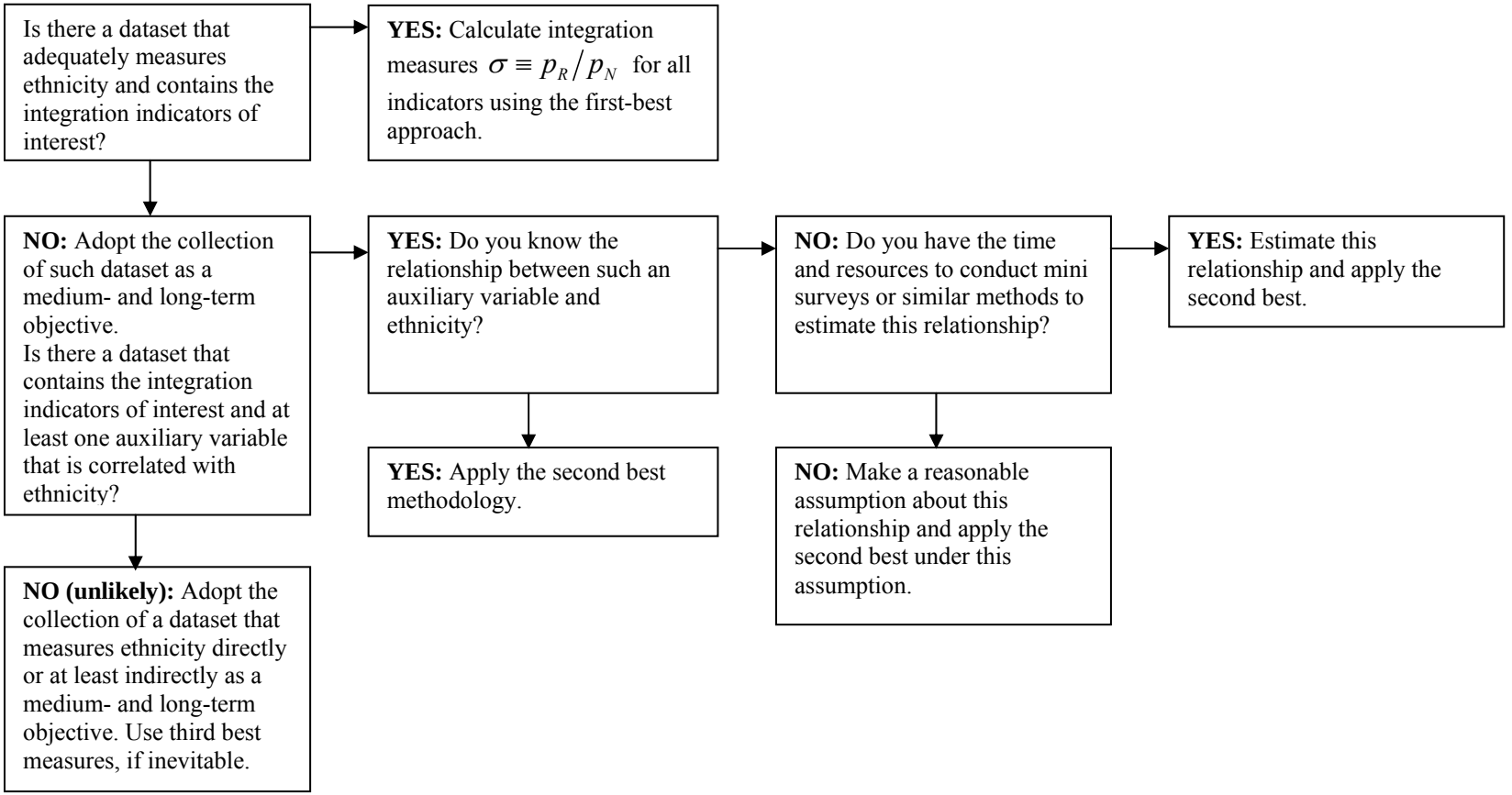
4. Monitoring Practice

The lack of suitable data is the major limiting factor in measuring the integration progress of the Roma people in the Decade countries. Good practice is primarily determined by the data at hand and the considered time perspective (See Figure E2). If data containing direct and properly measured measures of ethnicity are available, the first-best techniques should be applied. If the core dataset at hand only contains indirect markers of ethnicity, such as geographical location, and the relationship between these indirect markers and ethnicity can be identified from external data, second-best techniques should be applied. Namely, we suggest a second-best feasible solution that is based on available data, measures integration progress using a rigorously derived calculation formula, and, when optimally applied, reaches the preciseness of the first best measurement methodology.

This second-best approach is based on two premises. First, that there is a representative dataset, be it census, survey, or administrative dataset collected recently or even in the more distant past, that contains the variables necessary to calculate integration indicators of interest as well as an auxiliary variable sufficiently correlated with ethnicity, such as geographical location.[1] Second, the relationship between this auxiliary variable and ethnicity must be known, from external data or statistics. Thus, under this approach no direct measures of ethnicity, such as self-identified ethnicity, are necessary in the core dataset. Under this approach, whenever possible, mini-surveys in representative neighborhoods should be used to calculate the necessary parameters of the measurement formula provided in the Technical Report. Third best methodologies using the share of people with some substandard outcome in the total population have the advantage that

[1] Obviously, the working assumption is that ethnicity is not well measured in this dataset; otherwise one could directly apply the first best methodology using it.

Figure E2: *A Policy Chart (general)* [2]



[2] Notes: If the respective dataset is not representative for the country's population (Roma as well as non-Roma) the short run strategy is to try to correct for dataset's non-representativness, for example by weighting individual observations by population weights, and then proceed according to the Policy Matrix. If the best available dataset does not cover all integration indicators of interest, these can possibly be measured using other datasets and second (or third) best methods. In both cases the adequate medium and long-term strategy is to ensure the representativness and adequate coverage (in terms of measured indicators) of the primary dataset.

they can be applied using most of the available datasets, but their shortcomings disqualify them as integration measures.[3]

Table E2: *Data options*

Methodological approach	Data requirements	Data options
First-best	Contain integration indicators of interest and it is possible to distinguish Roma and non-Roma	Living Standard Measurement Surveys and Multi-Topic Household Surveys of the World Bank; the UNDP data covering vulnerable groups in Central South-Eastern Europe; and the Multiple Indicator Cluster Survey collected by UNICEF in Serbia
Second-best	Core data: Contain integration indicators of interest and an auxiliary variable that is correlated with ethnicity	National censuses; micro-censuses; labor force surveys; administrative data from employment offices, labor agencies, or the records of educational, health, and other register offices; Eurostat data such as the European Community Household Panel (ECHP); the EU Survey of Income and Living Conditions (SILC); and the European Social Survey (ESS); PISA data
	External data: Facilitate identification of the relationship between ethnicity and the auxiliary variable from the core data	Sociographic Mapping of Roma Communities in Slovakia; Living Standard Measurement Surveys and Multi-Topic Household Surveys of the World Bank; the UNDP data covering vulnerable groups in Central South-Eastern Europe; and the Multiple Indicator Cluster Survey collected by UNICEF in Serbia
Third best	Any dataset that contains integration indicators of interest	Any of the above

Over time, these techniques need to be complemented by the collection of data with direct measures of ethnicity enabling first-best measurement to be achieved. A variety of data pools could be considered: dedicated mini-surveys; Roma boosters or ethnicity supplements in existing surveys; community surveys providing aggregated data

[3] See the Technical Report.

for well-defined Roma communities; or custom surveys collecting data from social service recipients on a voluntary basis. Such techniques would have to overcome a number of issues: (i) they are costly in terms of time and money; (ii) ensuring the representativeness for the whole Roma and non-Roma population is a serious problem; and (iii) indirectly collected data (e.g. from community leaders or social workers) can suffer from subjective individual biases or prejudice.

In the long run, regularly collected datasets, such as censuses and surveys, should be amended to measure ethnicity directly. If the only data available neither directly nor indirectly measures ethnicity, and not even the computationally undemanding version of second-best methodology that makes some simplifying assumptions can be applied, third-best solutions can be resorted to in the short run. Table E2 summarizes some alternative data sources for the proposed integration indicators.

5. Policy Conclusions and Suggestions

Monitoring and measuring integration of the Roma people in the Decade countries is a formidable measurement challenge. The Technical Report suggests a number of indicators and first- and second-best methodologies to facilitate integration measurement in the Decade countries. It also provides a number of guidelines and definitions to facilitate a unified application of good practice of integration monitoring across the Decade countries.

The primary factor limiting integration monitoring is the severe paucity of data of adequate quality. Above all, reliable measures of ethnicity are missing from the existing datasets. This report suggests a first-best methodology that can be applied whenever

adequate data are at hand. It represents a robust framework of measuring integration in its three stages: access, results, and success. Given the prevailing lack of adequate data, it is rarely feasible in the short to medium run, however.

