Risk Management in a Census

Select Topics in International Censuses[1]

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INTRODUCTION

Population and Housing Censuses (PHC) are challenging programs to manage, not only because of the complexity and scale of operations, but because countries typically only conduct them once every 10 years. This means that for many low- and middle-income countries with national statistical offices (NSOs) that do not have a permanent decennial census unit, there are long latent periods followed by rapid increases in activity. The periodic nature of PHCs requires semidormant knowledge, skills, staffing, and capacity to be refreshed. The relatively rare occurrence and operational magnitude of a PHC heighten the importance of risk management. Risk is unavoidable in any project or program but depending on how that risk is managed can significantly help or harm the PHC schedule, budget, operations, and the quality of deliverables.

Risk management implementation benefits include:

- Early identification of strategies to deal with known risks.
- Provision of a structure for monitoring, documenting, and managing risk assessment changes and responses.
- Identification of areas for analysis to reduce future risk.
- Allowing for identification and resolution of risk that extends across census activities or operational divisions within the national statistical system by building a structure to integrate systems.

The success or failure of the PHC may depend on implementation of risk management plans (United Nations Statistics Division, 2017 and 2021).

This technical note presents guidance based on United Nations standards and Project Management Body of Knowledge® recommendations for risk identification, analysis, mitigation, and reassessment focused on different forms of risk across the census lifecycle.

KEY CONCEPTS FOR UNDERSTANDING RISK

Risk is the "cumulative effect of the probability of uncertain occurrences that may positively or negatively affect objectives" (Ward, 2008). This includes both threats and opportunities and includes three components:

- A definable event.
- A probability of occurrence.
- The impact (consequences or benefits) of occurrence.

Risk management involves identifying, analyzing, and responding to risk during the entire census lifecycle.

Risk exposure is the impact value of a risk event multiplied by its probability of occurring.

Risk triggers are warning signs, events, or conditions that an identified risk is likely to occur.

Risk registers are documents used to identify, analyze, and track individual risks.

[1] This technical note is part of a series on *Select Topics in International Censuses* that explores matters of interest to the international statistical community. The U.S. Census Bureau helps countries improve their national statistical systems by engaging in capacity building to enhance statistical competencies in sustainable ways.

U.S. Department of Commerce
U.S. CENSUS BUREAU
census.gov

United States Agency for International Development
www.usaid.gov

United Nations Population Fund
www.unfpa.org

Program risk threatens the success of the census as a whole. In contrast, **project risk** is risk that applies to a specific project or subcomponent of the census operation.

Residual risk refers to remaining risk after all identified risks have been assessed and accounted for.

Risk events are situational, time-based, and interdependent. The answers/approaches must be tailored to the specific event and context, based on best practice tools and techniques. Risk is a future-oriented concept and time affects risk perceptions. Risk events can affect other risk events (including causing or altering others), for example:

- The risk in the late delivery of tablets during procurement can affect the likelihood of risk in the timing of training the trainers for a census.
- The risk of delays in funding can affect the likelihood of risk for delays in the pilot census schedule.

Quantity of risks can affect perceptions too.

