

Date: 13/03/2023

Statistical Innovation and Capacity Building in the Pacific Islands Project

**REQUEST FOR EXPRESSIONS OF INTEREST (REOI)
Microdata Anonymization Consultant - (INDIVIDUAL CONSULTING SERVICES)**

Grant No. D544; Project ID No. P169122

Assignment Title: Microdata Anonymization Consultant
Reference No.: FJ-SPC-287198-CS-INDV and EO123/4968

Background:

The Pacific Community has received financing in the amount of USD 4.5 million equivalent from the World Bank toward the cost of the Statistical Innovation and Capacity Building in the Pacific Islands Project, and it intends to apply part of the proceeds for consulting services.

The consulting services (“the Services”) include those of a Microdata Anonymization Consultant over the period of late March 2023 to March 2024. The Consultant will be home-based, and the required services relate to census and survey microdata anonymization methodologies in the Pacific region. The assignment requires stakeholder consultation, methodology and literature review, making a presentation to stakeholders and the preparation of a report and a policy brief/guidance note. Any travel required under these consulting services will be organized by SPC or by the consultant, in accordance with SPC’s travel policy requirements. SPC doesn’t cover cost related to visa and medical insurance for consultants.

The overall objective of the assignment is to provide information to the Pacific Statistics Methods Board (PSMB) and other Pacific statistics decision makers to guide decision making in relation to anonymization methods, with particular focus on Household Income and Expenditure Survey (HIES) data.

The consultant will:

- i. Review current anonymization methods adopted by SPC and Pacific Island Countries and Territories (PICTs).
- ii. Document recommended best practice for anonymizing HIES, and other survey and census microdata.
- iii. Provide a guidance note.

The detailed Terms of Reference (TOR) for the assignment is appended herewith.

The Pacific Community now invites eligible individuals (“Consultants”) to indicate their interest in providing the Services.

Interested Consultants should provide information demonstrating that they have the required qualifications and relevant experience to perform the Services (attach curriculum vitae with description of experience in similar assignments, similar conditions, etc.).

Firms’ staff may express interest through the employing firm for the assignment and, under such situation, only the experience and qualifications of individuals shall be considered in the selection process.

The criteria for selecting the Consultant are:

Criterion	Desirable skills and experience	Maximum points	Weight %
Education & work experience	<ul style="list-style-type: none"> • Degree in Statistics, Statistical Methods, Data Science, Survey Methodology, or other related discipline, preferably at a master's or Doctorate level. • At least 5 years of relevant professional experience in areas relating to anonymization methods, Household Income and Expenditure Survey (HIES) data. 	8	25
Technical skills	<ul style="list-style-type: none"> • Technical and quantitative skills of a Microdata Anonymization Consultant, including: <ul style="list-style-type: none"> ○ In-depth understanding of the structure of survey and census microdata, including those generated by household consumption surveys, Multiple Indicators Cluster Surveys, health surveys, labor force and agricultural surveys, and population and housing censuses. ○ Undertaking statistics methodological research, with a demonstrated track record of publication in peer-reviewed literature. ○ Undertaking literature reviews, cost-benefit analyses, and risk assessments. ○ Critiquing statistical legislation, methods, policies, and protocols related with census and survey microdata anonymization. ○ Synthesizing information and preparing policy dialogue for statistics development. • Demonstrated understanding of up-to-date anonymization techniques, including techniques to measure disclosure risk, methods to reduce such risk and for assessing the compromise in terms of data application. • Demonstrated experience as a practitioner in developing and/or transition countries is desirable. Experience specific to the Pacific region is highly desirable. • Interpersonal skills: ability to collaborate effectively with multi-disciplinary teams, and to listen and integrate ideas from varied sources. 	16	50

Criterion	Desirable skills and experience	Maximum points	Weight %
General Knowledge & Professional skills	<ul style="list-style-type: none"> • General statistical knowledge and analytical skills: demonstrated track record of working with survey data; understands underlying statistical concepts. • Knowledge of microdata anonymization methods to estimate statistical disclosure risk and techniques such as (but not limited to) data reduction and data perturbation. • Knowledge and experience policy issues, policy-making process. • Policy dialogue skills: identifies and assesses policy issues and plays an active role in the dialogue with the government and/or other stakeholders (distils recommendations/lessons to stakeholders) • Integrative skill: working to develop an integrated view across all facets of the current sector. • Excellent written and oral communication skills in English, with French language skills also being desirable; delivers information effectively in support of team or workgroup. 	8	25
TOTAL		32	100