Therefore, to facilitate the proposed first-best methodology, this report suggests the following principles for the long run. First, data collection needs to include broad measures of ethnicity, including questions on ethno-cultural background. Second, increase the awareness of the general public of the meanings of nationality, citizenship, and ethnicity and curb negative attitudes towards the Roma that obstruct their self-identification. Third, remove excessive restrictions on data availability. In the medium run, collection of small-scale dedicated datasets (dedicated mini-surveys, Roma boosters or ethnicity supplements in existing surveys, community surveys providing aggregated data for well defined Roma communities, custom surveys collecting data form social service recipients on voluntary basis) should be considered.

For the situations where no data with direct measures of ethnicity are available and time or budget constraints do not permit their collection, a feasible and valid second best solution is suggested. It reduces the measurement problem, but does not quite eliminate it. Still, if properly administered, it can attain the preciseness of the first-best methodology. This method uses datasets with indirect measures of ethnicity, such as geographical location, complemented by information about the distribution of people from e.g. census data. Third-best solutions can be considered with due regard to their shortcomings, but only if all other options fail. We rather suggest using a simplified version of the second best approach instead.

TECHNICAL REPORT

This Technical Report was prepared within the framework of the Decade of Roma Inclusion 2005-2015, in close cooperation with the Decade Secretariat, the World Bank and the Indicators Working Group. The views expressed are the author's alone and do not necessarily correspond to those of the aforementioned institutions.

1. Introduction

In February 2005 governments of Central and Southeastern Europe committed themselves to an unprecedented political movement – Decade of Roma Inclusion 2005-2015 – to improve the socio-economic status and social inclusion of Roma. The initiative aims to address the integration barriers that Roma, the largest European ethnic minority, face in all spheres of life by bringing together not only governments, intergovernmental and nongovernmental organizations, but the Romani civil society as well (See Box 1 on *Partner Countries and Organizations*). DecadeWatch was formed to scrutinize the initiatives in individual countries and review progress in a transparent and quantifiable way. Core areas in which special focus is applied are: education, employment, health and housing. Furthermore, Decade commits governments to consider implications on poverty, discrimination and gender mainstreaming.

Box 1: *Partner Countries and Organizations*

As of October 2008, the eleven countries taking part in the Decade are Albania, Bosnia and Herzegovina, Bulgaria, Croatia, the Czech Republic, Hungary, Macedonia, Montenegro, Romania, Serbia and Slovakia. All of these countries have significant Roma minorities, which have been rather disadvantaged, both economically and socially. Each country participating in the Decade has developed a national Decade Action Plan, which specifies the goals and indicators in the areas of priority.

The founding international partner organizations of the Decade are the World Bank; the Open Society Institute; the United Nations Development Program; the Council of Europe; Council of Europe Development Bank; the Contact Point for Roma and Sinti Issues of the Office for Democratic Institutions and Human Rights of the Organization for Security and Co-operation in Europe; the European Roma Information Office; the European Roma and Traveler Forum; the European Roma Rights Centre; and the Roma Education Fund. In February 2008, the United Nations Children's Fund (UNICEF) also became a partner in the Decade.

The identification of outcome targets and performance indicators is essential to monitor the success of the Decade. In the run-up to the Decade launch, each country worked,

with varying degrees of success, on identifying indicators and strengthening datasets which could be used to monitor progress on each of the Decade`s goals. DecadeWatch, a tool to assess governments' inputs, was developed by Roma activists. However, monitoring frameworks at the national level, to the extent to which they have been introduced, remain underdeveloped. DecadeWatch does not directly measure the outcomes and real changes for people. Thus, three years into the Decade, there is still an absence of an effective outcome monitoring mechanism which would measure the results of government programs and help assess progress towards meeting the goals set at the inception of the Decade in 2005.

Box 2: *Minority Integration*

A single consensual definition of integration is precluded by the complexity when dealing with ethnic minorities. Many aspects need to be considered: legal, social, economic, political and moral. Nevertheless, there is one criterion which is repeatedly cited when analyzing the extent of integration: human rights. This encompasses the right for effective and lasting protection from crime, harassment and violence; and citizenship rights, which are at the very foundation of minority integration. Linguistic skills and cultural awareness are key strengths which facilitate integration of ethnic minorities. Social connections within and between ethnic groups empower ethnic minorities to participate fully in the social and economic life of broader society. Such full participation defines integration and involves two features. The first is achieving results within e.g. employment, education, housing and health which are comparable to those achieved within the broader society and the majority ethnic group in particular. The second involves building social relationships within the ethnic minority, between the ethnic minority and majority, and between members of the ethnic minority and state institutions and services, which all facilitate achievement of the desired outcomes in all these areas.

Box 3: *Literature Survey (Selected works)*

The issue of Roma integration has been largely overlooked by academics, receiving only sporadic attention until recently. The early work of Beynon (1936) investigates Romani or Dom communities in Hungary, India and the USA in a comparative framework. Barany (1994) analyzes socio-political and economical situations of the Roma in the post-communist eastern Europe and the dangers of retaining their identity, and issues of domestic and international security. Vermeersch (2003) studies the interaction between Roma ethnic identity and political participation. Reyniers (1995) investigates the migration flows of the Roma within Central and Eastern Europe and towards certain OECD countries. Vašečka and Radičová (2001) analyze the social exclusion and marginalization of the Roma during the transition process in Slovakia.

A number of reports investigate the integration of ethnic minorities and evaluate integration policies. The report from the Council of Europe (2006) investigates the issues of discrimination and inequality in the areas of housing, education and health care as well as racially motivated violence. Zimmermann et al. (2007) and the ensuing report prepared by the High Level Advisory Group of Experts of the European Commission (European Commission, 2007) discuss the situation of ethnic minorities in Europe, including Roma, and measure the gaps in their labor market outcomes, evaluate the key barriers to integration including negative attitudes towards members of ethnic minorities, and pinpoint a number of good practices using sample case studies. The report most closely related to this paper is from the Home Office on the indicators of integration (Ager and Strang, 2004). This report suggests a framework for evaluating of integration policies and services aimed at refugees and asylum seekers. Another study which this report draws upon is UNDP (2007), which reviews the possible approaches to quantification of the integration progress achieved by the Decade.

The objective of this report is to propose a mechanism which will enable the Decade countries to track and report on the results of the Roma inclusion policies in 2015 using a unified methodology across countries and time. This objective includes an analysis of the good practice in monitoring the integration of ethnic minorities and proposing measures to strengthen outcome monitoring for the Decade of Roma Inclusion – either at a national level or across the Decade countries (See Box 2 on *Minority Integration*). Specifically, this report (i) identifies suitable indicators for tracking the integration of Roma in the Decade countries in the four focus areas: education, employment, health and housing; (ii) discusses adequate first and second best mechanisms of the collection of data on Roma integration; and (iii) sets concrete proposals for strengthening the results framework for

the Decade, including guidelines for how the suggested indicators should be applied with regards to the available data. Box 3 on *Literature Survey* reviews a selection of relevant works upon which this report draws.

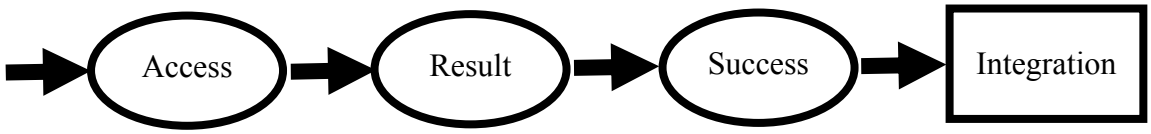
2. Integration Measurement Methodology: A First Best

As a first step in developing a unified methodology of integration progress measurement, we ignore the data issues for the moment and suggest a first-best integration progress measurement methodology. As discussed above, the key markers of minority integration within the Decade are education, employment, health and housing. While these four areas are strongly interdependent and influence each other through many complex relationships, they each measure important dimensions of Roma integration and thus are relevant for integration progress measurement.

Integration as a measurable variable is broadly understood as a process which leads to a positive social or economic outcome for the individual comparable to his or her majority counterpart. One can think of this process as integration into certain social or economic institutions, such as the labor market or health system, which provide opportunities and services to an individual, and determine his or her success in the socio-economic domain. Integration consists of a number of sequential stages that all condition individual outcome and thus the degree of success. To begin with, the individual may or may not have the opportunity to *access* a particular institution (e.g. labor or housing market, or health or educational system), and the opportunities and services it provides. If there is access, the individual may or may not be able to realize a positive *result* (e.g. some employment or

some healthcare). If a positive result is accomplished, the chances of achieving *success*, i.e. make use of the high-quality opportunities and obtain a service of good quality, may differ (See Figure 1 for a depiction of *Three-stage Integration*).

