

**IPUMS-INTERNATIONAL: “Best practice”
A Review by Dennis Trewin, Statistical Consultant**

IPUMS-International is a global initiative to recover, preserve, integrate and disseminate census microdata to researchers world-wide without charge. Begun in 1999, the project is lead by the University of Minnesota Population Center and major funding is provided by the National Science Foundation and the National Institutes of Health (USA). <http://international.ipums.org>

Mr. Dennis Trewin kindly accepted the invitation to evaluate the IPUMS-International project with respect to data security and statistical confidentiality. He attended an IPUMS-International workshop (Lisbon, Portugal, Aug 25, 2007) and visited the Minnesota Population Center for an on-site inspection, Oct 30-Nov. 4, 2007. As part of the review, he also examined project documents and publications as well as interviewed the General Counsel of the University of Minnesota.

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1. **Highlights (summary prepared by Bob McCaa, Nov. 28, 2007)**
 - a. **Very strong statement in support of IPUMS** "...could become one of the most important global statistical assets." ...and "strong support" by data providers. IPUMS is in full compliance with CES principles and guidelines.
 - b. **Best practice:** "Without question IPUMS International meets the four Core Principles outlined in CES (2007). It is cited in CES (2007) as a Case Study of good practice. This review confirms its status as good practice for Data Repositories. Indeed it is likely to provide **the best practice for a Data Repository for international statistical data.**" And (Section 12.6): "**The security of the computing environment used by IPUMS-International is first class and appears to be of the standard of the best statistical offices.**"
 - c. **Feedback from data providers:**
 - i. more feedback on users and research results
 - ii. strong support for an on-line tabulator
 - iii. more on practical statistical methods relevant to microdata such as confidentiality methods, data management and analytical skills.
 - d. **Feedback from users: --overwhelming support; main request is for more censuses and more countries.**
 - i. a sample function to generate smaller extracts
 - ii. GIS facility
 - iii. more workshops
 - e. **16 conclusions—each in a word or phrase (see item 12).**

Growth, opportunities for greater international use, excellent service (recovering, archiving, documenting, integrating, and accessing microdata), ambitious development program may require prioritisation, high level of trust by users and producers, first class security, some confidentiality risks may be underestimated, reliance on trust (supported by Trewin), breaches must be seriously treated, reinforce confidentiality, inability of some countries to participate on IPUMS terms, more feedback on research, new initiatives (module on ethical behavior, confidentiality exam for users, add prominence to conditions for access, provide more instruction to producers, target more awareness to strategic international organizations.
 - f. **Recommendations (item 13).** "IPUMS-International is a valuable and trustworthy microdata service. It meets the fundamental principles of good practice with respect to confidentiality and microdata. Consequently, ***my recommendations are limited (emphasis bob's).***"
 - i. minor adjustments to user licensing agreements (reinforce user responsibility to protect the microdata, module on ethical behavior, short test on acceptable behaviors, direct statement of conditions of access
 - ii. user breach must lead to corrective action; some assessment of degree of inappropriate use
 - iii. better feedback to data providers
 - iv. increase awareness with international agencies, including an assessment of how to approach
 - v. consider alternative ways of incorporating data of countries which cannot relinquish control (i.e., Australia).
 - vi. is IPUMS well positioned to scale up to expected growth?

2. Terms of Reference

IPUMS-International is a project to inventory, preserve, harmonise and disseminate census microdata from around the world. Use is restricted to scholarly purposes. It is a collaboration of the Minnesota Population Center (MPC), national statistical agencies, international data archives and experts from participating countries. Major funding for IPUMS-International is provided by the National Science Foundation and the National Institutes of Health.

The Terms of Reference for this study are as follows.

“The goal of IPUMS-International is perfection in the following sense:

- a) total satisfaction of our statistical agency partners that we have implemented every detail of the memorandum of understanding regarding both archiving and dissemination
- b) complete satisfaction of the researchers regarding the integrated data and documentation

The study will identify weaknesses and lapses so that IPUMS-International can improve its procedures. This will provide an additional layer of protection for official statisticians as well as trust for the public.”

To achieve the last objective it will be necessary for this review report to be a public document. It has been written with this in mind.

A number of information sources were used to undertake this review.

