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Size designation of clothes —

Part 4: Determination of the coverage ratios of body measurement tables

Désignation des tailles de vêtements —

Partie 4: Détermination des taux de couverture des barèmes de mensuration du corps

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Foreword

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This document was prepared by Technical Committee ISO/TC 133, *Clothing sizing systems - size designation, size measurement methods and digital fittings*.

A list of all parts in the ISO 8559 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

The optimization of measurement tables is the final objective of a garment company in order to increase its coverage ratios (also termed as market share).

Usually, numerous coverage ratios are calculated in an iterative way in order to optimize the table of measurements.

One coverage ratio could be based on the values (minimum and maximum of an interval) of two body dimensions or of three body dimensions.

The two body dimensions can be easily represented in a two-dimensional chart while the three body dimensions can be correctly represented in a three-dimensional chart.

Size designation of clothes —

Part 4: Determination of the coverage ratios of body measurement tables

1 Scope

This document describes the calculation of coverage ratios of body measurement tables in comparison with two or three selected body dimensions of the targeted population.

NOTE Theoretically, the calculation of the coverage ratios can be extended to further dimensions. Practically, carrying out calculations based on 4 or more dimensions, leading to low percentages, face difficulty in getting easy visual illustrations and has not been found relevant.

This document is applicable to body measurement tables only if a database of body dimensions of the targeted population is available.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1
interval
difference between the two adjoining values in a body measurement table

[SOURCE: ISO 8559-3:2018, 3.3]

3.2
coverage ratio
ratio of the number of cases within the values of the measurement tables for selected body dimensions in comparison to the number of the total cases

Note 1 to entry: The number of the total cases are related to the targeted population.

Note 2 to entry: The expression "market share" is also used in marketing to name the "coverage ratio".

4 General principle of the calculation of a coverage ratio

The calculation of a coverage ratio of a body measurement table is based on two or three body dimensions selected from the mentioned body measurement table in comparison with the data of the same two or three body dimensions extracted from a specified data base of the targeted population. The coverage ratio, expressed in percentage, is calculated from the number of the cases for which the

body dimension coordinates of a person falling within the area delimited by the intervals of the selected body dimensions in comparison with the number of the total cases of the specified targeted population of the data base.

A coverage ratio is calculated for each area (coverage ratio per area) and an overall coverage ratio is calculated for all the areas.

If N is the total cases of the specified targeted population of the data base and n_i is the number of the cases for which the body dimension coordinates of a person falling within area i delimited by the intervals of the selected body dimensions (lower limits of intervals are inclusive and upper limits of intervals are exclusive, except for the last one), the coverage ratio of area i is $100\times\frac{n_i}{N}$ expressed in percentage.

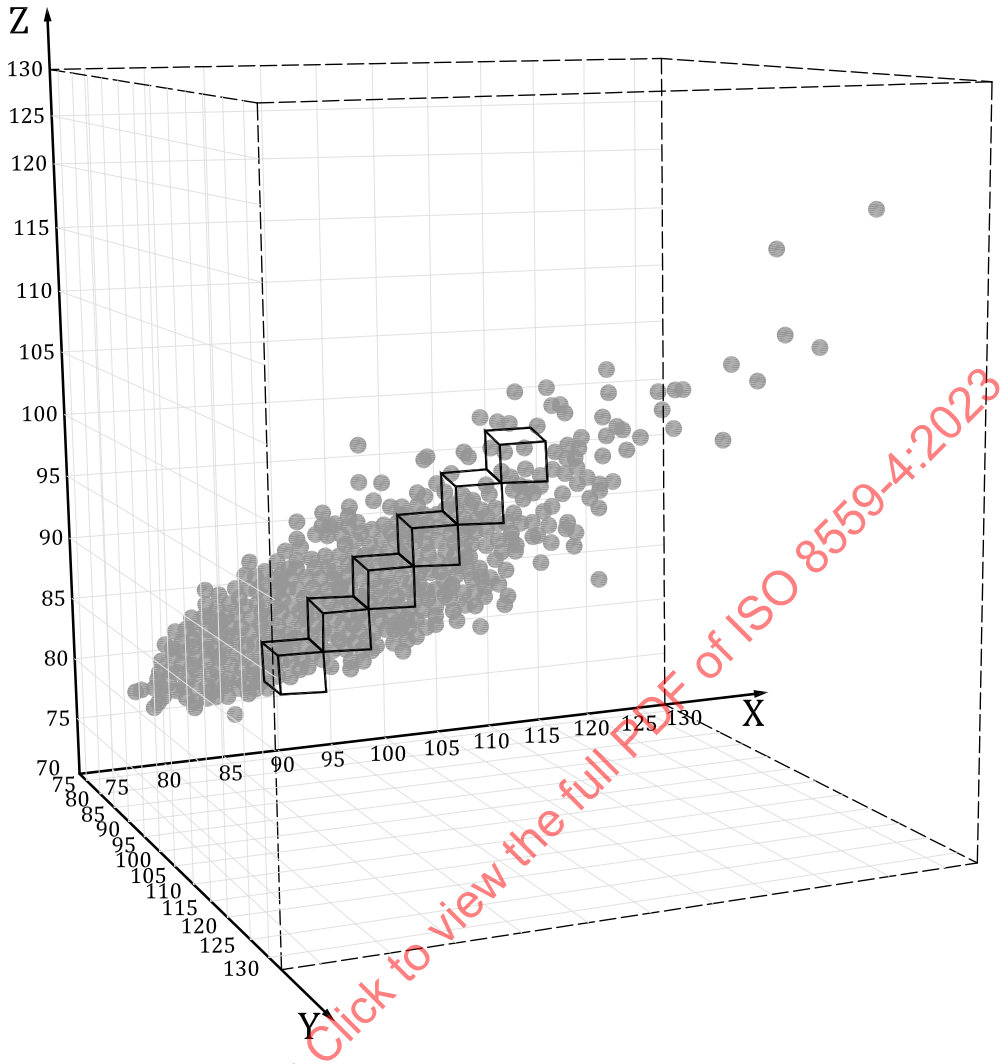
The overall coverage ratio is $100\times\frac{\sum n_i}{N}$ expressed in percentage.