Figure 1: *Three-stage Integration*



The *access* and *result* integration stages condition the realization of the following stage of success and thus integration. Put differently, failure in any of these two integration stages leads to individual integration failure. The rate of success in these integration stages is thus a relevant measure of success of a group of people. For example, in the labor market the relevant measures of integration success of a group of people in the access and result stages are their participation rate and employment rate (employment rate calculated as 1 - unemployment rate), respectively. The participation rate reflects the attachment of the group to the labor market (i.e. there may be 40% of the group members with a job and a further 10% seeking one, resulting in the participation rate of 50%), and the employment rate measures the chances that a person seeking a job finds one (i.e. 80% in our example).

The *success* stage measuring the quality of the outcome can be measured in terms of actual outcome or the chances of achieving an outcome above some threshold level. To illustrate, labor market outcomes can be measured by actual earnings or by chances of receiving earnings above a certain threshold. Such thresholds could be arbitrary (e.g. 10

currency units per hour) or defined in terms of a majority earnings distribution (e.g. mean majority earnings).[4] While the first measure is often easier to obtain, the second captures relevant distributional characteristics of outcomes.

It should be noted that certain success measures are sensitive to the share of the minority in the population. This is the case if, for example, one would define the abovementioned threshold to be 60% of the average wage of the total population. In such case, assuming that minority wages are lower than majority wages, ceteris paribus, regions with a larger share of a minority population would exhibit a higher degree of minority integration. Therefore, the benchmark thresholds need to be defined in terms of the majority's outcomes.

It is quite straightforward to compare integration indicators between majorities and minorities and thus evaluate the level of integration at various stages of the integration process. For example, in the labor market one could compare Roma and non-Roma participation rates (access), employment rates (result), and average hourly wages (success). Nevertheless, it may be desirable to measure the overall integration level in certain dimensions, e.g. employment. To achieve this we propose two alternative intuitive notions, corresponding to the two possible approaches to measure integration in the success stage.

[4] In fact, if the threshold is defined in terms of quintiles of majority outcome distribution (e.g. median), the comparison between minority and majority outcomes is even more straightforward. See below.

The first one is to calculate the relative expected outcomes of Roma and non-Roma. The expected outcome of a certain social group is the product of the group success probabilities in each of the stages up to the final stage multiplied by the average outcome achieved by the group in the final stage. In the case of employment, this is computed as the participation rate multiplied by the employment rate (defined as one minus the unemployment rate) and by the average wage or occupational attainment of the social group. This boils down to average wage or occupational attainment of the *whole* population of interest, not only of those who are employed.[5] Integration (σ) is then measured as the ratio of the minority and majority expected outcomes, $\sigma \equiv p_R / p_N$. Continuing our labor market example, we consider group R with the participation rate of 50%, unemployment rate of 20% and average hourly wage of 6 currency units, and group N with the respective figures of 60%, 10% and 10 currency units. Then the expected labor market outcome of group R in terms of wages is 0.5*(1-0.2)*6=2.4; while the corresponding measure for group N is 0.6*(1-0.1)*10=5.4. The measure of integration then is 2.4/5.4=0.44.

The second notion is to compute the relative chance of success for Roma and non-Roma. This chance is computed as the product of the group members' success probabilities in each of the stages up to the final stage multiplied by the group members' probability to achieve a certain threshold outcome. In the case of employment, the chance of success is computed as the participation rate multiplied by the employment rate (one minus the unemployment rate) and then by the probability of achieving certain minimum earnings

[5] The earnings and occupational attainment of people who are not employed are then assigned the value of 0.

or occupational rank by the members of a group. Integration is then measured as the ratio of the minority and majority expected chances of positive integration outcomes, $\sigma \equiv p_R / p_N$.[6] Considering the same participation and employment rates as in the example above, taking 10 currency units as the threshold hourly wage, and assuming that 50% of group R and 70% of group N achieve at least this hourly wage, the expected rates of success for group A and B are 20% and 37.8%. This results in a measure of integration of 0.53.[7]

Generally speaking, any integration indicator should fulfill a number of criteria to support consistent measurement. In particular, any indicator should: (i) measure relevant domains of the integration progress; (ii) be general enough in its coverage, so all relevant aspects of the complexity of the integration process within each domain are captured; (iii) be easily applicable and well measurable given the available data or data that can be collected in the given time and budgetary frame; (iv) be actually or potentially affected by the efforts of the national governments, non-governmental organizations, and other actors of the Decade; (v) measure integration progress in relative terms in comparison to the majority (non-Roma) population; and (vi) be flexible to enable applicability in the various integration contexts across the Decade countries and, simultaneously, ensure international comparability of the integration measures.

[6] One could calculate integration success over all dimensions in a similar way. The key idea is to calculate the ratio of minority and majority chances of being successful in all dimensions. We slightly abuse the notation here, using $\sigma \equiv p_R / p_N$ again.

[7] An appealing possibility is to measure the relative chance of success for members of a minority group relative to a benchmark that is defined by the majority population. A useful benchmark would be the median outcome for the majority population. In such a case there is no need to further benchmark minority outcomes to those of the majority population: the median already serves as a convenient normalization of majority's chances to achieve a good outcome (at 50 percent).

3. Integration Indicators

There are a number of potential indicators of integration within any given area. To illustrate, in the area of employment one can look at paid employment, self-employment, or both at the same time. One strategy of overcoming this ambiguity could be reporting separate indicators for each outcome or success measure; another would be to develop comprehensive indicators, such as *income from paid- or self-employment*. The first approach could lead to a non-comparable set of indicators across countries and thus dilution of the measurement framework. The second approach may confuse various aspects of integration, as, for example, in some countries self-employment may be a major means of integration, while in others not. Therefore, we suggest a third approach: adopting one or two core indicators, such as paid-employment, which relate to the greatest share of relevant populations, and report a limited number of secondary indicators whenever available. In any case, indicator definitions need to be strictly enforced to facilitate international comparability. Table 1 summarizes the methodology suggesting a number of usable indicators.[8]

Another problem is the definition of the relevant populations. The role of gender is perhaps the most relevant aspect of minority integration in this context. Other potential areas concerning integration indicators or their international comparability include the roles of age, regional distribution of relevant populations, business cycle phase in different countries, and differences in welfare policies and other institutions that define not only the well-being of ethnic minorities under non-integration but also their incentives. These issues need to be carefully examined in all areas and stages of

[8] Please see Section 6 and Appendix III on the definitions.

integration measurement. We suggest considering the total population as the benchmark case and report indicators by gender, age group, or region whenever available.

Table 1: *Three-stage Integration Indicators (Core indicators bold)*

	Employment	Education	Health	Housing
1. Access	**Labor force participation rate**	**Enrolment rate in primary education**, Enrolment rate in pre-primary education	**Possession of health insurance (rate)**	**Legal housing in a segregated neighborhood (as opposed to illegal housing) (rate)**
2. Result	**1 - unemployment rate (including self-employment),** 1 - unemployment rate (excluding self-employment)	**Integration at classroom level in primary education (index)**, 1- Special school incidence	**Registration with a general practitioner (rate)**, Registration with a gynecologist (rate), Vaccination rate	**Legal housing in a non-segregated neighborhood (rate)**
3. Success	**Average hourly wage**, Occupational status (ISCO-88)	**Share with (upper) secondary or tertiary education (ISCED 3+)**, Share with tertiary education (ISCED 5+), Mean educational achievement in standardized screenings and tests, Mean length of stay in pre-preprimary education	**Life expectancy at birth**, Infant mortality rate	**Mean net floor area (in m^2) per inhabitant (in legal housing in a non-segregated neighborhood),** Mean number of rooms per inhabitant (in legal housing in a non-segregated neighborhood)

Notes: For ISCO88 see ILO (1990), details on ISCED available in UNESCO (1997).

Finally, the degree of geographical segregation in the country can serve as a yardstick for all the proposed integration indicators. There have been many segregation indicators proposed in the literature (see James and Taeuber, 1985). We consider the Gini coefficient of geographical segregation suitable for our purposes.[9] It must be noted,

[9] See Box A1 in Appendix III for details.

however, that although geographical segregation is often related to many socio-economic outcomes, it does not measure them in itself.

4. The Issues Concerning Data Availability

The lack of suitable data is the major limiting factor in measuring the integration progress of the Roma people in the Decade countries. There are almost no applicable data, and access to many existing datasets is severely restricted. Gaps in the available data include missing variables, ill-defined groups of interest, or missing values for years of interest. Even if datasets contain information on Roma people, how representative they are for the Roma population is problematic and the actual number of Roma in the samples is too low for statistical purposes. In particular, this lack of data renders the proposed first best methodology infeasible in the short run. In this section we discuss possible approaches to the collection of usable data and set the ground for development of second-best practices of integration progress measurement.

