Presentation Plan

- Survey Design Strategies
  - List-frame based survey component:
    - Survey design: available options
    - Integrating annual and infra-annual enquiries
  - Area-frame based survey component:
    Three main alternative approaches
    - Area-frame based enterprise survey
    - Mixed household enterprise survey
    - Integrated "1-2" Survey
- Choice of Survey Design Strategy

Survey Design Strategies

Use of <u>Fully Integrated Rational Survey Technique (FIRST)</u> is recommended as the basic approach for collection of data from

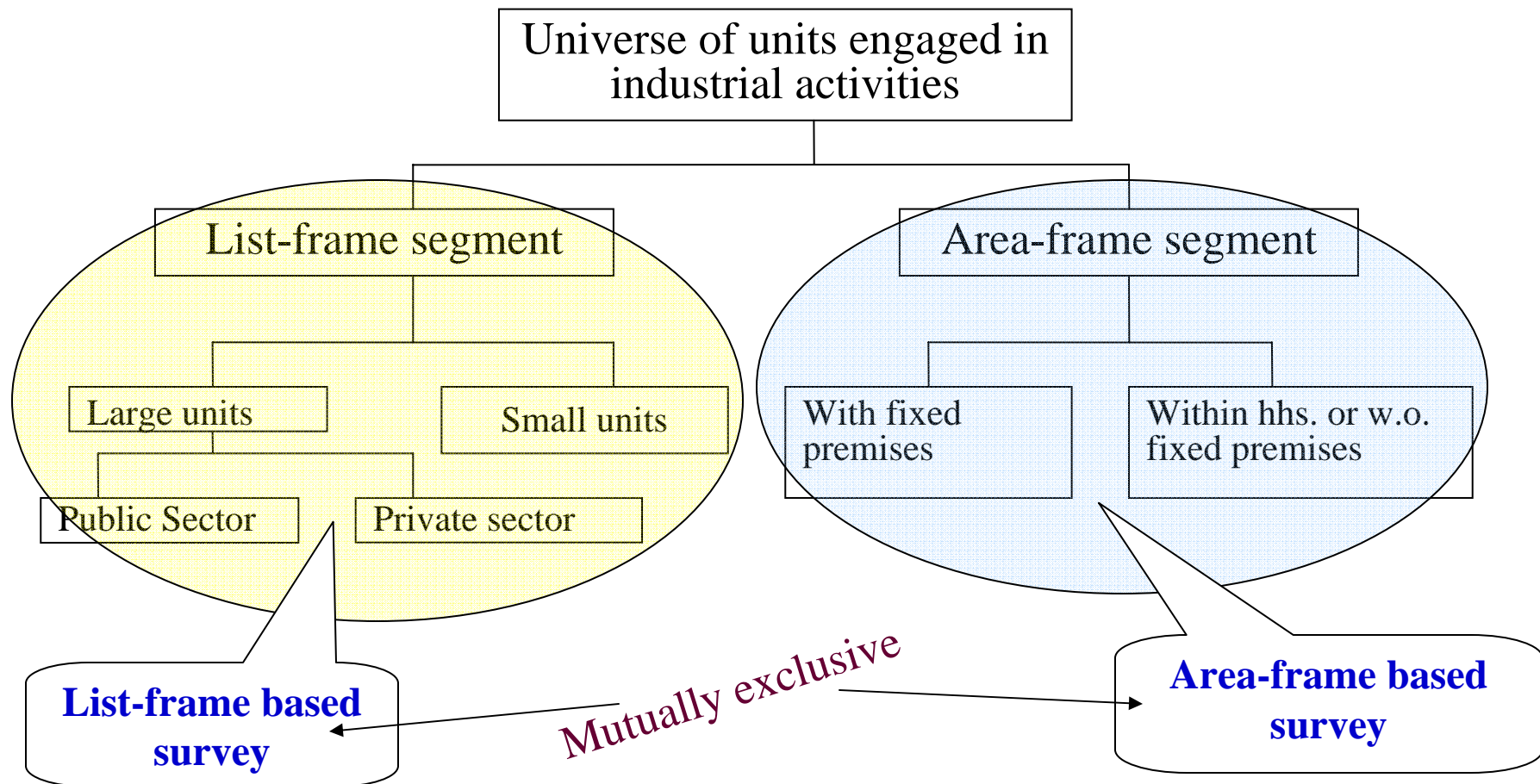- all within-scope establishments
- of all sizes

operating in the economy.