- (i) The role of ‘archiving’ services like IPUMS-international was discussed at the 2007 Session of the United Nations Statistical Commission. I was the author of the main discussion paper and, at the time, an Interregional Adviser on National Statistical Systems for the United Nations. As a consequence I also participated in a number of ‘corridor’ discussions on the topic.
- (ii) A number of meetings with participating countries were held in conjunction with the 2007 Session of the International Statistical Institute. I was able to participate in some of those discussions as well have bilateral discussions with country experts.
- (iii) I was able to read a number of papers and reports relevant to IPUMS-International.
- (iv) The IPUMS-international procedures are well documented facilitating a review of their adequacy.
- (v) I have had extensive discussions with the staff of the Minnesota Population Center (MPC).

3. Why am I qualified to undertake this review?

Until January 2007 I was Australian Statistician responsible for the Australian Bureau of Statistics. One of my achievements was the extension of microdata services to researchers whilst maintaining public trust and abiding by the conditions outlined in the legislation governing microdata access. During this time I was asked by the Conference of European Statisticians to chair a Task Force to produce guidelines on good practice on the release of microdata and the protection of confidentiality. These were published in 2007 as "Managing Statistical Confidentiality and Microdata Access: Principles and Guidelines on Good Practice" (CES, 2007). I produced a variant of these guidelines as a Discussion Paper for the 2007 session of the United Nations Statistical Commission. These were discussed and adopted as international guidelines.

4. Objectives of IPUMS-International

The objective of IPUMS-International is to make cross-national census microdata readily accessible and usable. The project facilitates comparative international research based on pooled microdata. A harmonised composite coding system for variables allows easy comparisons across time and countries. Extensive documentation aids in the interpretation of data.

5. Services Provided

IPUMS-International provides a range of services both to data providers and those wishing to access the data users. It is important not to under-emphasise the services to data providers. For many it is a major motivation for belonging to IPUMS.

Some of the key services provided to data providers include:-

- (i) microdata creation services – assistance in creating a confidentialised microdata file in a form that can be used by researchers.
- (ii) data archiving services – a copy of a country's data becomes available off site at MPC; it is recommended practice that key data sets be archived off site but many countries do not have the facilities or resources for doing their own archiving. There are several examples of countries recovering lost data (eg through natural disaster or mismanagement) by using the IPUMS service.
- (iii) data recovery services – IPUMS expertise or contractors working with IPUMS has been able to be used to recover data where the storage medium (eg magnetic tapes) have been damaged.
- (iv) Seminar services – international seminars on various topics are a very effective way of sharing knowledge.
- (v) Documentation services – the documentation produced by IPUMS can often be very useful for the country providing the data.
- (vi) Improved data access – countries can use IPUMS tools and facilities to generate tables and other statistical material from their own data.
- (vii)

IPUMS-International is considering an increasingly range of powerful on-line facilities to allow improved researcher access to Population Census microdata. These may be very

useful to some users although the majority of users will still prefer simply to have data sets they can download into their own software facilities. But there will be an important sub-set of users who will not have access to such facilities and would prefer on-line facilities.

For data users, the prime service is access to a rapidly growing set of microdata that has been 'integrated'. The process of integration greatly facilitates comparisons across countries – it also facilitates comparisons across time.

Among other things, it supports cohort analysis. It enables cohorts to be tracked across successive censuses. Although not as powerful as longitudinal analysis, research studies have shown that cohort analysis provides at least half the power of longitudinal analysis and can be far easier to implement.

We should not forget the benefits from simply having the data available for research use. For many researchers, it may be the only way to access some data sets especially those from developing countries.

It should also be seen in the context of international trends in making access to more detailed data increasingly available but in a way that its confidentiality is protected. The demand is there – technology has made detailed data easier to access and it has also made evidence based decision making increasingly realistic.

6. Trends in the Provision of Microdata

The 2003 Conference of European Statisticians was the first occasion the heads of National Statistical Offices collectively considered the question of microdata. Importantly they agreed that supporting research is an important activity for National Statistical Offices (NSOs) and that most NSOs could do more to satisfy these needs. Doing more included providing improved access to microdata. They commissioned work which led to the publication of Guidelines on Confidentiality and Microdata Access (CES 2007).