When 3 body dimensions are selected, the three related intervals lead to identify an area as a box in a three-axis diagram, where each axis represents one of the selected body dimensions.

Figure 1 illustrates a three-axis diagram with boxes based on the three selected body dimensions.

NOTE 1 The positions of the boxes are not systematically along a linear progression.

NOTE 2 A dot in chart represents a single subject or a group of subjects with the same coordinates. An example of a calculation of a coverage ratio based on three selected body dimensions is given in Annex A.



Key

X first body dimension
Y second body dimension
Z third body dimension

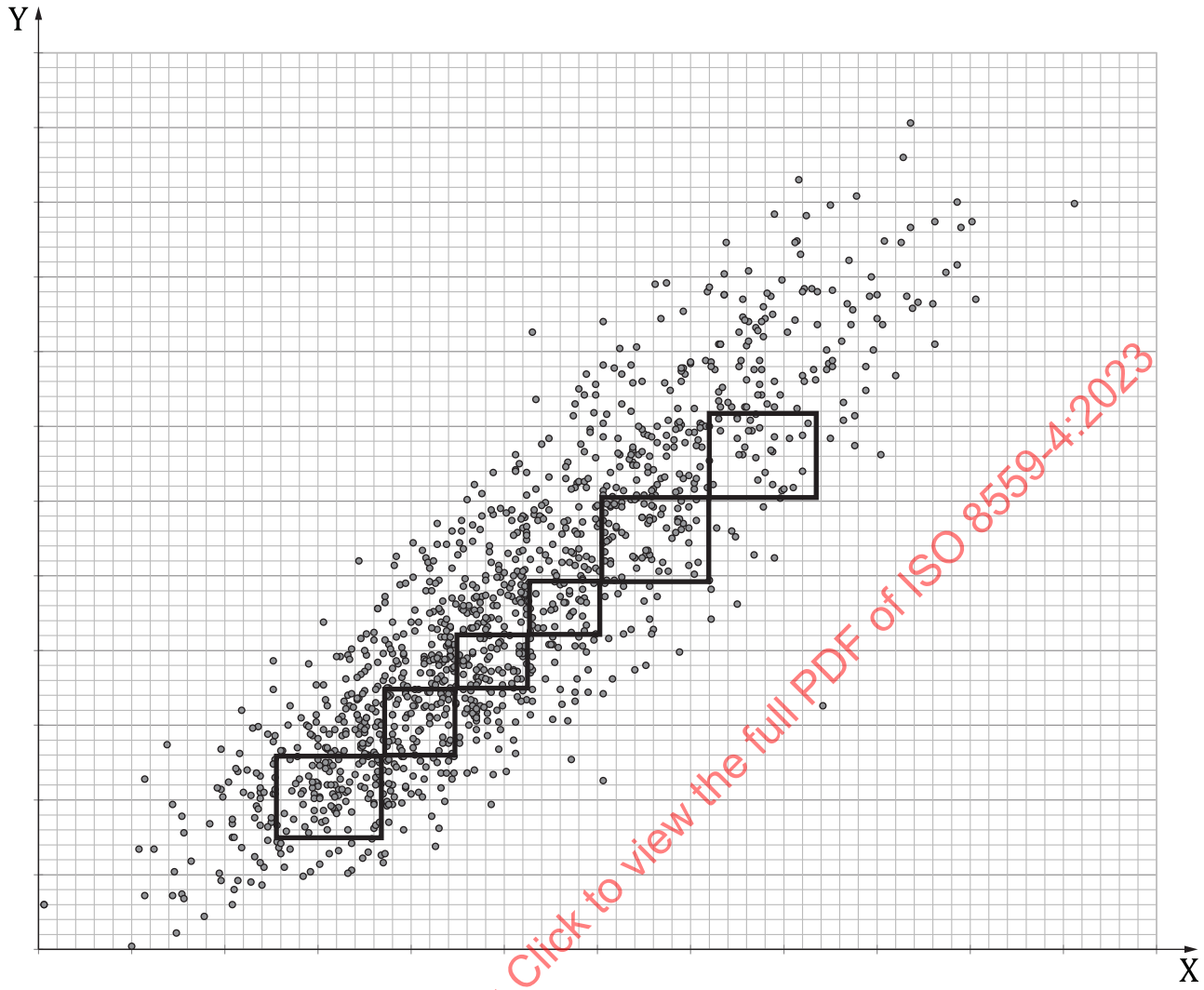
Figure 1 — Box areas based on three selected body dimensions