The FIRST methodology consists of two components:
- List-fame based survey component
- Area-frame based survey component

Strategies:
Basic Approach – FIRST

Universe of units engaged in industrial activities

List-frame segment

Large units

Small units

Public Sector

Private sector

Area-frame segment

With fixed premises

Within hhs. or w.o. fixed premises

List-frame based survey

Mutually exclusive

Area-frame based survey

Strategies:
List-frame based survey component (1)

This survey, on "list-frame segment" - often thru mailed questionnaire with follow-up visits where required.

The definition / coverage of list-frame segment is
– based on practical considerations and differs from country to country;
– and ease of maintaining the list frame.

Issues involved:
– Survey design: available options
– Integration of annual enquiry with infra-annual enquiries, i.e. quarterly or monthly enquiry for short-term indicators.

Strategies:
List-frame based survey component (2)

Survey Design: Available options

The list-frame segment generally

- tends to be very heterogeneous in its size and characteristics.

- a small number account for a major share.

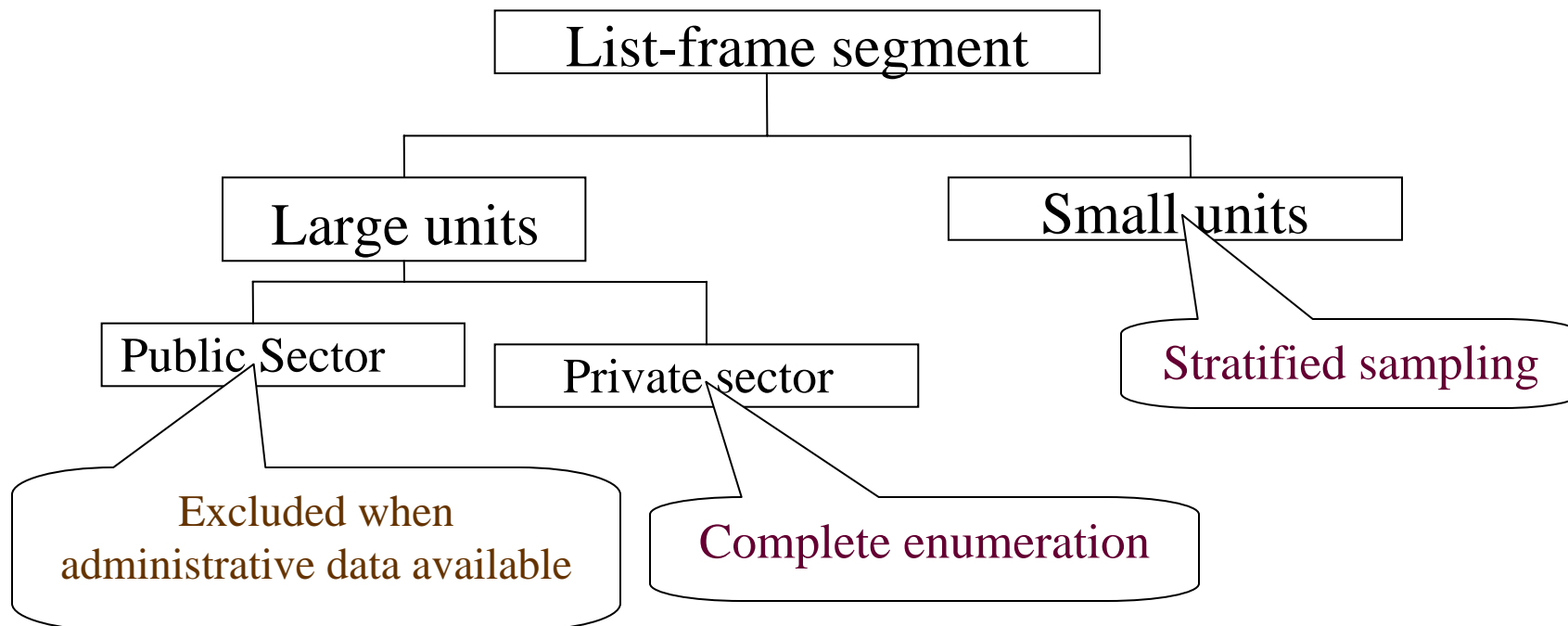For obtaining efficient estimates, desirable to stratify into

- – Large units stratum: all units above a certain size (cut-off point),

  ['Size' in terms of employment.]

- – Small units stratum: the rest of the units.

Strategies:
List-frame based survey component (3)

Survey Design: Available options

List-frame segment

Large units

Small units

Public Sector

Private sector

Stratified sampling

Excluded when administrative data available

Complete enumeration

Strategies:
List-frame based survey component (4)

Survey Design: Available options

Large units stratum: covered by complete enumeration – thus the stratum is also referred to as the 'certainty' or 'self-representing' stratum.