7. Broad Conclusion

IPUMS-International provides a range of deeply appreciated services with rapidly increasing demand particularly in the United States. It also has the potential for even greater use internationally especially by the international agencies. It could become one of the most important global statistical assets.

Without question IPUMS International meets the four Core Principles outlined in CES (2007). It is cited in CES (2007) as a Case Study of good practice. This review confirms its status as good practice for Data Repositories. Indeed it is likely to provide the best practice for a Data Repository of international statistical data sets.

8. How does IPUMS-International work?

A more detailed description is given as Annex 1.23 in CES (2007)

The core processes are:

- (i) obtaining samples of microdata and supporting metadata from participating countries. This does not happen before a Memorandum of Understanding outlining the conditions of release is signed at a senior level by both the University of Minnesota and the participating countries (usually a representative of the National Statistical Office).
- (ii) The Memorandum of Understandings are cleared with the legal and accounting departments at the University of Minnesota. The standard contract was developed in close liaison with the General Counsel at the University and he also approves deviations from the standard. The accounting department signs each individual memorandum so it is an arms length process from MPC.
- (iii) Before this data is released for researcher access, it is confidentialised, harmonised (to facilitate comparisons across countries and time), and structured to enable efficient access. Documentation is also structured to enable easier access.
- (iv) Researcher access is limited to scholarly purposes. Before being given approval to access the data, researchers must apply for access. The registration process requires them to agree to a range of conditions. It also points out that breaches of these conditions make them liable to a range of penalties including withdrawal of service or possible legal sanctions.
- (v) There is an expectation that they will notify IPUMS-International of publications, reports, etc that result from their access to IPUMS data.

Data is often confidentialised before it is provided to IPUMS-International. If it is not, MPC will take further steps such as constraining the level of geographic and occupation detail. It also uses data swapping techniques as a further layer of confidentiality protection.

Of course further protection is provided by the steps IPUMS-International will take if there are breaches of the conditions of access.

9. Feedback from Data Providers

The United Nations Statistical Commission discussed data repositories in March 2007. Some of the main conclusions of that discussion were:

- (i) countries should retain ownership of their submitted data and control over its access;
- (ii) there should be greater transparency in policies governing the release of data; and
- (iii) there should be consultation between countries and the depositories on the arrangements for granting access to data.

My other main source of feedback from countries providing data to IPUMS International was at the Seminar held in Lisbon 2007. As well as the discussions held during the

Seminar, it was an opportunity to have bilateral discussions with participants. Some of the key points made in these discussions were:

- (i) They would like more feedback on researchers accessing their data or research that resulted from this access,
- (ii) The IPUMS-International services are highly appreciated by National Statistical Offices (NSOs) especially the archiving, documentation and data recovery services;
- (iii) There seemed to be strong support for an on-line facility available through the web; and
- (iv) They would like to know more about practical statistical methods relevant to microdata such as confidentiality methods, data management and analytical skills.

The key message from them is one of strong support for IPUMS-International but with more feedback on research and researchers. This is discussed later.

Points (ii) and (iii) above are mainly aimed at repositories other than IPUMS-International. Data providers generally regarded the practices of IPUMS-International as being better than those of other repositories.

10. Feedback from Data Users

This is based purely on advice from the MPC. But these views are “evidence based”. They were compiled from an analysis of feedback MPC had received from data users.

The key message was one of overwhelming support for the program. The main request was simply for more data – more countries and more censuses. They emphasised the importance of harmonisation – it made analysis across countries and across time far more meaningful.

There was support for adding a sampling function to allow smaller data sets to be chosen. The data sets for some countries are very large and some users would prefer to work with smaller data sets.

There also seemed to be a demand from some users to more easily drop the data from IPUMS – International into GIS systems.

There were also requests for more workshops on IPUMS–International so that users could better understand the data sets and how to use them.

11. Comparison with International Guidelines on Microdata

The Principles are outlined in CES (2007). They are as follows.

1. It is appropriate for microdata collected for official statistical purposes to be used for statistical analysis to support research as long as confidentiality is protected.
2. Microdata should only be available for statistical purposes.

3. Provision of microdata should be consistent with legal and other necessary arrangements that ensure the confidentiality of released microdata is protected.
4. The procedures for research access to microdata, as well as the uses and users of microdata, should be transparent and publically available.