Perhaps the most complex issue is the low self-identification rates of Roma in the census or survey data. This issue has to be understood in two dimensions. One concerns the insufficient awareness of the general public in the Decade countries: the meanings of nationality, citizenship, and ethnicity are often confused. In addition, Roma self-identification is often burdened with negative associations stemming from the perception and attitudes towards them.

The other dimension concerns the lack of specific detail in questionnaires: the typical ethnicity question based on the *nacionalnost* (natsionalnost, národnosť) concept[10] is perhaps too limiting, offering only exclusive and radical options. For example, respondents in Slovakia can identify themselves as non-Roma (Slovak, Hungarian, Ruthenian, or other non-Roma) or as Roma, but not both. It may well be that Roma in Slovakia identify themselves as Slovaks or Hungarians in the census, but simultaneously they are strongly attached to their Roma ethno-cultural heritage. Only a well-designed questionnaire can capture such crucial ethnic self-identification.

A policy which would successfully address these measurement issues would also help to resolve the described problem of data availability and thus facilitate using standard census or survey data to measure Roma integration. Such policy would require non-negligible amount of time as well as long-term commitment of the involved actors. However, solutions for the measurement challenge are also requisite for the medium and short term. A medium term approach is to collect small-scale dedicated data with well-defined questions to measure integration indicators and identify the Roma.[11] This could include mini-surveys, Roma boosters or ethnicity supplements in existing surveys, community surveys providing aggregated data for well-defined Roma communities, or custom surveys collecting data from social service recipients on a voluntary basis. Such techniques could prove very useful, but face at least three considerable challenges: (i) they are costly in terms of time and money; (ii) ensuring the representativeness for the whole Roma and non-Roma population is a serious and, in some cases, insurmountable

[10] Whereas in the Western usage nationality mainly concerns citizenship, the nacionalnost concept relates to ethnic or national identity.
[11] See UNDP (2007) for further details.

problem; and (iii) indirectly collected data (e.g. from community leaders or social workers) can suffer from subjective individual biases or prejudice. If these data collection methods, such as mini-surveys or survey boosters, are carefully administered, they can provide high-quality data permitting first best measurement techniques in the medium term.

Concerning short-term approaches that use the available dataset, one could resort to indicators of ethnicity in the available datasets other than self-identification based on the *nacionlanost* concept, such as language or religion. Unfortunately, in the case of Roma this is an option of very limited applicability: they regularly adopt the religion prevailing among the respective majority population or do not report a religion at all. This does not make religion a suitable marker of Roma ethnicity. Language offers slightly better possibilities. While the Roma often assimilate in terms of their primary language, if data contain information on the mother tongue or other languages used, it may still be possible, albeit imprecisely, to identify Roma in the data. However, even the mother tongue is subject to non-negligible assimilation and thus is a very imprecise measure of Roma ethnicity.

Perhaps the most promising short-term approach is to use geographical (or other measurable) segregation of Roma and non-Roma, which offers an indirect marker of ethnicity in the available data. In particular, no direct measure of ethnicity is required under this approach. Thus, even data collected in the past and administrative data without information on ethnicity can facilitate this method. In the next section we develop a

feasible second-best measurement methodology using an approach based on geographical segregation.

5. A Second Best Integration Measurement Methodology

There are hardly any datasets of adequate quality and with the necessary information on ethnicity that could without further provisions facilitate measuring integration progress of the Roma people using the first-best integration measurement methodology depicted in Section 2. Therefore, we consider a second-best feasible solution that is based on available data, measures integration progress using a rigorously derived calculation formula, and, when optimally applied, reaches the preciseness of the first best measurement methodology. This second-best approach is based on two premises. First, that there is a representative dataset, be it census, survey, or administrative dataset collected recently or even in the more distant past, that contains the variables necessary to calculate integration indicators of interest as well as an auxiliary variable sufficiently correlated with ethnicity.[12] Second, the relationship between this auxiliary variable and ethnicity must be known, from external data or statistics. Thus, under this approach no direct measures of ethnicity, such as self-identified ethnicity, are necessary in the core dataset.

The method that uses an auxiliary variable that is correlated with ethnicity, or even more such variables, can be applied very generally, if the specific mapping (or functional relationship) between this variable and ethnicity is known. The approach that we discuss

[12] Obviously, the working assumption is that ethnicity is not well measured in this dataset; otherwise one could directly apply the first best methodology using it.

in this report is tailored to the specific conditions of measurement of Roma integration in the Decade countries.[13] In these countries it is often the case that large datasets of good quality collected by the statistical offices or other governmental but also non-governmental and international institutions do not adequately measure ethnicity and thus do not permit distinguishing the Roma and non-Roma properly. The geographical location (address) of the respondent is available and adequately measured in most data, however. In addition, from focused statistical investigations[14] or other external statistics the relationship between geographical location and ethnicity is known, that is, the share of Roma in any particular location or neighborhood is known or can be inferred.

Specifically, the approach that we suggest approximates the relative outcomes of the Roma and non-Roma (σ) in two steps, carefully explicating the possible measurement error. In the first step, the population is partitioned into two subpopulations based on an auxiliary variable and a partition criterion.[15] Given the almost omnipresent spatial segregation of Roma and non-Roma, geographical location serves this purpose well. The corresponding partition criterion is the share of Roma in a neighborhood (a properly defined regional unit): for example more than 50%, at least 2/3, or even 100%. Two subpopulations are then defined: those that fulfill the criterion and those that do not.[16] We can call neighborhoods fulfilling the criterion of a high share of Roma segregated, and

[13] See Appendix I.
[14] Such as the Sociographic mapping of Roma communities in Slovakia, IVO, 2004.
[15] It is quite straightforward to see that the suggested approach can be generalized such that the population is partitioned into any number of sub-populations. While a finer partition can facilitate greater precision of integration measurement, it also requires more information on the relationship between geographical location and the share of Roma in it.
[16] While the problem of self-selection (of those who declare Roma ethnicity and those that do not) typically invalidates census data for the purpose of integration measurement, it is much less problematic to use such data to define neighborhoods with *high* and *low* shares of Roma.

the remaining ones integrated. In the second step a rigorously derived formula is applied to compute the relative outcomes of the Roma and non-Roma in the total population, σ. Box 4 *Analytical results: Second best* summarizes some analytical results for the second-best measurement methodology. It shows that for the proposed second best approach the following information is necessary:

1. The numbers of Roma in each subpopulation (living in segregated and integrated neighborhoods)
2. The numbers of non-Roma in each subpopulation (living in segregated and integrated neighborhoods)
3. The aggregate outcome measures for all members of each subpopulation (inhabitants of the segregated and integrated neighborhoods)
4. The relative outcomes of Roma and non-Roma in each subpopulation (within segregated and integrated neighborhoods), σ^s and σ^i.

The accuracy of estimating Roma and non-Roma relative social and economic outcomes using the proposed second-best methodology depends on how precise all the inputs necessary to calculate p_R and p_N, and thus σ, are. The numbers of Roma and non-Roma in each subpopulation can be taken from external data, aggregate statistics, or estimated from census data, properly accounting for the problem of inaccurate ethnic self-identification. The outcomes of the two subpopulations (i.e. those living in segregated and integrated neighborhoods) can be calculated from the dataset at hand that contains respondents' geographic location and the respective outcome variable.

Box 4: *Analytical results: Second best*

Appendix I shows that

$p_R = \left(R^s \sigma^s p^s \left(R^s + N^s\right) \Big/ \left(R^s \sigma^s + N^s\right) + R^i \sigma^i p^i \left(R^i + N^i\right) \Big/ \left(R^i \sigma^i + N^i\right)\right) \Big/ R$ and

$p_N = \left(N^s p^s \left(R^s + N^s\right) \Big/ \left(R^s \sigma^s + N^s\right) + N^i p^i \left(R^i + N^i\right) \Big/ \left(R^i \sigma^i + N^i\right)\right) \Big/ N$, where R and $N = 1 - R$ are the numbers of Roma and non-Roma, R^s (N^s) denotes the number of segregated and $R^i = R - R^s$ ($N^i = N - N^s$) integrated Roma (non-Roma). The probabilities of the integration outcomes (e.g. employment) for the two groups and the total population are p_N, p_R and p_T respectively. The probabilities of some outcome in integrated and segregated neighborhoods are denoted p_R^i, p_R^s, p_N^i and p_N^s. The proposed integration measure is $\sigma \equiv p_R / p_N$. If then, for example, $\sigma^s = 1 = \sigma^i$, $\sigma = \frac{N}{R} \frac{\left(R^s p^s + R^i p^i\right)}{\left(N^s p^s + N^i p^i\right)}$. See further details in Appendix I.