Public sector units in the "large units stratum" are excluded when data are available from administrative sources.

Small units stratum: Further sub-stratified by economic activity and data collected from a sample of establishments.

Probability proportional to size sampling (PPS) procedure should normally be avoided for selection of sample of units from the list frame.

Strategies:
List-frame based survey component (5)

Integrating annual enquiry with infra-annual enquiries:

- Infra-annual enquiry – monthly or quarterly – is used usually for estimating a limited number of parameters.

- Usually cover only "large units stratum" or a part of it.

- Thus, the results of the annual and infra-annual enquiries are often inconsistent.

- Covering "small units stratum" by an integrated sample design help resolve the problems of inconsistency.

Strategies:
List-frame based survey component (6)

Integrating annual enquiry with infra-annual enquiries:

- Integrated design can provide reliable estimates of both annual and infra-annual change parameters like
    – Rate of growth
    – Changes in employment
    – Changes in commodity production (quantity)
- as well as level parameters like quarterly and annual
    – Value added
    – Employment
    – Value of input and output.
- This requires a suitably framed rotating panel sample design.

Strategies:
List-frame based survey component (7)

Integrating annual enquiry with infra-annual enquiries:

Advantages of a rotating panel design:

- cost effective
- strikes a balance between the conflicting objectives of obtaining reliable estimates of annual and infra-annual estimates.
- eases the burden on respondents.
- usually free from large and unrealistic temporal variations.
- use of composite estimates can further restrict temporal variations resulting from sampling error.
- provides the scope of including the new units in survey coverage.

Strategies:
Area-frame based survey component (1)

The FIRST uses an area sampling technique for the non-list frame segment.

It consists of a two (or more) stage sample design.

First stage: a sample of area units are selected,

- from a complete frame area units covering the entire geographical territory.

Next, in each of the selected first stage unit, all establishments operating in the selected area are listed.

Second stage: a sample of establishments is drawn from the listed establishments.

Strategies:
Area-frame based survey component (2)

Listing of establishment in the selected area units:

- Establishments to be excluded from the list:
  - Those included nor linked to any enterprise appearing in the list frame used for the survey of the 'list frame segment'.
  - Those not falling in the coverage of the survey.

- Stratification: by kind-of-activity and / or by scale of operation and / or size of employment

Strategies:
Area-frame based survey component (3)

Three main alternative approaches at the second stage:

– Area-frame based enterprise survey

– Mixed household enterprise survey

– Integrated "1-2" Survey

Strategies:
Area-frame based survey component (4)

Area-frame based enterprise survey

- In these surveys, a list frame of establishments is developed unit by door to door enumeration for each selected area.

- But it suffers from the same limitation as the Establishment Census.

- This procedure is prone to omission of activities carried out inside the owner's home as well as mobile units.

Strategies:
Area-frame based survey component (5)

- The choice of method is, therefore, practically restricted to the two area-frame surveys, viz.
  - Mixed household enterprise survey and
  - Integrated "1-2"survey
- Both these methods use a multi-stage (usually two-stage) sampling scheme
- A sample of area units are selected as the first stage unit (*fsu*) in both the methods.
- The methods differ at the second-stage.

Strategies:
Area-frame based survey component (6)

Mixed household enterprise survey (MHES)

The sampling frame at the second stage consists of the following:

    i.   all identifiable establishments outside the owners' home located in the selected area unit;

    ii.   household-based enterprises located within home; and

    iii. the units without any fixed premises of operation

are listed by a structure-to-structure visit.

The units of later two categories are listed against and interviewed in the owners' households.

Strategies:

Area-frame based survey component (7)

Mixed household enterprise survey

- Within-scope units without fixed premises of within owner's home are identified through additional questions put to households during listing; and

- are listed against the household where the proprietor (or a partner of a partnership concern) resides.

- This way, all establishments within the scope of the survey in the *fsu* are included in the list.

Strategies:
Area-frame based survey component (8)

**Mixed household enterprise survey
– case of partnership**

- A partnership may get reported by each of its partners belonging to different households – leading to duplication.

- This is either adjusted for in the survey estimation procedure or

- eliminated by adopting special listing rules.

Strategies:
Area-frame based survey component (9)

Integrated "1-2" survey

- This approach consists of <u>two phases</u> at the second stage:
    - First phase: a household survey (LFS) and
    - Second phase: an enterprise survey.
- From the sample households in the first phase, the within-scope enterprises owned by the households are identified.
- In the 2nd phase, a sample of within-scope enterprises that are owned by the households is drawn for the enterprise survey.