With respect to the first principle, IPUMS-International protects confidentiality through the procedures described in Section 7. The limitation that IPUMS-International is only available for scholarly purposes, and the proposed uses are checked before approval to access is given, satisfies Principle 2. The Memorandum of Understandings signed both by the University of Minnesota and the country providing the data are an important way of satisfying Principle 3. The other important element is the undertakings signed by the researchers. The procedures for research access are available on the IPUMS-International web site thereby satisfying that element of Principle 4. The names of the researchers are not made available because the numbers are very large and it would be impractical. The web site does contain a Bibliography of papers published which are based on data obtained from IPUMS-International.

IPUMS-International is in full compliance with these Guidelines. For this reason, it was chosen as a Case Study on Good Practice on repositories in CES (2007).

12. Conclusions

1. There has been considerable growth in the demand for microdata for statistical analysis and research. This is reflected in IPUMS-International where usage has doubled over the last 12 months. There is no reason not to expect this type of growth to continue. Census microdata is a valuable data set and the harmonisation processes incorporated by IPUMS-International add considerably to value of these data sets.
2. Despite this rapidly growing demand, there is scope to improve awareness. Usage is dominated by students, particularly from USA, and other users from USA. There is scope for much greater use outside USA and by international organisations. Word of mouth (by satisfied users) is often the most effective way of increasing awareness.
3. IPUMS-International provides an excellent service:
 - (a) to researchers and analysts by providing easy access and well documented data sets;
 - (b) to national statistical offices by (i) providing means of accessing their Census microdata, (ii) assisting them to produce good quality documentation of their censuses, and (iii) a Census data archiving services; and
 - (c) to some national statistical offices by helping them recover data where storage medium may have been damaged.
4. There is an ambitious program of development – not all proposed developments may be possible and some prioritisation may be necessary. The key user demand is for more Census microdata sets (especially from additional countries).

5. There is a high level of trust in the procedures adopted by IPUMS-International, both by data users and data producers.
6. The security of the computing environment used by IPUMS-International is first class and appears to be of the standard of the best statistical offices.
7. The intention to encrypt data sets being moved to and from IPUMS was noted. This would be a very positive step towards securing the data.
8. Confidentiality is well managed but there are some areas of risk that may have been underestimated – these mainly exist (i) where data sets for regions (down to 20,000 people) can be recognised, and (ii) where there are relatively large samples (eg 10%) of relatively small countries. The proportion of unique households, even after removing geographic details and combining ages into 5 year age groups is about 25% for a medium sized country like Australia (20 million). This is from only examining the demographic characteristics of households. The data swapping technique used by IPUMS-International introduces a large degree of uncertainty into whether a record is unique or not but the increasing availability of demographic data sets from other sources (often private sector) means that confidentiality can never be absolute.
9. Consequently, there has to be some reliance on trust and/or undertakings which are enforceable. IPUMS-International pursues both approaches. Access is restricted to scholarly research and all users must sign an undertaking with full knowledge of the consequences of non-compliance. I support this approach.
10. But if the undertaking is to have impact, breaches must be seriously treated. Enforcement must be tested in cases of breaches. Depending on the seriousness of the breach, possible responses might be:
 - (i) warnings to the researcher,
 - (ii) withdrawal of service to the researcher, and possibly the institution for period of time,
 - (iii) pursuance of charges of academic misconduct, and
 - (iv) pursuance of legal options

Assurances were made by IPUMS-International that these types of responses would be followed if necessary. But the undertakings will only be meaningful if any breaches are taken seriously.

11. The confidentiality risk could be reduced by limiting the amount of geographic and/or demographic detail available on the microdata sets at most risk. The amount of detail for more sensitive variables might also be reduced. Of course, such steps also reduce the usefulness of data sets. The confidentiality conditions might be reinforced to users in such cases.
12. Some countries will never be able to provide publicly accessible microdata to IPUMS-International because of legal or other constraints. Other approaches may need to be considered for such cases.

Several possibilities exist.

- (i) Countries may require individual approval of each access to their microdata set to be done by them (but IPUMS-International) would provide the access after approval has been received).
- (ii) As for (i) but the countries providing the access.
- (iii) Only providing access through the countries' own remote access facilities but they would be prepared to work with IPUMS-International to allow their data sets to be harmonised with the microdata sets of other countries.