Measurement of inter-group relative outcomes within the two subpopulation (integrated and segregated neighborhoods), σ^s and σ^i, is a key measurement issue in this approach. A related issue is how exclusively the partition criterion separates the two groups. If the separation is perfect (i.e. full segregation), we can calculate the relative Roma/non-Roma outcomes as the relative outcomes of the two subpopulations (segregated and integrated). The fine-tuning of σ^s, σ^i, or the partition criterion results in improved measurement and a closer approximation of the first-best integration measures as developed in Section 2. Since it is practically not possible to partition the neighborhoods in such a manner which perfectly divides the Roma and non-Roma, we require not only a well-defined partition but also reasonable estimates of σ^s and σ^i.[17]

The estimation of the relative outcomes of Roma and non-Roma within segregated and integrated neighborhoods, σ^s and σ^i, is of key importance for international and

[17] Note that if the geographical partition criterion is 100% share of Roma, one only needs to estimate the relative outcomes of the Roma living in integrated neighborhoods (σ^i).

intertemporal comparison. There are two options how to proceed in this regard. First, there is an option of precisely measuring σ^s and σ^i in each country and every time. This option not only fulfils the criteria of the first-best measurement methodology proposed earlier, but also generates proper incentives for governments: improving any parameter of the integration measure helps to improve the integration measure, as well as the welfare of Roma. One could, for example, estimate σ^s and σ^i using mini surveys or samples in a few carefully selected segregated and integrated neighborhoods.[18] This option, however, is costly and could generate incentives to misreport σ^s and σ^i.[19]

Second, one could disregard any variation in σ^s and σ^i, and assume that they are both equal to unity (or some reasonable number). Such a crude assumption would mean that the integration progress measure, the change in σ, would ignore any changes in the relative quality of life within each subpopulation (segregated and integrated neighborhoods), and no first-best measurement would be attained. Furthermore, international comparison could be biased. However, the advantage of this approach is that it is highly transparent and restricts misreporting. Policy makers trying to maximize the integration measure σ with fixed σ^s and σ^i would be required to improve the standard of living in segregated areas or reduce the number of Roma living there: both of which are in line with the objectives of the Decade. However, reducing the number of

[18] The selection of these neighborhoods needs to be held constant over time to facilitate inter-temporal comparability. International comparability of integration measures would hinge on the degree to which the selected neighborhoods are representative. It must be noted that given the variation in national data collection rules and standards international comparability of integration measures is extremely hard to achieve under any methodology.

[19] Misreporting is a non-trivial issue concerning any variable. However, allegedly, σ^s and σ^i are the variables with the least degree of verifiability in calculation of σ. Therefore, it could be desirable to have an independent supranational agency overseeing the measuring of σ^s and σ^i in the involved countries.

segregated Roma (i.e. as a result of some policy measures) without them achieving the standard outcomes in integrated neighborhoods would increase our integration measure without really changing their well-being – and thus the true degree of integration would be misreported. [20]

6. Some Third-Best Alternatives

In this section we outline some alternative measurement methods that may be used in specific context and with due regard to their shortcomings. In general, they involve using the share of people with some substandard outcome in the total population, p_T, to measure Roma integration. These approaches are based on the assumption of a strong correlation between ethnicity and integration outcomes: for example, examining the long term unemployed, which are predominantly Roma in some countries. Another measure could be the share of the population at high risk of poverty (e.g. having less than $1 per day per person). Other examples could include the share of people without a completed education, the share of schools which performed badly in the PISA evaluation, the share of people without any healthcare, or of those in illegal housing. A geographically defined inequality index could be considered, based on an index of social exclusion: such as the share of low status people (e.g. people without a permanent income and an educational status no higher than primary) in a settlement, neighborhood or block.

[20] The endogenous nature of how people are allocated across two subpopulations defined by the partition criterion is potentially an important issue that one has to bear in mind when interpreting the observed integration measures and their (causal) relationship to other variables or policies. Furthermore, any policy targeting certain integration outcomes needs to take into account the differences in observable and unobservable characteristics and define the targets appropriately. For example, while a long-term integration target may be equal outcomes for Roma and non-Roma, short-term integration targets may need to be specified within occupational and educational categories.

As it turns out, this approach involves non-negligible measurement issues, however. Recall that ideally we want to measure the relative standing of Roma and non-Roma, σ, which is defined as p_R/p_N. Using a simple analytical framework, Appendix II (summarized in Box 5) shows that σ and p_T are in fact *inversely* related, holding *R* and p_R constant. One could calculate σ using p_T, but only if we know *R* as well as p_R. But if we know *R* and p_R, it is straightforward to calculate σ, and there is no need to use p_T.[21] In Box 5 we present some analytical results for the third best methodology.

There are good reasons not to ignore the measurement problems that using the share of people with some substandard outcome in the total population introduces into the measurement of Roma integration. First, p_T depends on the share of Roma in the population whenever outcomes for Roma and non-Roma differ (which is our premise): countries with a higher share of Roma would report lower integration, keeping other factors constant. Second, it depends on the outcome of the non-Roma population in an additive way (i.e. from Box 5 p_T is a linear function of p_N). This would imply that any improvement in the situation of non-Roma would improve our measure, whereas it would actually imply, ceteris paribus, a worsening of the integration situation of the Roma.[22] Third, a related and perhaps the most important issue is that p_T in itself is not an integration measure, since it is not benchmarked with respect to the outcomes of the non-

[21] Knowing p_R, p_T and *R* we can calculate p_N as $p_N = \left(p_T - Rp_R\right)/\left(1-R\right)$.

[22] Some but not all of these issues would be alleviated if the chance of being in the measured negative outcome is zero for the non-Roma. This would be the case, for example, if there are no non-Roma among the long-term unemployed. This would actually mean that we could calculate the outcome measures for the Roma (knowing the number of Roma who are and are not long-term unemployed), as shown in Appendix II.

Roma population. In fact, undesirably, an increase of this measure is consistent with an increase in the Roma/non-Roma outcome gap if the situation of the non-Roma improves more than that of the Roma. Furthermore, a country with a higher level of development (i.e. lower unemployment) would exhibit, ceteris paribus, a higher measure of "integration" than a country with a lower level of development, regardless of the "true" integration of Roma people (i.e. their relative outcomes). Therefore, these shortcomings also invalidate any international comparison of Roma integration.

Despite these important shortcomings, the greatest, albeit perhaps the only, advantage of p_T is that it is often readily available. Could we salvage p_T as a reasonable third-best alternative? While we would not recommend using p_T as a measure of Roma integration, in Section 2 we in fact suggest a concept that is computationally almost as simple as p_T, but has significantly better properties. Namely, it is the proposed second-best approach with the assumption that $\sigma^s = 1 = \sigma^i$ (See Box 4).

Box 5: *Analytical results: Third best*

A third best measure would be p_T, where $p_T = Rp_R + (1-R)p_N$. Appendix II shows that $p_T = Rp_R + (1-R)p_R/\sigma$ and $\sigma = \frac{(1-R)p_R}{p_T - p_R R}$ under the third best methodology. See Box 4 for the definitions of variables and Appendix II for further details.

7. Monitoring Practice

The analysis developed in the previous sections shows that there are no simple solutions to a suitable monitoring practice. Good practice is primarily determined by the data at hand and the considered time perspective.[23] If data containing direct and properly measured measures of ethnicity are available, the first-best techniques should be applied. If the core dataset at hand only contains indirect markers of ethnicity, such as geographical location, and the relationship between these indirect markers and ethnicity can be identified from external data, second-best techniques should be applied. In the case where geographical location and the segregated-integrated dichotomy are applied, mini-surveys in representative neighborhoods should be used to calculate the degree of integration of the Roma populace in each subpopulation (σ^s and σ^i) whenever possible. As discussed in Section 4, over time these techniques need to be complemented by the collection of data with direct measures of ethnicity enabling first-best measurement to be achieved, including dedicated mini-surveys, Roma boosters, or other. In the long run, regularly collected datasets, such as censuses and surveys, should be amended to measure ethnicity directly. If the only data available neither directly nor indirectly measures ethnicity, and not even the computationally undemanding version of second-best methodology that assumes $\sigma^s = 1 = \sigma^i$ can be applied, third-best solutions can be resorted to in the short run.

[23] See the Policy Charts in Appendix IV.

