



# Session 1: Methodologies for the new censuses

# The Italian Permanent Census

- ▶ **Goal:** Produce annual data - replacing the previous decennial cycle - using information from administrative sources integrated with sample surveys information
- ▶ The Italian Permanent Census is register-based using:
  - ▶ the **Integrated Register System**
  - ▶ the **Permanent Population Census**
  - ▶ the **Census and Social Surveys Integrated System**

# The Italian Permanent Census (cont'd)

## ▶ Integrated Register System:

- ▶ “Backbone” of the system for production of social statistics
- ▶ Target units: usual resident persons (living in a household)
- ▶ 3 classes of variables of interest:
  - ▶ Complete variables ([register variables](#), mainly from admin sources)
  - ▶ Partially complete variables ([survey variables](#), for subsets of the population)
  - ▶ Not replaceable variables (not directly available from admin data)

# The Italian Permanent Census (cont'd)

- ▶ **Population Permanent Census:**
  - ▶ Provides fundamental information on the structure of the population, guaranteeing very high levels of territorial and sectoral granularity
  - ▶ Adds to the set of register variables the estimates from the sample surveys of variables that cannot be deduced from the administrative sources

# The Italian Permanent Census

- ▶ **Census and Social Surveys Integrated System:**
  - ▶ Annual data for target parameters (hypercubes)
  - ▶ Multi-annual data for traditional parameters produced every 10 years
  - ▶ Used for filling information gap of the Population Register for estimation of target parameters (hypercubes)

# Previous papers related to the Italian Permanent Census

## ▶ 2017 (April):

- ▶ S. Falorsi - **Census and social surveys integrated system**
- ▶ M. Di Zio, M. Fortini, D. Zardetto - **Balancing Methods for Ensuring Time and Space Consistency of Demographic Estimates in the Italian Integrated System of Statistical Registers**
- ▶ Guarnera, D. Filipponi - **Integration of administrative sources and survey data through Hidden Markov Models for the production of labour statistics**

## ▶ 2017 (November):

- ▶ P. Righi, P. Falorsi - **The anticipated variance as a measure for the accuracy of complex multisource statistics**

# Previous papers related to the Italian Permanent Census (cont'd)

## ▶ 2019 (June):

- ▶ S. Falorsi - **Census and social surveys integrated system (update)**
- ▶ S. Toti, R.M. Lipsi, S. Giavante, S. Daddi - **A Hierarchical Bayesian model for quality check of the Italian population count by Administrative Data**

## ▶ 2019 (November)

- ▶ M. Fortini, S. Falorsi, P. Righi - **The Italian Permanent Census and issues related to population counts estimation when data are affected by coverage error**
- ▶ F. De Fausti, M. Di Zio, R. Filippini, S. Toti, D. Zardetto - **A comparison between machine learning techniques and standard statistical methods for the imputation of the “attained level of education” in the base register of individuals**

# Previous papers related to the Italian Permanent Census (cont'd)

## ▶ 2020 (June):

- ▶ S. Falorsi, A. Bernardini, N. Cibella, M. D'Alo, L. Di Consiglio, M. Di Zio, A. Fasulo, D. Filipponi, M. Fortini, P. Righi, A. Ronconi, F. Solari, S. Toti - **Census and social surveys integrated system (update)**
- ▶ M. Ballin, G. Barcaroli - **R package SamplingStrata: new developments and extension to Spatial Sampling**
- ▶ F. De Fausti, R. Filippini, M. Di Zio, S. Toti, D. Zardetto - **Imputation of the “Attained Level of Education” in Base Register of Individuals: a comparison between Machine Learning and standard techniques**
- ▶ T. Tuoto, M. Fortini - **Current directions for research on record linkage in Istat: focus on Mixture models for probabilistic record linkage**



# Previous papers related to the Italian Permanent Census (cont'd)

## ▶ 2021 (June):

- ▶ S. Daddi, M. Di Zio, M. D'Alò, S. Falorsi, D. Filipponi - **Census count estimates geocoded at sub-domain levels**
- ▶ S. Toti, M. Di Zio, A. Ronconi - **A pseudo-population bootstrap approach for variance estimation of population counts with under/over coverage**
- ▶ S. Loriga, L. Di Consiglio, S. Falorsi - **LFS non-response indicators for register overcoverage estimation**

# Previous papers related to the Italian Permanent Census (cont'd)

## ▶ 2021 (December):

- ▶ C. De Vitiis, S. Falorsi, A. Guandalini, F. Inglese, P. Righi, M. D. Terribili - **Planning the Post-21 Permanent Census of Population and Housing according to a Responsive-Adaptive Survey Design approach**
- ▶ M. Ballin - **A proposal for a spatial concentration index**
- ▶ F. Altarocca, M.R. Aracri, R. Benedetti, R. Radini, G. Vaste - **Longitudinal and cross-sectional analyses of data in the Integrated System of Statistical Register**

# Previous papers related to the Italian Permanent Census (cont'd)

- ▶ 2022 (May):
  - ▶ M. D'Alò, S. Falorsi, D. Filipponi, S. Loriga - **Several data on labour status, a problem or a resource? Looking for an integrated approach for a good quality and consistent set of statistics**
  - ▶ A. Bernardini, N. Cibella, F. Solari - **A Statistical Framework for Register Based Population Size Estimation**
- ▶ *...and many more other papers not necessarily presented at the Advisory Committee*

# Papers presented at Session 1

- 1. Census and social surveys integrated system (update)**

Stefano Falorsi

- 2. Multi-source statistics in the Italian permanent census**

Marco Di Zio, Danila Filipponi

- 3. Overview of new approaches on the topic and discussion**

David Haziza (University of Ottawa, Canada)