Although not the preferred approach, these alternatives need to be considered if IPUMS-International is to become a truly global product. For these approaches to be effective, there has to be an agreed turnaround time to requests for approval. It is noted that (i) and (ii) make cross-national studies more difficult.

13. Feedback to countries on approved researchers is limited. Ways of notifying them of approved researchers should be considered. Their particular sensitivity is to researchers who might compute alternative estimates to official statistical estimates. This is most likely for developing countries – it is most likely to be done by international organisations. Perhaps notification could be limited to researchers from these organisations especially given the large number of researchers accessing the data sets.
14. Feedback on research is limited. A bibliography exists on the IPUMS-International web site. You appear to be able to search this data base by country. Perhaps this facility might be more widely promoted to participating countries.
15. There are some other initiatives that might be undertaken.
 - (i) A module on ethical behaviour should be included in training workshops and the like.
 - (ii) All applicants for access should be able to successfully complete a short questionnaire (8 to 10 questions say) which asks about their behaviours in certain circumstances.
 - (iii) The agreements to access are not very prominent on the IPUMS-International web site. There should be a reference on the home page where a single click would provide the reader with the conditions.
16. Countries participating in IPUMS-International want to learn more about good practice in areas such as metadata and data management, practical methods for data confidentiality.
17. IPUMS-International provides an outstanding service to both data producers and data users. These services are not as widely known as they should be among the international statistical community. Considerable effort has gone into improving awareness but more effort needs to be targeted at strategic organisations. These include the United Nations Statistics Division, World Bank,

UNFPA, Eurostat and the UN Regional Organisations in Africa, Asia, the Middle East and the former Soviet Union.

13. Recommendations

IPUMS-International is a valuable and trustworthy microdata service. It meets the fundamental principles of good practice with respect to confidentiality and microdata. Consequently, my recommendations are limited.

In terms of the confidentiality arrangements, there are some minor adjustments that could be made in terms of improving the exposure of applicants and researchers to their obligation (See conclusions 11 and 15).

In the event of a breach appropriate action must be taken and the consequences of that action made aware to all users of the services (but in a way that does not identify the person making the breach). Checks should be made of published outputs from time to time will provide some assessment of whether there has been any inappropriate use of microdata (eg reference to individual cases).

Data providers could be given better feedback on researchers accessing their data sets (see conclusion 13). Efficient ways of doing this should be explored.

Awareness of IPUMS-International services could be improved by finding ways of better engaging with the relevant international agencies. This would require an assessment of the best way of approaching these organisations.

Alternative ways of incorporating the data for some countries needs to be considered (see Conclusion 12).

Finally, it is clear that IPUMS-International is on a strong growth path. The number of data sets that are part of IPUMS-International is expected to increase rapidly. Likewise the number of researchers using the service is expected to grow rapidly. There should be a specific position of how well positioned the MPC is to scale up to meet this level of expected growth.

14. Reference

CES(2007), "Managing Statistical Confidentiality and Microdata Access: Principles and Guidelines on Good Practice", published on Conference of European of Statisticians web site (www.unece.org/stats)

Dennis Trewin
November 2007

15. Appendices (prepared by IPUMS-International)

Letter of Understanding

Integrated Public Use Microdata Series International and [National Statistics Institute of Country X]

Purpose. The purpose of this letter is to specify the terms and conditions under which metadata and microdata produced by the [National Statistics Institute of Country X] shall be distributed by **Integrated Public Use Microdata Series International** of the University of Minnesota.