Table 2: *Data options*

Methodological approach	Data requirements	Data options
First-best	Contain integration indicators of interest and it is possible to distinguish Roma and non-Roma	Living Standard Measurement Surveys and Multi-Topic Household Surveys of the World Bank; the UNDP data covering vulnerable groups in Central South-Eastern Europe; and the Multiple Indicator Cluster Survey collected by UNICEF in Serbia.
Second-best	Core data: Contain integration indicators of interest and an auxiliary variable that is correlated with ethnicity	National censuses; micro-censuses; labor force surveys; administrative data from employment offices, labor agencies, or the records of educational, health, and other register offices; Eurostat data such as the European Community Household Panel (ECHP); the EU Survey of Income and Living Conditions (SILC); and the European Social Survey (ESS); PISA data
	External data: Facilitate identification of the relationship between ethnicity and the auxiliary variable from the core data	Sociographic Mapping of Roma Communities in Slovakia; Living Standard Measurement Surveys and Multi-Topic Household Surveys of the World Bank; the UNDP data covering vulnerable groups in Central South-Eastern Europe; and the Multiple Indicator Cluster Survey collected by UNICEF in Serbia.
Third best	Any dataset that contains integration indicators of interest	Any of the above.

Table 2 summarizes some alternative data sources for the proposed integration indicators. There are a number of datasets available which cover the socio-economic outcomes of Roma and non-Roma, properly identifying the two groups, and can be used to calculate integration measures using the first-best methodology: Living Standard Measurement Surveys and Multi-Topic Household Surveys of the World Bank; the UNDP data covering vulnerable groups in Central South-Eastern Europe; and the Multiple Indicator Cluster Survey collected by UNICEF in Serbia. However, these datasets often do not

cover the whole time period or all the integration indicators of interest; and they do not cover all the Decade countries.

Several data sources can be drawn on to facilitate second-best measurement techniques. As concerns the potential sources of core data, national statistical offices offer a rich range of options: censuses, micro-censuses, labor force surveys, and other. These datasets normally contain a wide range of variables that can facilitate the calculations of the indicators of integration progress. While they often contain the ethnicity variable, in most cases it is not possible to use it for our purposes due to measurement problems (e.g. low self-identification). In addition, statistical offices and other governmental organizations collect administrative data, which can also be used to facilitate second best measurement techniques. Such data may be for example available from employment offices and labor agencies; or the records of educational, health, and other register offices. Besides the national statistical offices, EU-wide datasets are coordinated and collected by Eurostat. Such datasets include, among others, the European Community Household Panel (ECHP); the EU Survey of Income and Living Conditions (SILC); and the European Social Survey (ESS). Similarly as national datasets, the datasets collected by Eurostat cover relevant integration indicators, but do not adequately measure ethnicity.[24] Datasets collected for other specific purposes, such as the PISA data collected by the OECD, can also be used. Most of the datasets mentioned in this paragraph, however, cover the geographical location of the respondent very well - and thus can be used as the core data for the second-best measurement technique.

[24] Anonymization of these datasets may pose another difficulty.

The more difficult task is to identify the relationship between ethnicity and geographical location (or other markers of ethnicity). For this purpose, a number of auxiliary datasets can be used. Even the census or similar data may be used to identify locations (neighborhoods) with high and low share of Roma. However, due to self-identification problems, to pin down the actual shares of Roma and non-Roma in these datasets may be considerably more difficult. Much better possibilities are offered by dataset that adequately measure ethnicity, even if their scope is limited or if they are outdated to some degree.[25] One option is to use the datasets mentioned above under the first-best methodology to identify the share of Roma across locations. Thematic and focused datasets may offer better possibilities. An example of such a data pool is the Sociographic Mapping of Roma Communities dataset collected in Slovakia. Novel data collection techniques based on Internet surveys, such as the WageIndicator survey, offer rich opportunities to collect the necessary data effectively. In general, to facilitate integration measurement all data options need to be considered.

8. Policy Conclusions and Suggestions

Monitoring and measuring integration of the Roma people in the Decade countries is a formidable measurement challenge. This report suggests a number of indicators and first- and second-best methodologies to facilitate integration measurement in the Decade countries. It also provides a number of guidelines and definitions to facilitate a unified application of good practice of integration monitoring across the Decade countries.

[25] Dated data can help to identify the relationship between ethnicity and the auxiliary variable (location). Certainly, the indicators calculated based on dated external data do not capture any changes that come about from changes in this relationship, such as migration of people between locations. Yet, it should be noted that the calculations are unaffected if the relationship is stable over time, e.g. if migration does not alter the shares of Roma and non-Roma across neighborhoods.

The primary factor limiting integration monitoring is the severe paucity of data of adequate quality. Above all, reliable measures of ethnicity are missing from the existing datasets. This report suggests a first-best methodology which can be applied whenever adequate data are at hand. It represents a robust framework of measuring integration in its three stages: access, results, and success. Given the prevailing lack of adequate data, it is rarely feasible in the short to medium run, however.

Therefore, to facilitate the proposed first-best methodology, this report suggests the following principles for the long run. First, data collection needs to include broad measures of ethnicity, including questions on ethno-cultural background. Second, increase the awareness of the general public of the meanings of nationality, citizenship and ethnicity, and curb negative attitudes towards the Roma that obstruct their self-identification. Third, remove excessive restrictions on data availability. In the medium run collection of small-scale dedicated datasets (dedicated mini-surveys, Roma boosters or ethnicity supplements in existing surveys, community surveys providing aggregated data for well defined Roma communities, custom surveys collecting data form social service recipients on voluntary basis) should be considered.

For the situations where no data with direct measures of ethnicity are available and time or budget constraints do not permit their collection, a feasible and valid second best solution is suggested. It reduces the measurement problem, but does not quite eliminate it. Still, if properly administered, it can attain the preciseness of the first-best

methodology. This method uses datasets with indirect measures of ethnicity, such as geographical location, complemented by information about the distribution of people from e.g. census data. It should be noted that another advantage of this method is that also already existing datasets and administrative data can be used to facilitate it. Third-best solutions based on the share of people with some substandard outcome in the total population can be considered with due regard to their shortcomings, but only if all other options fail. We rather suggest using a simplified version of the second best approach instead.

Considering the monitoring practice, this report outlines the definitions of relevant integration indicators as well as the target populations on which they are defined. Furthermore, it lists a number of datasets and potential data sources that can be tapped.

References

Ager, Alastair and Alison Strang. 2004. *Indicators of Integration*. Development and Practice Report. Home Office.

Barany, Zoltan D. 1994. "Living on the Edge: The East European Roma in Postcommunist Politics and Societies." *Slavic Review*, Vol. 53, No. 2., pp. 321-344.

Beynon, Erdmann Doane. 1936. "The Gypsy in a Non-Gypsy Economy." *The American Journal of Sociology*, Vol. 42, No. 3., pp. 358-370.

Council of Europe. 2006. *On the Human Rights Situation of the Roma, Sinti and Travellers in Europe*. Council of Europe. Available at http://ec.europa.eu/employment_social/fundamental_rights/pdf/roma/humrights_en.pdf

European Commission. 2007. *Ethnic Minorities in the Labour Market*. Report prepared by the High Level Advisory Group of Experts.

ILO. 1990. *International Standard Classification of Occupations (ISCO-88)*. International Labour Organization. Geneva 1990.

James, David R. and Karl E. Taeuber. 1985. "Measures of Segregation." *Sociological Methodology*, Vol. 15, pp. 1-32.

Reyniers, Alain. 1995. *Gypsy populations and their movements within Central and Eastern Europe and towards some OECD countries*. International Migration and Labour Market Policies Occasional Papers No. 1, OECD.

UNDP. 2007. *Quantitative indicators for the Decade of Roma Inclusion Progress Monitoring: Review of the Existing Experience and Possible Approaches*. mimeo, UNDP.

UNESCO (1997). *International Standard Classification of Education. ISCED 1997.* http://portal.unesco.org/education/en/files/9405/10371902320ISCED_A_word.doc/ISCED_A%2Bword.doc, retrieved on 01/29/2008.

Vašečka, Michal and Iveta Radičová. 2001. *Social Exclusion and Double Marginalization of the Roma in the Slovak Republic after 1989*. In: Labor, Employment, and Social Policies in the EU Enlargement Process (eds.) Funck, B. and Pizzati, L., The World Bank, Washington, DC

Vermeersch, Peter. 2003. "Ethnic minority identity and movement politics: The case of the Roma in the Czech Republic and Slovakia." *Ethnic and Racial Studies*, Vol. 26, No. 5.,, pp. 879-901.

Zimmermann, Klaus F., Martin Kahanec, Amelie Constant, Don DeVoretz, Lilya Gataullina and Anzelika Zaiceva. 2007. *Study on the Social and Labour Market Integration of Ethnic Minorities*, Research Report No. 16., Institute for the Study of Labor (IZA).