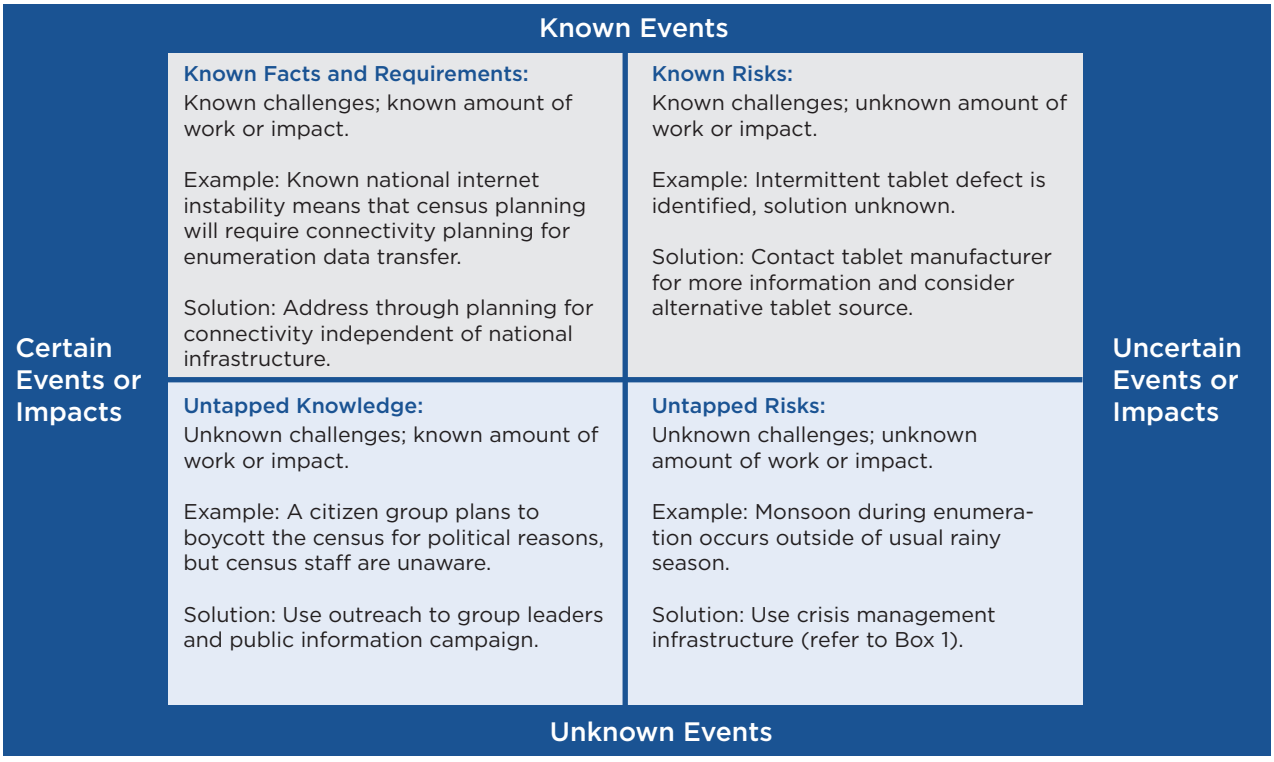
Risk perception involves control, information, time, and risk preference. Control reflects the source of risk—risks can come from internal sources, external entities, or acts of nature. Information can include inadequate information, unfamiliarity with the risk or context, unreliable information, unpredictable information, and insufficient time between information receipt and decision necessity. Time includes changing perception of risk based on how far in the future it is and associated uncertainty, lack of time to identify and perform risk response, and ability to change actions today for future outcomes. Risk preferences are internal and include whether someone or an organization is risk-averse or comfortable with risk.

Finally, risks should be divided into **known** and **unknown** risks, with the goal of increasing the known/knowns and decreasing the unknown/unknowns (Figure 1).

Risk management framework. Multiple risk management frameworks and toolsets exist. The advantages and disadvantages of common frameworks are outside the scope of this document, but it is important to select a framework that fits the needs and organizational culture of the NSO, while setting uniform and standardized processes for the NSO to follow throughout the census lifecycle.

As described in Box 1, for the U.S. Census Bureau it is useful to differentiate between NSO enterprise risk management processes, census risk management, and crisis management. All three represent important and mutually supporting structures, but each has a different role within the NSO.

Figure 1.
Known/Unknown Matrix



RISK IN A CENSUS

Overview

Risk management in a census focuses on identifying, quantifying, responding to, and controlling the risks involved in the census operation. Risk management planning is an eight-step process that continues throughout the census project lifecycle. The quality of each phase directly affects the success of future phases (United Nations Statistics Division, 2021).

Steps for Managing Risks:

Step 1: Risk Management Preplanning.

Step 2: Risk Identification.

Step 3: Risk Analysis.