1. Ownership. The [National Statistics Institute of Country X] is the owner and licensee of the intellectual property rights (including copyright) in the metadata and microdata of [Country X] acquired by the University of Minnesota to be distributed by **Integrated Public Use Microdata Series International**. This agreement explicitly authorizes release to the University of microdata of [Country X] that may be in the possession of third parties. The University is obligated to provide to the [National Statistics Institute of Country X] timely notice of any such acquisitions and, upon request and without cost, provide copies of same.
2. Use. These data are for the exclusive purposes of teaching, scientific research and publishing, and may not be used for any other purposes without the explicit written approval, in advance, of the [National Statistics Institute of Country X].
3. Authorization. To access or obtain copies of integrated microdata of [Country X] from **Integrated Public Use Microdata Series International**, a prospective user must first submit an electronic authorization form identifying the user (i.e., principal investigator) by name, electronic address, and institution. The principal investigator must state the purpose of the proposed project and agree to abide by the regulations contained herein. Once a project is approved, a password will be issued and data may be acquired from servers or other electronic dissemination media maintained by **Integrated Public Use Microdata Series International**, the [National Statistics Institute of Country X], or other authorized distributors. Once approved, the user is licensed to acquire integrated metadata and microdata of [Country X] from **Integrated Public Use Microdata Series International** or other authorized distributors. No titles or other rights are conveyed to the user.
4. Restriction. Users are prohibited from using data acquired from the **Integrated Public Use Microdata Series International** or other authorized distributors in the pursuit of any commercial or income-generating venture either privately, or otherwise.
5. Confidentiality. Users will maintain the absolute confidentiality of persons and households. Any attempt to ascertain the identity of a person, family, household, dwelling, organization, business or other entity from the microdata is strictly prohibited. Alleging that a person or any other entity has been identified in these data is also prohibited.
6. Security. Users will implement security measures to prevent unauthorized access to microdata acquired from **Integrated Public Use Microdata Series International** or its partners.

7. Publication. The publishing of data and analysis resulting from research using metadata or microdata of [Country X] is permitted in communications such as scholarly papers, journals and the like. The authors of these communications are required to cite [**National Statistics Institute of Country X**] and **Integrated Public Use Microdata Series International** as the sources of the data of [Country X], and to indicate that the results and views expressed are those of the author/user.
8. Violations. Violation of the user license may lead to professional censure, loss of employment, and/or civil prosecution. The University of Minnesota, national and international scientific organizations, and the [National Statistics Institute of Country X] will assist in the enforcement of provisions of this accord.
9. Sharing. **Integrated Public Use Microdata Series International** will provide electronic copies to the [National Statistics Institute of Country X] of documentation and data related to its integrated microdata as well as timely reports of authorized users.
10. Jurisdiction. Disagreements which may arise shall be settled by means of conciliation, transaction and friendly composition. Should a settlement by these means prove impossible, a Tribunal of Settlement shall be convened which will rule upon the matter under law. This Tribunal shall be composed of an arbitrator, which shall be selected by the ICC International Court of Arbitration. This agreement shall be governed by, and construed in accordance with, generally accepted principles of International Law.
11. Order of Precedence. In the event of a conflict between a term or condition of this Letter of Understanding and a term or condition of any Contract, to which this Letter of Understanding is attached, the term or condition in this Letter of Understanding shall prevail.

Date: _____

Signed: _____

Regents of the University of Minnesota

By: Kevin J. McKoskey, Sponsored Projects Administration

Date: _____

Signed: _____

Rev. Jan. 27, 2005

Purchase Order for the Licensing of census microdata of [country X] and Corresponding Documentation

Between: Minnesota Population Center,
50 Willey Hall, 225 19th Ave.S.
University of Minnesota. Minneapolis, MN 55455 USA

As represented by: Kevin J.McKoskey **Job Title:** Sponsored Projects Administration
Phone: 1+612- 624-5066
(Hereinafter: The Purchaser)

And Between: Statistical Office of [Country X] (Hereinafter: The Vendor)

Insert name and address of contact person

1. The Subject Matter of this Purchase Order is the preparation and licensing of microdata and documentation (survey questionnaires, training manuals, instructions, codebooks, technical studies, etc.).for the census(es) of _____ of [Country X].
2. In consideration for the carrying out of the Purchase Order, the Purchaser shall pay the Vendor the sum of \$5,000 (in words: Five thousand United States of America Dollars) per census.
3. The payment schedule is as follows:
The Purchaser will pay the Vendor upon receiving each bill for products delivered, partial or final, within 60 days from receipt of products.
4. Additional Terms: This Purchase Order will only become binding upon its signature both by the Purchaser and the Vendor. Any changes to the Purchase Order must be made in writing, and signed by both Parties.
5. Special Terms:

Copyright in the statistical products produced in accordance with this Purchase Order rest solely in the Statistical Office of [Country X]. Digital products are provided to the Purchaser subject to the terms of the standard IPUMS-International Letter of Understanding.