The attention of interested Consultants (including firms) is drawn to paragraph 3.14, 3.16 and 3.17 of the World Bank's Procurement Regulations for IPF Borrowers, dated July 2016, revised November 2017, and August 2018 ("the Regulations"), setting forth the World Bank's policy on conflict of interest.

The assignment will be undertaken from late March to December 2023.

Further information can be obtained by email at the addresses below during office hours [07.30 to 16.00 hours, Noumea, New Caledonia (GMT+11)].

Expressions of interest must be delivered in a written form to the address below (by e-mail) by 27 March 2023.

The Pacific Community
Michael Sharp – Manager Statistics Collections
michaels@spc.int ; cc: sandrag@spc.int, and rfq@spc.int
<https://www.spc.int/>

Terms of reference for the “Methodological review for anonymising census and survey microdata in the context of Small Island Developing States”.

Background information on the project

The Pacific Community

The Pacific Community (SPC) (www.spc.int) is the principal scientific and technical organization supporting development in the Pacific region. It is an international organization established by treaty (the Canberra Agreement) in 1947 and is owned and governed by its 27 members, including all 22 Pacific Island countries and territories (PICTs). SPC’s headquarters are in Noumea, New Caledonia, and it is one of nine member agencies of the Council of Regional Organizations of the Pacific (CROP).

The Statistics for Development Division

The Statistics for Development Division (SDD) (<http://sdd.spc.int>) of SPC is the main stakeholder in the implementation of the Ten-Year Pacific Statistics Strategy (TYPSS), which was adopted by PICT leaders in 2009 in recognition of the need for a comprehensive plan to drive improvement and development of statistics in the Pacific region. TYPSS proposed a regional approach to provide regional strategic leadership to improve the scope and quality of national statistics. The ten-year strategy (2010 - 2020) outlined a series of short and long-term programs to contribute to national statistics capacity development and regional coordination and capability. SDD’s strategic framework is guided by TYPSS and its current work program by the Business Plan 2018 - 2020. The revision of both TYPSS and SDD’s business plan are currently underway.

SDD plays a significant role for TYPSS as a large and comprehensive technical provider to national statistics offices (NSOs) in the Pacific region. SDD’s technical assistance role has been strongly endorsed by NSOs, in particular the Small Islands Developing States (SIDS) where resources are limited, and technical assistance and supplementation is essential. As part of a regional organization with a broad technical and social mandate operating across 22 PICTs, SDD has been able to translate and mediate between international standards and frameworks and Pacific contexts and focus.

Statistical Innovation and Capacity Building in the Pacific (PACSTAT) Project

The [PACSTAT project](#) is an International Development Association (IDA) funded project to be implemented over the period of June 2020 to June 2025. The overall development objective of PACSTAT is to *improve the quality of welfare data collection and accessibility to comparable welfare data in the Pacific Island Countries*.

The context for this project is that PICTs are characterised as having small populations that live across vast areas of the Pacific. More comparable data is needed to understand deprivation in PICTs overtime, and between countries to monitor regional trends. The Pacific is a region with substantial gender inequality and data deprivation hinders evidence-based policy. Public access to data is another challenge facing the region and data deprivation hinders efforts to track and monitor progress on reducing poverty and inequality, and to implement policy.

National Statistics Offices (NSOs) in the Pacific region lack funding to meet the costs of data collection, and the small populations are of low statistical capacity in terms of budget, labour qualification, and other technical constraints associated with technology and statistics across the vast Pacific.

The Pacific Statistics Methods Board (PSMB; <https://sdd.spc.int/pacific-statistics-methods-board-psmb>) has potential to accelerate the adoption of new methods for data collection and statistical analysis as well as promote regional harmonization and comparability.