Step 4: Risk Prioritization.

Step 5: Risk Strategy Planning.

Step 6: Strategy Execution.

Step 7: Strategy Evaluation.

Step 8: Strategy Documentation.

STEP ZERO: STARTING STATE

While not an official part of the cycle, census risk management planning should begin with establishing clear lines of communication between the relevant actors within the NSO. Communication, a clear framework to follow, and clear support from management are the three most important components necessary to begin effective risk management planning.

STEP 1: RISK MANAGEMENT PREPLANNING

The planning stages of census preparation are arguably the most critical processes for the completion of a successful census. Initial development of a risk management framework tailored to the census should begin 2 to 3 years prior to census enumeration to allow sufficient time for planning across NSO work divisions and full stakeholder involvement.

At this stage it is critical that risk management be led by executive management from the NSO. Risk management planning, monitoring, and action cut across all areas of the national census and involve engagement with stakeholders outside of the NSO at high levels of government and civil society. To be successful with the many diverse voices and actors, full support and engagement from leadership are critical, otherwise risk management activities may be ignored, mired in bureaucracy, or simply ineffective.

At this stage, risk management teams should begin to consider the risk context of the census operation. Risk context includes:

Box 1.

U.S. Census Bureau Case Study of Risk Management and Crisis Management

Crisis management is what happens when an organization is faced with an unforeseen negative event. In contrast to the proactive nature of risk management, crisis management is (by definition) reactive. However, a good risk management system working with a crisis management team can enable an organization to better handle risk management adaptively when unforeseen crisis events occur.

The U.S. Census Bureau maintains active 2020 and 2030 Census risk registers as well as an enterprise risk management system that covers all areas of risk management for the Census Bureau, not just those associated with the decennial census. Apart from risk management, the Census Bureau maintains a census program crisis management plan that provides an overarching framework for managing crises related to the decennial census.

During the lead-up to the 2020 Census, the Census Bureau (like all national statistical offices) was faced with serious disruptions due to the COVID-19 pandemic. The crisis management team declared a crisis in relation to the pandemic, which provided a vehicle that the Census Bureau 2020 Decennial Risk Management team was able to use to systematically integrate risk stemming from pandemic census disruptions into the active risk management efforts of the Census Bureau. The Census Bureau risk management team was able to leverage this framework to enact strategies to address pandemic-related risk with the visibility and interagency support that was needed to effectively adapt to the crisis.

Krutsch, P., "Counting on a Crisis: How the Census Bureau Utilized Crisis Management and Information Fusion During the 2020 Census," Project Management Center for Excellence, Project Management Symposium, April 22, 2021.

- Attitude: The general tendency of an individual or group of people towards risks.
- Acceptance: A set of boundaries within which risk can be tolerated; more quantifiable than attitude.
- Threshold: A risk limit beyond which a risk will not be accepted.

While documentation is discussed later in Step 8, it is a continual process and should begin with the first preliminary planning steps of census risk management.

STEP 2: RISK IDENTIFICATION

Risk identification involves putting together a list of all possible risks, including both the known risks and the unknown risks that may affect the census lifecycle. Risk identification can be one of the hardest parts of the process due to the speculative nature of it. Three elements that can support this step are:

- The team(s) involved require intimate knowledge of the full scope of census operations.
- Strong communication between all areas of census operations.
- Having retrospective documents from the previous census round to review for lessons learned.

Identifying risk involves creating a comprehensive list of risk events including clear and specific definition of each risk. The goal is to generate a risk register (or a categories list of risk events) that includes at least these elements:

- A risk event statement ("If [X], then [Y]."), though format may vary between risk management frameworks.
- Probability.
- Impact.
- Overall rating.
- Priority ranking.
- A documented source for each risk.
- Potential risk triggers.

STEP 3: RISK ANALYSIS

After potential risks have been identified, risk levels can be communicated **qualitatively** (e.g., "severe" or "minor"), **quantitatively** (probability of occurrence and impact cost), and **descriptively** (slightly more in-depth narrative of each risk).