The Vendor reserves the right to make use of any products resulting from this Purchase Order, including their publication and sale to other purchasers.

The Vendor warrants that the media on which the microdata are furnished is free of defects in workmanship and material under normal use. The sole responsibility of the Vendor and the exclusive remedy under this warranty will be replacement of the defective microdataset. In no event shall the Vendor be liable for any loss of revenues, goodwill, or any other consequential, indirect or incidental damages arising out of this purchase order.

In the event of a conflict between a term or condition of the Letter of Understanding, and a term or condition of this purchase order, other contract or license pursuant to the datasets supplied, the term or condition in the Letter of Understanding shall prevail.

In Agreement to the Above Conditions We Affix Our Signatures

The Purchaser		
	Date	Representative of the University of Minnesota

The Vendor		
	Date	Representative of the Statistical Office of [Country X]

Invoicing and payment instructions for microdata, documentation & dissemination licenses

Upon presentation of invoice, the project pays a fee to the corresponding national statistical authority of US\$1,000 per complete microdataset (\$5,000 for datasets with 1 million or more person records) entrusted to the project. This fee is intended to cover marginal costs of the dissemination license, preparing copies of the microdata and documentation as well as incidentals for providing a modest amount of consulting or translation assistance regarding unusual terms or concepts.

Payment is made upon receipt of microdata, documentation, and official invoice. To reduce administrative costs as well as bank transaction charges, please bill for all microdata on a single invoice, unless a long delay is expected in providing one or more datasets (such as the most recent or a historical microdataset requiring recovery). The invoice should provide the following information:

- Name and Address of Statistical Agency
- Telephone, fax, name and email of contact person
- Amount to be paid (US\$ 1,000 per microdataset supplied; \$5,000 for 1 million or more person records)
- Datasets (e.g., “Microdata and documentation for the 1980, 1990 and 2000 microdatasets of [Country X]”)
- Signature and date

Payment will be made by check drawn to the Statistical Agency or other official bank account. Request for payment to individuals cannot be honored. If payment by wire is preferred, please email rmccaa@umn.edu for details.

Please send the signed invoice along with documentation and the microdata on CD or tape by courier mail to:

Robert McCaa, Minnesota Population Center
225 19th Ave. S. 50 Willey Hall
Minneapolis, MN 55455 USA

Tel. 1+612-624-5818 Reference: IPUMS: [Country]

For pre-payment of courier shipping costs, please email rmccaa@umn.edu requesting the account number. Please confirm shipment by email to rmccaa@umn.edu, indicating contents, date shipped, name of courier service, and package tracking number.

The following is requested for each microdataset for which complete or partial microdata exist. Please send on CD, where available; paper copies will be scanned.

1. Microdata (both edited and unedited versions, where available). NOTE: Microdata shipped on CD should be encrypted. After the shipment is received by the MPC, the encryption key should be emailed to rmccaa@umn.edu
2. Questionnaires (survey forms)
3. Surveyor’s manual of instructions
4. For each microdataset, data definition files or “codebooks” (definitions of record structures, column location of variables and labels for codes, such as the U.S. Census Bureau “IMPS” data dictionary files), including nomenclatures for administrative geography, occupation, industry, education, etc.
5. Copies of technical reports on survey operations, data editing, sampling methods, comparability, data quality, phrasing of questionnaires, etc.—any extant

documentation that would be of assistance in promoting the highest standards of integration and use.

INVOICE:

***IPUMS-International Microdata, Documentation and License Fee
(please use this form, official invoice or letter providing the requested
information)***

- Official Statistical Agency: _____
Street address: _____
Building Name/Room number: _____
Postal Code: _____ City: _____
Telephone: _____ FAX: _____
Contact person name: _____
Email address: _____
- Amount to be paid (US\$ 1,000 per microdataset supplied; \$5,000 for 1 million or more person records)
Amount: US\$ _____ .00 in words: _____
- Microdatasets entrusted:
Microdata Year(s): _____
- Signature: _____
Date: _____
Name: _____
Position: _____

Payment will be made by check drawn to the Statistical Agency or other official bank account. Request for payment to individuals cannot be honored.