The Project includes the following components and sub-components:

- i. To support the administration of PSMB and the dissemination of its recommendations:
 - a. PSMB technical support and administration, including overseeing PSMB commissioned statistical development research, such as the activities of this Terms of Reference;
 - b. Dissemination and training of best practice recommendations from the PSMB to regional NSOs, such as the activities of this Terms of Reference; and
 - c. Improve the analysis and publication of gender statistics in the region.
- ii. To strengthen SPC-SDD's ability to play a "statistical system leader" role and provide technical assistance on data collection methods:
 - a. Expanding technical capacity of SPC-SDD in welfare data collection, analysis, and dissemination;
 - b. Create comparable indicators, including gender statistics, and micro-datasets to promote data use in the region.
- iii. To promote context-appropriate innovation in the Pacific region and experimentation in statistical methods.

Data use in the Pacific region

In lieu of population-based registers, the Pacific region depends significantly on data produced through the suite of core national statistical collections for population-based social and economic statistics. The core suite of statistical collections - including: i) Population and Housing Census (PHC), ii) Multiple Indicator Cluster Survey (MICS) programme with possible integration of modules typically included in Demographic Health Survey (DHS), iii) Household Income and Expenditure Survey (HIES), iv) Labour Force Survey (LFS), v) Agricultural Census / Survey, and vi) Disability Survey - collectively contribute data towards populating around half (63 of the 132) of the Pacific subset of SDG indicators and 87 percent of the population-based indicators. The coverage of the core national statistical collections presents endless opportunity for thematic analysis and research for policy development across a wide range of sectors and cross-cutting issues, including gender.

Numerous nationally representative census and surveys (<https://sdd.spc.int/census-and-survey-calendar>) have been conducted in the Pacific region; however, data remain mostly underutilised. In many cases, upon completion of the census/survey report, the microdata sets are not made available for further use. This is a missed opportunity for the economic and social development of the Pacific region and hinders evidence-based policy derivation and monitoring.

There are numerous factors as to why data are not made available for secondary analysis, which range from unclear mandate in statistics legislation in relation to microdata dissemination, to data sovereignty, capacity limitations, and **risk of individual disclosure**.

This assignment aims to explore matters relating to anonymising Pacific development microdata, including identifying the costs and benefits of microdata anonymisation, and other related matters, such as the main principles of microdata anonymisation and anonymisation techniques.

Objectives of the assignment

The overall objective of the assignment is to provide information to help the Pacific Statistics Methods Board (PSMB), and other Pacific statistics decision makers, with information to guide decision making in relation to the methodology for anonymization of census and survey microdata.

This Consultancy will research multiple aspects relating to anonymization of microdata (or unit record data) sourced from population-based censuses and household surveys, however with particular focus on HIES data. The overall objective is to disseminate best practice recommendations from the PSMB to regional statistics stakeholders, and to provide strengthen capacity in the region with respect to microdata anonymisation.

This specific research aims to make recommendations to PSMB in relation to technical matters associated with microdata anonymization, and to synthesise recommendation and policy implication in a policy brief for statistics decision makers. The objectives are therefore to:

- i. Consult stakeholders and undertake literature review to understand, evaluate and critique the current procedures and protocols in place in the Pacific Region in relation to survey and census microdata anonymization, with a focus on Pacific countries NSOs, other organisations operating in the Pacific region (such as the World Bank, UNICEF, WHO, Australian Bureau of Statistics (ABS) and Stats New Zealand) and SPC's Pacific Data Hub – Microdata Library.
- ii. Document recommended best practices for anonymising household surveys and census microdata, with a particular focus on:
 - a. Techniques to measure disclosure risk (individual vs. global measures);
 - b. Methods to reduce disclosure risk (including those based on data reduction, such as top and bottom coding, and those based on data perturbation, such as data swapping, adding noise);
 - c. Methods for assessing the resulting information loss (bias, impact on variance of estimates, impact on regression coefficients and statistical analyses...).
- iii. Prepare a guidance note and a policy brief - including recommendations, policy implications and critical pathway to improve microdata anonymization methods in the Pacific Region - to support Pacific statistics stakeholders to make decisions in relation to microdata anonymisation as well as the pros and cons of microdata anonymisation with respect to maintain 'usability' of the microdata for small populations and specific purposes, including poverty mapping.