Risk levels are generally expressed in one of three ways: qualitatively (e.g., red versus green or high versus low); quantitatively (e.g., an 80 percent chance of occurring or $10,000 of potential loss); or descriptively (e.g., using text to describe the situation and ramifications). By using any combination of theoretical knowledge, subjective judgement, simulations, and historical data, a planner can quantify the likelihood of mutually exclusive and nonmutually exclusive events.

STEP 4: RISK PRIORITIZATION

Time and budgetary constraints make it nearly impossible to respond to all potential risks. Once risks are identified and assessed, prioritizing them is the first step in deciding which risks will be addressed. Threats and opportunities should be prioritized separately. Ideally, quantitative rankings should be used; however, ordinal, comparative, or qualitative rankings can be used if quantitative scoring is not possible.

It's critical for risk to be prioritized based on a consistent and well-documented structure that is updated regularly to reprioritize based on the most significant current risks.

Risk prioritization must quantify and balance three elements for every item identified on the risk register:

- Probability of the risk happening.
- Impact (or magnitude) of the risk if it happens.
- Estimated overall rating of the risk.

Where uncertainty exists, the team should attempt to identify and document the worst, best, and most likely outcomes. These analyses rely on theoretical knowledge, subjective judgement, simulations, and historical data. Impacts to cost, schedule, and scope should be subdivided to consider individual components, e.g., assessing cost in terms of labor, materials, or opportunity costs. Generally, subjective expert judgement may be effective but should be used as a secondary alternative, unless no precise objective analytical technique is available.

STEP 5: RISK STRATEGY PLANNING

Once risks have been prioritized, risk strategy planning involves going through the prioritized risk listing to plan for how each threat can be avoided and each opportunity exploited.

Threats:

- Accepted.
- Mitigated.
- Transferred.
- Avoided.

Opportunities:

- Accepted.
- Enhanced.
- Exploited.
- Shared.

This step involves determining what the consequences of accepting the risk would be for the project. Can the threat be mitigated or transferred? Can the opportunity be shared or enhanced?

Based on conclusions from this stage, census management should establish financial and scheduling reserves to mitigate risks:

- Management reserves: Separately planned quantities of money or time intended to reduce the impact of missed cost, schedule, or performance objectives that are impossible to plan for—"unknown unknowns."
- Contingency reserves: Money or time that is intended to reduce the impact of missed cost, schedule, or

performance objectives, which can only be partly planned—"known unknowns."

STEP 6: STRATEGY EXECUTION

As the risk management plan is executed, the team should track project progress, deviation, and variances and identify how those factors affect the risk response plan.

At this stage, the team monitors and reacts to risk triggers and residual risks while communicating the risk plan status to stakeholders. As part of stakeholder communication, regular project status meetings should include risk review as a focused agenda item and report on significant risks, progress made, new problems or windfalls, and any required management actions.

At this stage, it is important that NSOs design and continue training for staff on ongoing risk management processes and policies.

STEP 7: STRATEGY EVALUATION

As the project lifecycle proceeds and the risk management strategy is executed, the risk management team should conduct continuous evaluation and risk reassessment, including updating the prioritized risk list. This evaluation involves monitoring risk response strategy effectiveness, evaluating corrective actions that were taken, reanalyzing existing risks and the risk environment, checking project assumptions, identifying new risks, and adjusting the plan accordingly.

The strategy for any particular risk should be updated based on the success or failure of actions and as conditions change. For example, successful risk mitigation strategies may reach a point when the risk no longer needs to be mitigated and the strategy is changed from mitigation to acceptance. Conversely, changing conditions can make a risk that was previously identified as acceptable be addressed instead through mitigation strategies.

To aid strategy evaluation, it is a good idea to establish early warning systems based on cost or schedule variance, stakeholder attitude, or emergence of additional critical paths. Early warning systems are important for detecting plan deviations that may be a risk trigger or may cause a risk trigger. In doing so, risk management teams create an objective framework to trigger intervention early and effectively.