Appendix I

Consider a society of unit size in which there are R Roma and $N = 1 - R$ non-Roma. Note that, given the normalization, *R* also denotes the share of minority people in the society. Let R^s (N^s) denote the number of Roma (non-Roma) in segregated and $R^i = R - R^s$ ($N^i = N - N^s$) integrated neighborhoods (i.e. the two subpopulations). Let the probability of some positive integration outcome (e.g. employment) be p_N and p_R for the members of the two groups, respectively, and p_T for the total population. Let their respective probabilities of positive integration outcome in integrated and segregated neighborhoods be p_R^i, p_R^s, p_N^i and p_N^s.

Ideally, we would like to measure the aggregate probability of integration outcomes for Roma and non-Roma,

$$p_R = \left(R^s p_R^s + R^i p_R^i \right) \Big/ R \qquad (1)$$

and

$$p_N = \left(N^s p_N^s + N^i p_N^i \right) \Big/ N \qquad (2)$$

and then take their ratio $\sigma \equiv p_R / p_N$ as our measure of integration between 0 and 1.

Given the data deficiencies, we are not able to directly measure the respective probabilities of integration outcomes p_R^i, p_R^s, p_N^i and p_N^s. By assumption, however, we can measure the probabilities of integration outcomes for segregated and integrated neighborhoods. By definition, these are, respectively,

$$p^s = \left(R^s p_R^s + N^s p_N^s\right) / \left(R^s + N^s\right) \tag{3}$$

and

$$p^i = \left(R^i p_R^i + N^i p_N^i\right) / \left(R^i + N^i\right). \tag{4}$$

Obviously, $p_R = p^s$ and $p_N = p^i$ if $R^i = 0$ and $N^s = 0$; that is, if our segregated neighborhoods only contain Roma people and integrated neighborhoods non-Roma people. We can hardly eliminate the measurement problem altogether in practice, since there is typically a large number of mixed neighborhoods. However, let us assume, quite reasonably, that we can estimate how many people of each ethnicity live in segregated and integrated neighborhoods, R^i, R^s, N^i and N^s. Furthermore, let us adopt the assumption that $p_R^s = \sigma^s p_N^s$ and $p_R^i = \sigma^i p_N^i$ where σ^s and σ^i are measures of relative minority deprivation within segregated and integrated neighborhoods that one can estimate. Under these assumptions we can calculate p_R and p_N. Namely, we can calculate $p_N^s = p^s \left(R^s + N^s\right) / \left(R^s \sigma^s + N^s\right)$, $p_R^s = \sigma^s p^s \left(R^s + N^s\right) / \left(R^s \sigma^s + N^s\right)$, $p_N^i = p^i \left(R^i + N^i\right) / \left(R^i \sigma^i + N^i\right)$, and $p_R^i = \sigma^i p^i \left(R^i + N^i\right) / \left(R^i \sigma^i + N^i\right)$ from (3) and (4). Inserting these into (1) and (2) we obtain

$$p_R = \left(R^s \sigma^s p^s \left(R^s + N^s\right) / \left(R^s \sigma^s + N^s\right) + R^i \sigma^i p^i \left(R^i + N^i\right) / \left(R^i \sigma^i + N^i\right)\right) / R \tag{5}$$

and

$$p_N = \left(N^s p^s \left(R^s + N^s\right) / \left(R^s \sigma^s + N^s\right) + N^i p^i \left(R^i + N^i\right) / \left(R^i \sigma^i + N^i\right)\right) / N, \tag{6}$$

where we, as discussed, know all the parameters and thus can compute p_R and p_N and thus σ. Note that if we assume $\sigma^s = 1 = \sigma^i$, that is, that Roma and non-Roma achieve the

same outcomes given they are in the same neighborhood,[26] (5) and (6) boil down to simple population-weighted averages of outcome probabilities in segregated and integrated neighborhoods

$$p_R = \left(R^s p^s + R^i p^i\right)/R \qquad (5')$$

and

$$p_N = \left(N^s p^s + N^i p^i\right)/N\,. \qquad (6')$$

Given (5') and (6') σ can be calculated as

$$\sigma = \frac{N}{R}\frac{\left(R^s p^s + R^i p^i\right)}{\left(N^s p^s + N^i p^i\right)}\,. \qquad (7)$$

It is worth noting that this approach can be applied much more generally, albeit such extensions are practical only under specific conditions. For example, one can partition the population into any number of sub-populations, *n*. If then $\sigma^n = 1$ is assumed, which under a very fine partition may be a reasonable assumption, (7) can be generalized as follows:

$$\sigma = \frac{N}{R}\frac{\sum_n R^n p^n}{\sum_n N^n p^n} \qquad (8)$$

If we know the functional relationship between R^n (N^n) and n, $R(n)$ and $N(n)$, in the continuous case (7) can be generalized as follows:

[26] As mentioned above, another assumption which may be reasonable in some countries is that the number of segregated non-Roma is zero, $N^s = 0$.

$$\sigma = \frac{N}{R} \frac{\int_n R(n)\, p^n}{\int_n N(n)\, p^n}. \qquad (9)$$

The framework can be adjusted in a similar way if we do not assume $\sigma^n = 1$, but know the relationship between σ^n and *n*.

Appendix II

Consider again a society of unit size populated by $N = 1 - R$ majority and R minority individuals. Consider now our measurement problem: we observe p_T but not p_N, p_R or σ. Let us assume that we observe *R*. By definition,

$$p_T = Rp_R + (1-R)p_N \qquad (8)$$

and thus, noting that $p_N = p_R/\sigma$,

$$p_T = Rp_R + (1-R)\, p_R/\sigma\,. \qquad (9)$$

Therefore, p_T is in fact *inversely* related to σ, holding p_R and R constant. That is, ceteris paribus, improving p_N improves p_T, while worsening the integration situation of the Roma, σ. Straightforward manipulation of (9) yields

$$\sigma = \frac{(1-R)\, p_R}{p_T - p_R R}. \qquad (10)$$

Appendix III

Labor force participation rate (or activity rate) represents the labor force as a percentage of the population of working age (15-64 years).

Unemployment rate represents unemployed persons as a percentage of the economically active population (either employed or seeking employment).

Average hourly wage represents earnings from employment divided by hours worked.

Occupational status represents the share of the employed with occupational status above and including ISCO-88 level 3: Technician and Associate Professional.

Enrolment rate in primary education represents the share of pupils in the relevant age category (typically 6-14) which is enrolled in a primary educational institution.

Enrolment rate in pre-primary education represents the share of children in the relevant age category (typically 3-5) which is enrolled in a pre-primary educational institution.

Integration at classroom level in primary education is measured as 1 - the Gini index of segregation at classroom level in primary education. See Box A1 on *The Calculation of the Gini Coefficient of Segregation*.

Special school incidence refers to the share of the relevant population which attends special educational institutions, such as those for socially or otherwise disadvantaged pupils, rather than mainstream educational institutions.

Share with (upper) secondary or tertiary education refers to the share of the population (16-64 years) with educational attainment above and including ISCED 3 level.

Share with tertiary education refers to the share of the population (16-64 years) with educational attainment above and including ISCED 5 level.

Mean educational achievement in standardized screenings and tests needs to be defined by national authorities.

Mean length of stay in pre-preprimary education refers to the average number of months that children in the cohort entering primary education (6 years of age) have spent in pre-primary education.

Possession of health insurance (rate) refers to the share of the people with valid health insurance in the total population.

Registration with a general practitioner (rate) refers to the share of the people who are registered with a general practitioner (GP) in the total population.

Registration with a gynecologist (rate) refers to the share of the people who are registered with a gynecologist in total population.

Vaccination rate refers to the share of the people who have obtained all prescribed vaccinations in total the population.

Life expectancy at birth refers to the expected number of years that one is expected to live as determined by statistics and calculated at birth.

Infant mortality rate denotes the ratio of the number of deaths in the first year of life to the number of live births occurring in the same population during the reference year.

Legal housing in a segregated neighborhood (rate) denotes the share of the total population which lives in legal housing in segregated neighborhoods (as opposed to illegal housing anywhere).

Legal housing in a non-segregated neighborhood (rate) denotes the share of the total population that lives in legal housing in non-segregated neighborhoods.

Mean net floor area (in m^2) per inhabitant denotes the average size of net floor area per inhabitant, in m^2, calculated for the population in legal housing in non-segregated areas.

Mean number of rooms per inhabitant denotes the average number of rooms (rooms used for living, sleeping, eating, or cooking, or combinations thereof, but not including bathrooms, closets, halls, storage rooms, utility and similar spaces) per inhabitant calculated for the population in legal housing in non-segregated areas.