Scope of work and description of tasks

The assignment is to be performed across data sourced from household and population-based surveys, including HIES, MICS (UNICEF), DHS and STEPS (WHO), Agriculture, Labour and Disability surveys, and relating to some aspects of census anonymisation, with a main focus on anonymising HIES microdata sets.

The Scope of the assignment includes:

- i. Stakeholder consultations;
- ii. Literature and methodological reviews;
- iii. Drafting one report and a policy brief for consultation with PSMB and other stakeholders;
- iv. Participation to two consecutive meetings of the Pacific Statistics Methods Board (PSMB);
- v. Preparation of a 'publication ready' final draft of the report and the policy brief.

Consultation with stakeholders

Stakeholders are defined as members of PSMB as well as SDD Staff and other project Consultants. As the need arises, other stakeholders, such as Government Statisticians and technical partners, such as the World Bank, will be engaged.

Around 5-days should be dedicated to consulting with Stakeholders. Attending the PSMB meeting in Brisbane from 10 to 11 May 2023 is essential (either virtually or physically) and there may be a need for some virtual meetings with PSMB throughout the assignment. Consultations with other stakeholders, such as Government Statistician, World Bank, SDD, and others identified, will consist of a series of virtual meetings. There will be ongoing dialogue with the Project Manager and other SDD staff. The purpose of consultations is to evaluate the current situation in terms of microdata anonymisation in the Pacific, and to identify anonymization challenges.

The Project's [Stakeholder Engagement Plan](#) is to be implemented throughout the assignment with all stakeholders to be made aware of the Project grievance mechanism and provided with contact information to lodge grievances, as follows:

Address/post: Pacific Community (SPC), 95 Promenade Roger Laroque, BP D5 98848 Noumea, New Caledonia | Phone: +687 262000 | Fax: +687 263818 | Email: complaints@spc.int | Web: www.spc.int.
<https://spc.int/accountability>

Report: Statistical techniques to anonymise Pacific surveys microdata

The objective of this report is to serve as an information reference for Pacific statistics decision makers, and as the basis for producing the Policy Brief. The report will support decision making and policy on microdata anonymisation, with an overview of the current situation in the Pacific countries, the methodologies to evaluate disclosure risk, the statistical techniques for reducing such risk and the methods to estimate the subsequent information loss. The focus is on issues relevant to HIES microdata, with implications for data use in poverty, food security, labour, and gender analyses. Identifying issues that are common to SIDS is also of interest.

The report will be published by SPC; it is expected to be a high-quality product digestible by Pacific statistics technicians. An example of the content of the report is provided below:

- i. Introduction to microdata anonymisation: main principles and dictionary of definitions (de-identification, risk of individual disclosure, recoding, post-randomization, shuffling, etc.).
- ii. Literature review and synthesis in relation to the benefits, costs and risks associated with microdata anonymisation; specific challenges in the case of SIDS and HIES; methodological review of different approaches to anonymizing survey microdata, with particular focus on household income and expenditure surveys, and methods to measure and reduce disclosure risk and for estimating the resulting information loss.
- iii. Documentation and critique of the current processes and protocols of the Pacific Data Hub – Microdata Library, including current anonymization process, and those of other organisations, such as World Bank, UNICEF, the DHS Programme, WHO, ABS and Stats-NZ. Case studies of best practice.
- iv. Policy implication, critical pathway, and recommendation for anonymising microdata in the Pacific.

Policy brief

The report is to be accompanied by a policy brief that clearly presents the risks, opportunities, and costs of anonymizing microdata in the Pacific. The policy brief should be around 2- to 4-page long and should be written for a non-technical audience, with graphics welcomed.

Expected outcomes, deliverables, and timeline

The Project Development Objective is to improve the quality of welfare data collection and accessibility to comparable welfare data in the Pacific Island Countries.

The deliverables and timelines are presented in the table below.