STEP 8: STRATEGY DOCUMENTATION

Following strategy evaluation (but ideally throughout the entire project lifecycle), census management should track and document the census risk management process. Systematically recording the process should document risks encountered and list how those risks were managed. The practice of developing and maintaining a risk register with accompanying contingency plans and mitigation strategies is extremely valuable, not only for the next census operation but also for other statistical data collection programs throughout the national statistical ecosystem (United Nations Statistics Division, 2021).

A key part of plan documentation is to update the risk register, including documenting what worked and what did not work. Knowing the risks that were encountered in terms of success, failure, or nonimplementation of strategies is important for improving future projects among myriad other benefits.

Each risk response and contingency plan should be tracked throughout the project and the risk management plan should be updated as conditions or assumptions change. Documentation provides project history, lessons learned, and communicates that information effectively. As an element of effective communication, documentation should be current, accurate, complete, clear, and obtainable. Documentation protects the project team by communicating the rationale for the team's decisions to others who were not involved in the census.

CENSUS-SPECIFIC BEST PRACTICES

Census procurement risks can be mitigated through early procurement plan development, redundant sourcing strategies, and attention to contract management.

Establish long-term agreements to insulate strategic commodities required for successful census operations against cost or availability fluctuations.

Investigate multimode data collection (e.g., telephone interviews and tablet/mobile phone data collection) approaches to insulate against failures of any one or two data collection approaches.

Investigate political risks well in advance of the census enumeration to allow for stakeholder outreach and other risk mitigation strategies, especially in fragile contexts. Box 2 presents a case study on how the Kenya National Bureau of Statistics used this strategy as part of their 2009 Census.

Risk assessment should not stop following the completion of census enumeration. Historically, not all countries have extended risk assessment processes through post-enumeration and data dissemination stages, with subsequent reductions in the effectiveness of those stages.

It is useful to maintain separate project and program risk registers. Project risk registers are comanaged by the overall census risk management team but owned by individual project teams. A program risk register includes risks that relate to the census operation as a whole and are owned by the overall census risk management team.

Apart from the critical role that risk management planning plays in the census project lifecycle, many census donor agencies require risk matrices to be completed and maintained. The guidance provided in this document should be considered in light of the specific requirements from the donors supporting a national census.

Box 2.

Case Study: Political Risk Assessment and the 2009 Kenya Census

During the lead-up to the 2009 population and housing census in Kenya, the Kenya National Bureau of Statistics (KNBS) conducted a detailed risk assessment process that helped them identify a number of risks including concern around the inclusion of a question on ethnicity as part of the census questionnaire. Public discussion at the time included debate about whether the inclusion of an ethnicity question could enflame interethnic violence.

Supported by donors and United Nations technical advisors, KNBS pursued a two-part, risk mitigation strategy. First, impartial observers were arranged to monitor and verify the census process, focusing on districts identified as having a higher risk of interethnic tensions. Second, a media and publicity campaign was launched targeting key community leaders and the general public. This media campaign was aimed at spreading information on the aims of the census and was internationally recognized as a key factor in the success of the census.

United Nations Population Fund, "Evaluation of UNFPA Support to Population and Housing Census Data to Inform Decision-Making and Policy Formulation," United Nations Publications, New York, NY, 2016.

CONCLUSION

The 2020 global round of censuses proved to be challenging (even for countries that had comprehensive risk registers) because of the devastating impact of the COVID-19 pandemic. Depending on the timing of the census, some countries had to pivot to collecting data in new formats, deploy new sanitary field protocols, or even manage procurement issues due to global supply chain issues. Others had to supplement data from administrative registers to address data gaps or add questions to evaluate the impact of COVID-19. Many had to adjust their budgets. It was important for countries to update their risk registers and prioritize solutions to effectively manage the crisis. In light of this pandemic and the myriad challenges that typically face a global census round, the past few years have shown the value in having comprehensive risk management plans for censuses.

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