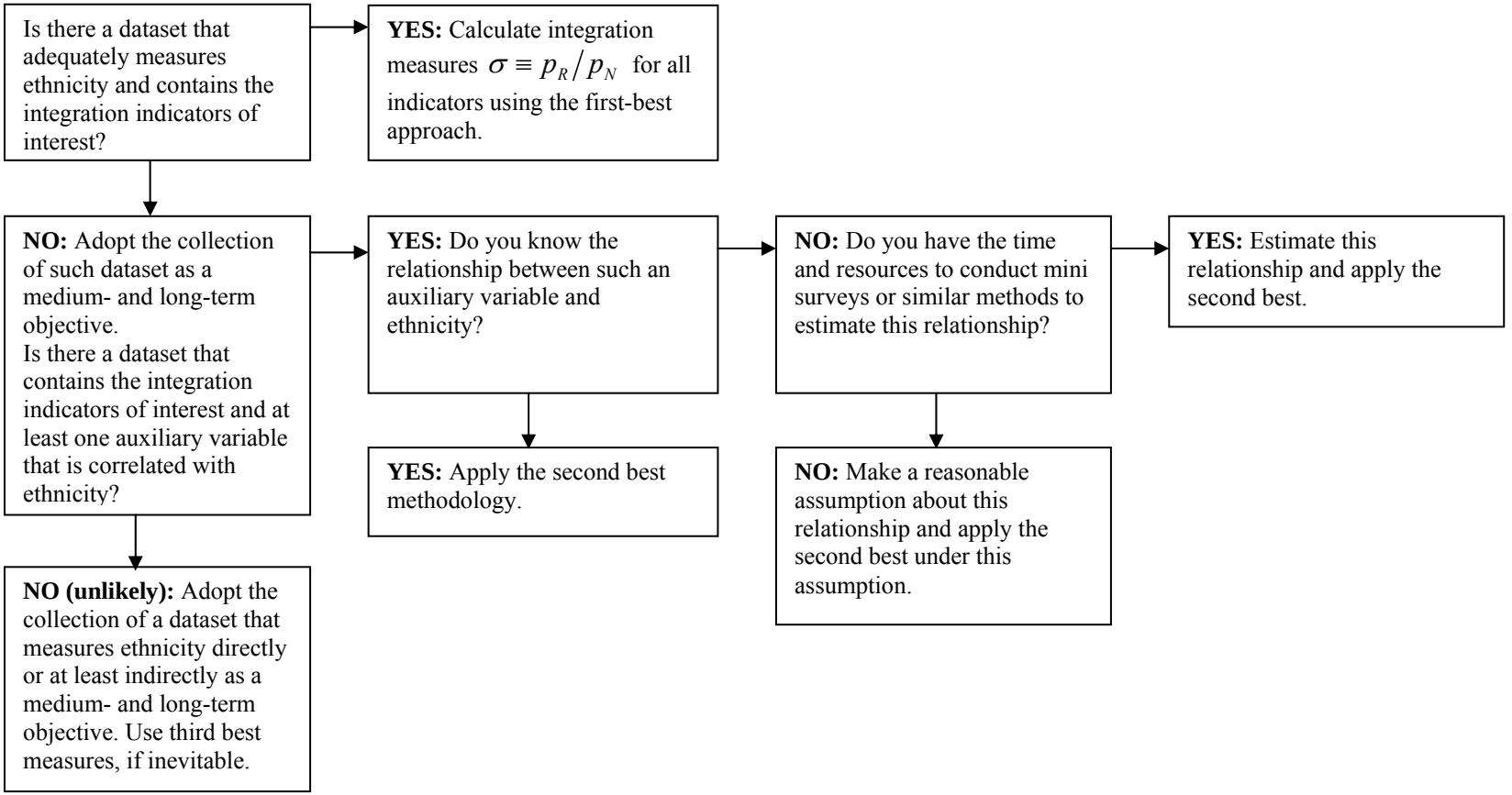
Box A1: *The Calculation of the Gini Coefficient of Segregation*

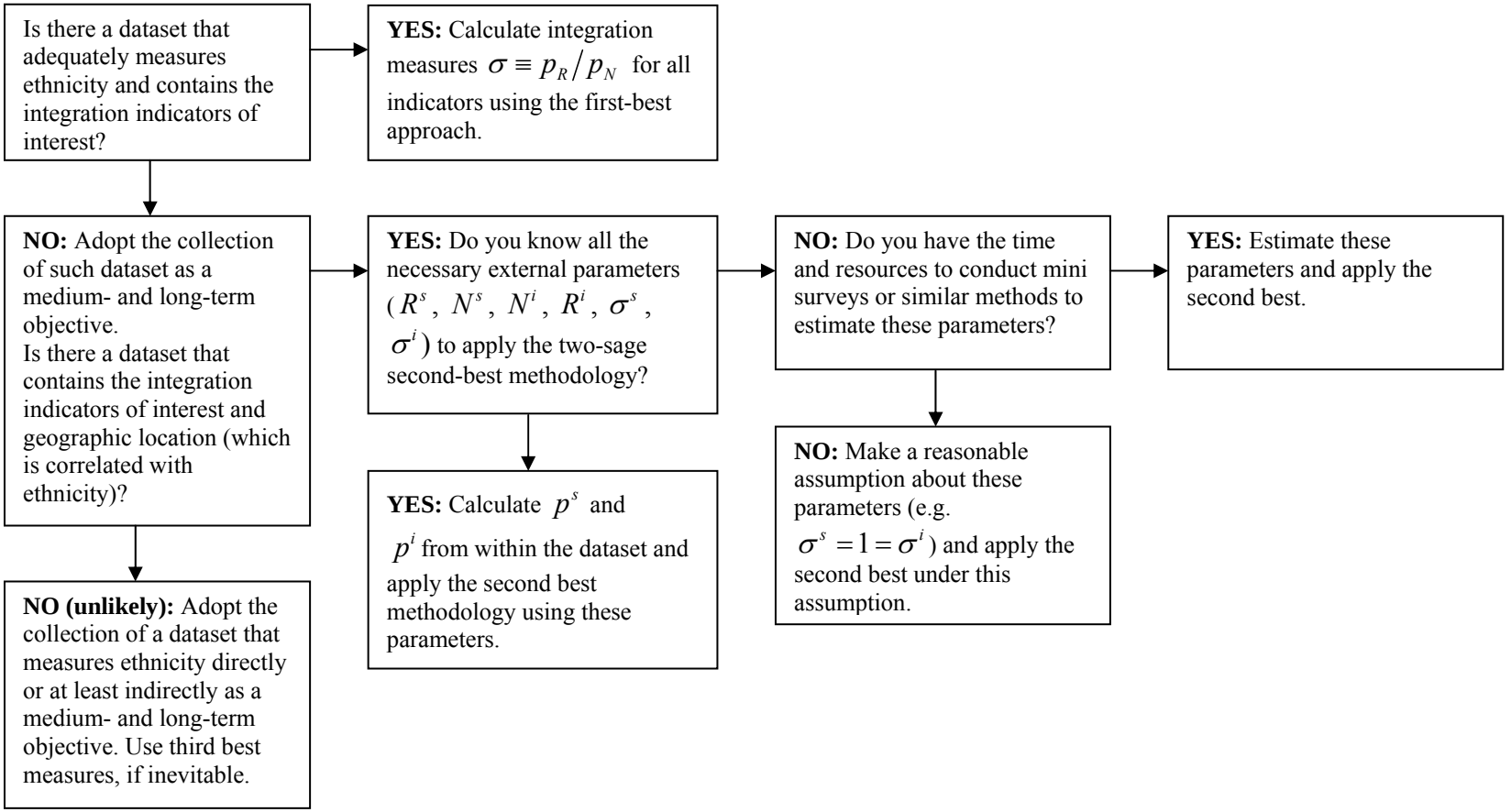
James and Taeuber (1985) provide a Gini-type measure of (classroom) segregation that we propose to use. One mathematical expression for the Gini index is

$$G = \sum_i \sum_j t_i t_j \left| p_i - p_j \right| \Big/ 2T^2 P(1-P)$$

where |*| denotes absolute value, T and P are the total population size and proportion of one of the component groups (i.e. the proportion Roma of the total), respectively, and t_i and p_i (t_j and p_j) denote the analogous values for classrooms i (j). G varies between 0 and 1 for the no-segregation and completely segregated conditions, respectively.

Appendix IV: A Policy Chart (general) [27]



[27] Notes: If the respective dataset is not representative for the country's population (Roma as well as non-Roma) the short run strategy is to try to correct for dataset's non-representativness, for example by weighting individual observations by population weights, and then proceed according to the Policy Matrix. If the best available dataset does not cover all integration indicators of interest, these can possibly be measured using other datasets and second (or third) best methods. In both cases the adequate medium and long-term strategy is to ensure the representativness and adequate coverage (in terms of measured indicators) of the primary dataset.

A Policy Chart (geographic location, two-stage second-best methodology)