Activity	Deliverable	Due date
Consultation with PSMB, SDD and other stakeholders	Collation of information for report	March-May 2023
Drafting of report	First draft of report	March-May 2023
Presentation of the draft report to the 11 th PSMB Meeting and consultation with PSMB members	Participation to the 11 PSMB Meeting	10-11 May 2023
Drafting of report	Second draft of report, incorporating feedback from SPC / PSMB	June/August 2023
Drafting of policy brief	Draft policy brief	September/October 2023
Presentation to the 12 th PSMB meeting	Final draft of report, and draft of the policy brief	TBC, but around late October 2023
Publish anonymisation report and policy brief	Final draft of the report, including having fully responded to editor comments, provided tables and figures required for publishing the report, and any other data or documentation. Publication-ready Policy brief, with tables/figures	22 December 2023

Duration of the assignment and estimated expert-time input

The work is to be conducted over the period of late March to December 2023, with the first draft of the report and the policy brief to be presented to the PSMB meetings in May and October 2023. Allowing for possible delays and processing for final deliverable, the offered until March 2024.

Reporting requirements

The Consultant will report to the Manager Statistical Collections / Project Manager, who reports to the Director, SDD. The Finance and Administration Officer will be the focal point for all finance and administrative aspects of the Project.

Working arrangements

Noting the above reporting requirements, the Consultant will be required to work with several different important stakeholders to the Project. The Consultant will have dialogue with the National Statistics Agencies of the Pacific, SDD Staff, the Project Steering Committee, PSMB, the World Bank, other donors and partners, NGOs and academia.

The Consultant should ensure that he/she has valid health insurance for the duration of the assignment. The Consultant is responsible for any tax payable under their national jurisdiction; SPC will accept no liability for any tax due.

The Project's [Labour Management Procedure](#) is to be implemented throughout the assignment. Grievances can be lodged, as follows:

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<https://spc.int/accountability>

Client's input

The payment schedule and deliverables are provided below.

SPC will effect payment to the Consultant after acceptance by SPC of an invoice according to the below payment schedule and based on satisfactory delivery of the deliverables. Every endeavour will be made to ensure payment is made within thirty days of receipt of the invoice.

Activity	Deliverables	Due date	% Payment
Consultation with PSMB, SDD and other stakeholders	At least one internal consultation and participation to 1 PSMB Meeting	March-May 2023	
Drafting of report	First draft of report	March-May 2023	25
Presentation of the draft report to the 11 th PSMB Meeting	Presentation	10-11 May 2023	25
Drafting of report and policy brief	Second draft of report, incorporating feedback from SPC / PSMB, and first draft of the policy brief presented at the 12th PSMB meeting	June-October, 2023	25
Publish final version of the report and the policy brief	Third draft of the report, including having fully responded to editor comments, provided tables and figures required for publishing the report, and any other data or documentation.	22 December 2023	25
TOTAL			100

TEMPLATE FOR CURRICULUM VITAE (CV)

Name of Expert:	{Insert full name}
Date of Birth:	{day/month/year}
Country of Citizenship/Residence	

Education: {List college/university or other specialized education, giving names of educational institutions, dates attended, degree(s)/diploma(s) obtained}

Employment record relevant to the assignment: {Starting with present position, list in reverse order. Please provide dates, name of employing organization, titles of positions held, types of activities performed and location of the assignment, and contact information of previous clients and employing organization(s) who can be contacted for references. Past employment that is not relevant to the assignment does not need to be included.}

Period	Employing organization and your title/position. Contact information for references	Country	Summary of activities performed relevant to the Assignment
[e.g., May 2015-present]	[e.g., Ministry of, advisor/consultant to... For references: Tel...../e-mail.....; Mr. Hbbbb, deputy minister]		

Membership in Professional Associations and Publications:

Language Skills (indicate only languages in which you can work): _____

Adequacy for the Assignment:

Reference to Prior Work/Assignments that Best Illustrates Capability to Handle the Assigned Tasks
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Expert 's contact information : (e-mail, phone.....)

Certification:

I, the undersigned, certify that to the best of my knowledge and belief, this CV correctly describes myself, my qualifications, and my experience, and I am available, as and when necessary, to undertake the assignment in case of an award. I understand that any misstatement or misrepresentation described herein may lead to my disqualification or dismissal by the SPC-SDD, and/or sanctions by the Bank.

{day/month/year}

Name of Expert

Signature

Date