Recovery of Census Microdata by IPUMS-International

For census microdata extant solely on old computer tapes, we propose the following plan of action.

Pack 2-4 tapes per box provided by the courier service using the MPC Account number (FEDEX account #: 2221-6454-0 or DHL #964630417) to:

Muller Media Conversions
21 Locust Street
Manhasset, NY 11030 USA
chris.muller@mullermedia.com
1+516.833.3067 x101

Each tape should be wrapped in bubble wrap or other protective materials before enclosing in the shipping box. No other protection is required.

Muller Media will attempt to recover the data at project expense. Usually they are quite successful, most recently recovering over 97% of the person records for the 1977 census of Romania. Whatever data are recovered will be returned to your office on CDs by courier service with complete documentation of the results. A second copy of the microdata will be sent to the MPC for evaluation. All costs are borne by the project, including recovery and shipment both directions.

Once the data are recovered we will consult with your office on whether the data should be included in the integration project or not.

Please address any questions that you may have to me by email (rmccaa@umn.edu) or to the data recovery firm (please mention IPUMS data recovery so that he will readily understand the issues and procedures).

**Information requested to issue a Translator Contract for Services:
IPUMS-International**

**Contact: Robert McCaa, University of Minnesota Population Center
225 19th Ave. S. 50 Willey Hall, Minneapolis MN 55455 USA
rmccaa@umn.edu Tel. 1+612.624.5818 Fax: 1+612.826.8375
FEDEX account #: 2221-6454-0 or DHL #964630417**

Please provide the following information. If approved, a formal contract will be issued by the University of Minnesota according to the terms stated below. Once the formal contract issued by the University is signed by the contracting party, work may begin.

Consultant name: _____

Address: _____

Phone: _____

Fax: _____

Email: _____

Maximum amount of contract: US\$5,000 _____

Contract Type:

Project-related services at stated rates: US\$ 50__ per thousand words

Begin date: _____ **End date:** _____

Description and Purpose of Contracted Consultant:

Translation of census documentation from [language X] to English.

Consultant qualifications and background:

Graduated from

.

Worked as translator for:

Basis for price:

Standard IPUMS price.

Assurance of reasonable price:

This rate is less than official translation rates for international agencies.

Payment schedule:

- **Date first invoice/deliverables:** _____
- **Date last invoice/deliverables:** _____
- **Invoices to be approved by:** Robert McCaa _____

Benefits of participation in IPUMS-International for National Statistical Offices, stakeholders, researchers, and citizens:

- Recover historical census data and documentation
- Archive data and documentation to the highest international standards
- License microdatasets and documentation in a global initiative
- Harmonize samples according to national practices and international principles
- Disseminate microdata with minimal risk and maximum benefit, at no cost
- Promote transparency and equitable access
- Facilitate highest quality research and fact-based policy making
- Increase stakeholders and use of census data

Costs borne by project:

- Uniform fee of US\$5,000 per census of 1 million or more person records
- Air courier shipping costs
- Producer workshops
- Data recovery costs (by commercial data recovery firm)
- Scanning of documentation (forms, codebooks, instructions, technical reports)
- Translation of census documentation into English.
- Drawing of samples, anonymization and harmonization of microdata
- Construction of database and internet tools; integration of metadata
- Dissemination of microdata and documentation

How does IPUMS-International work?

- Uniform Memorandum of Understanding endorsed before work begins
- Purchase agreement signed for licensing of microdata and documentation
- Minnesota Population Center is responsible for all integration work
- Uniform end-user license agreement
- Access restricted to bona-fide researchers and policy makers
- Researchers provide copies of publications to the project
- NSOs receive reports on users, usage and publications

Invitation to National Statistical Institutes to participate. Steps:

1. Endorse Memorandum of Understanding with University of Minnesota
2. Entrust census microdata and documentation (forms, instructions, technical reports, data dictionaries, codebooks, etc.) to the Minnesota Population Center via courier service
3. Invoice MPC for microdata license (US\$5,000 per census)
4. Participate in IPUMS workshop
5. Wait 2-3 years while the MPC integrates anonymized samples and documentation into the IPUMS-International census database
6. Launch integrated data with copies on CD to National Statistical Institute partners

For more information, please contact:

Prof. Robert McCaa, rmccaa@umn.edu