Area-frame based survey component (10)
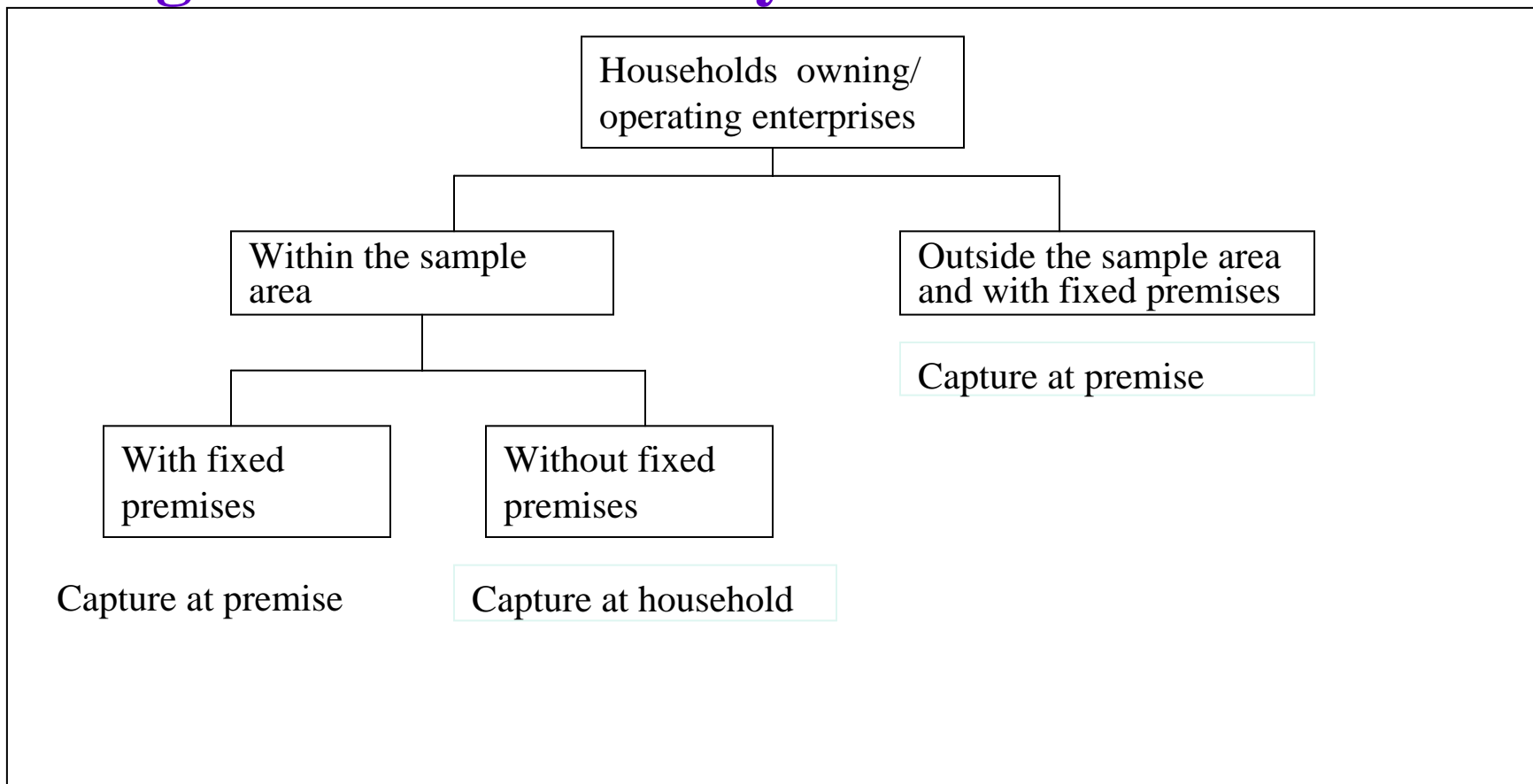
Integrated "1-2" survey

- The within-scope establishments selected for survey may either be

    - Within the fsu without fixed premises, or

    - Within the fsu with fixed premises

    - Outside the fsu

- In all these cases, the enterprise is surveyed. [as indicated in the next slide]

Strategies:
Area-frame based survey component (11)

Integrated "1-2" survey

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                    ┌─────────────────────────┐
                    │ Households owning/       │
                    │ operating enterprises    │
                    └─────────────────────────┘
              ┌──────────────┴───────────────────┐
     ┌────────────────────┐          ┌─────────────────────────┐
     │ Within the sample  │          │ Outside the sample area │
     │ area               │          │ and with fixed premises │
     └────────────────────┘          └─────────────────────────┘
        ┌──────┴──────┐                ┌─────────────────────────┐
 ┌────────────┐  ┌────────────┐        │ Capture at premise      │
 │ With fixed │  │ Without    │        └─────────────────────────┘
 │ premises   │  │ fixed      │
 │            │  │ premises   │
 └────────────┘  └────────────┘

 Capture at premise    Capture at household
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Area-frame based survey component (12)

Advantages & Disadvantages of the two methods

MHES	"1-2" Survey
• May be conducted independent of other surveys using EC data	• Provides data on informal employment & informal sector
• Estimate of informal sector employment varies from that obtained from Hhd. Survey.	• Estimates of informal sector employment from 2 sources likely to be consistent.
• Involves extra costs – expectedly marginally more - for enterprise listing.	• Involves extra costs for travel – for surveying enterprises outside the *fsu*.

Area-frame based survey component (13)

Main Disadvantages of the "1-2" method

The results of a survey conducted with "1-2" method are subject to higher sampling error than MHES – at both the stages.

- The first-stage variance is higher, since the *size variable* for *fsu* selection is based on distribution of population and not on that of within-scope enterprises.

- The second-stage variance is higher, since establishments are not selected from a complete list of establishments.

Strategies:
Area-frame based survey component (14)

Another Disadvantage of the "1-2" method

The establishments owned by <u>non-residents</u> can not be captured by the "1-2" approach – whether with fixed premises or not.

Choice of Strategy (1)

For an appropriate choice strategy issues involved:

- Availability of benchmark information
- Country-specific relevance
- Affordability
- Accuracy
- Timeliness.

Choice of Strategy (2)

Sampling frame for area-sample based establishment survey?

- The sampling frame should have –

  data on number of units by economic activity for each area unit.

- Economic census generally provides such data.

- If Economic Census is not done or is very outdated, Population Census results on workforce by economic activities may be used.

Choice of Strategy (3)

Integrating Annual and Infra-annual enquiries?

- Possible only when quarterly accounts are maintained by the establishments.
- May not provide results of infra-annual enquiry in time.
- Not relevant for countries of the region.

Rotating Panel Sample?

- A panel sampling with annual rotation can be used for covering "small units stratum" of the "list frame segment",
  - instead of *repeated cross sectional design* (independent samples on different occasions) – the usual practice
  - or a *fixed panel sample design*.
- Expected to provide better estimates of 'change' parameters.

Choice of Strategy (4)

Conducting area-frame based survey?

- The area-frame based surveys are costly. Resources may not permit annual coverage of non-list frame segment.
- For the countries where non-list frame segment is expected to be insignificant, need not be done annually.
- In both these cases, a baseline enquiry for the non-list frame segment may be conducted once in 3 / 5 years.
- The benchmark estimates obtained from the baseline inquiry may be projected forward, using suitable estimates of change based on
  - observed trend of baseline survey results or
  - other annual and infra-annual inquiries of relevance.

Choice of Strategy (5)

"1-2" Survey or MHES?

- "1-2" surveys produce less efficient estimates than MHES,
- but are cost-effective, being integrated with a regular household surveys (like LFS).
- Sampling errors of "1-2" survey estimates may be within acceptable limits,
  - particularly when sampling fraction of LFS is high.
- Thus, "1-2" approach can be adopted in countries where
  - LFS has high sampling fraction and / or
  - Non-list frame segment is insignificant.

Choice of Strategy (6)

Possibility of integrating MHES with a regular household survey?

- If integrated at the first stage, i.e. if conducted on the same sample of *f.s.u.*'s, cost of listing operations can be reduced.

- But, integration at the first stage may badly affect the efficiency of the estimates.

- However, if sampling errors are still found within acceptable limits, integration may prove to be cost-effective.

Choice of Strategy (7)

Possibility of partial integration?

- Partial integration of an area-frame based establishment survey and a regular household survey: selecting the two first-stage samples with a large proportion of common $f.s.u.$'s (overlap).

- Usually – for both for both the surveys - $f.s.u.$'s are selected with PPS, with 'size' variable population / # households for the household survey and # establishments / workers for the establishment surveys.

- For partial integration, PPS systematic samples of $f.s.u.$'s with respective size variables can be drawn with large overlap.

Choice of Strategy (8)

Integrating master samples?

- Countries using master sample (of *f.s.u.*'s) for household surveys can draw a partially integrated master sample for the area-frame based establishment survey.

- Creation and updating of the lists of households and those of establishments in the common *f.s.u.*'s can be taken up in one operation.

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