When two body dimensions are selected, the two related intervals lead to identifying an area as a rectangle in a two-axis diagram, where each axis represents one of the selected body dimensions.

Figure 2 illustrates a two-axis diagram with rectangles based on the two selected body dimensions.

NOTE 3 The positions of the rectangles are not systematically along a linear progression.

An example of a calculation of a coverage ratio based on two selected body dimensions is given in Annex B.



Key

X	first body dimension
Y	second body dimension
●	body dimension coordinates of a person
▭	area delimited by the intervals of the two body dimensions from the body measurement table

Figure 2 — Rectangle areas based on two selected body dimensions

NOTE 4 An example of a simplified version of the coverage ratio calculation which is based on two body dimensions, is a starting point for a body measurement table optimization approach given in Annex C.

5 Report

The report shall give the following information:

a) reference to this document, i.e. ISO 8559-4:—;

b) identification of the body measurement table for which the coverage ratios are calculated;

c) identification of the data base used for the comparisons and list of the criteria applied to select body dimensions of the targeted population;

d) the number of the total cases (i.e. number of persons) of the specified targeted population;

For each two or three body dimensions selected:

e) coverage ratio for each area, expressed in %;

f) when areas are ordered, a cumulative coverage ratio when adding another coverage ratio of the subsequent area to the previous one, expressed in percentage;

g) overall coverage ratio, expressed in %.

Annex A
(informative)

Example of a coverage ratio based on three selected body dimensions

A.1 Input data

A.1.1 Identification of the body measurement table

Table A.1 shows an extract of an example of body measurement table (6 sizes and 3 body dimensions) for women.

Table A.1 — Example of body measurement table (extract)

	Size 1		Size 2		Size 3		Size 4		Size 5		Size 6	
Bust girth cm	81	87	88	92	92	96	96	100	101	107	108	114
Waist girth cm	61	67	68	72	72	76	76	80	81	87	88	94
Hip girth cm	85	91	92	96	96	100	100	104	105	111	112	118

The determination of the coordinates of the eight corners of one box is based on:

— the settings of each axis for each selected body dimension;

EXAMPLE 1 From Table A.1: one axis for bust girth, second axis for waist girth and the third axis for hip girth. Each axis is graduated in cm with increasing values. Axis are orthogonal between each other.

— the combinations of the limits of the intervals for each size.

EXAMPLE 2 From Table A.1, for "Size 1" (axis chosen in the order as given in Example 1), the coordinates of the eight corners are : (81, 61, 85), (81, 61, 91), (81, 67, 85), (81, 67, 91), (87, 61, 85), (87, 61, 91), (87, 67, 85) and (87, 67, 91).

A.1.2 Identification of the data base used for the comparisons and list of the criteria applied to select body dimensions of the targeted population

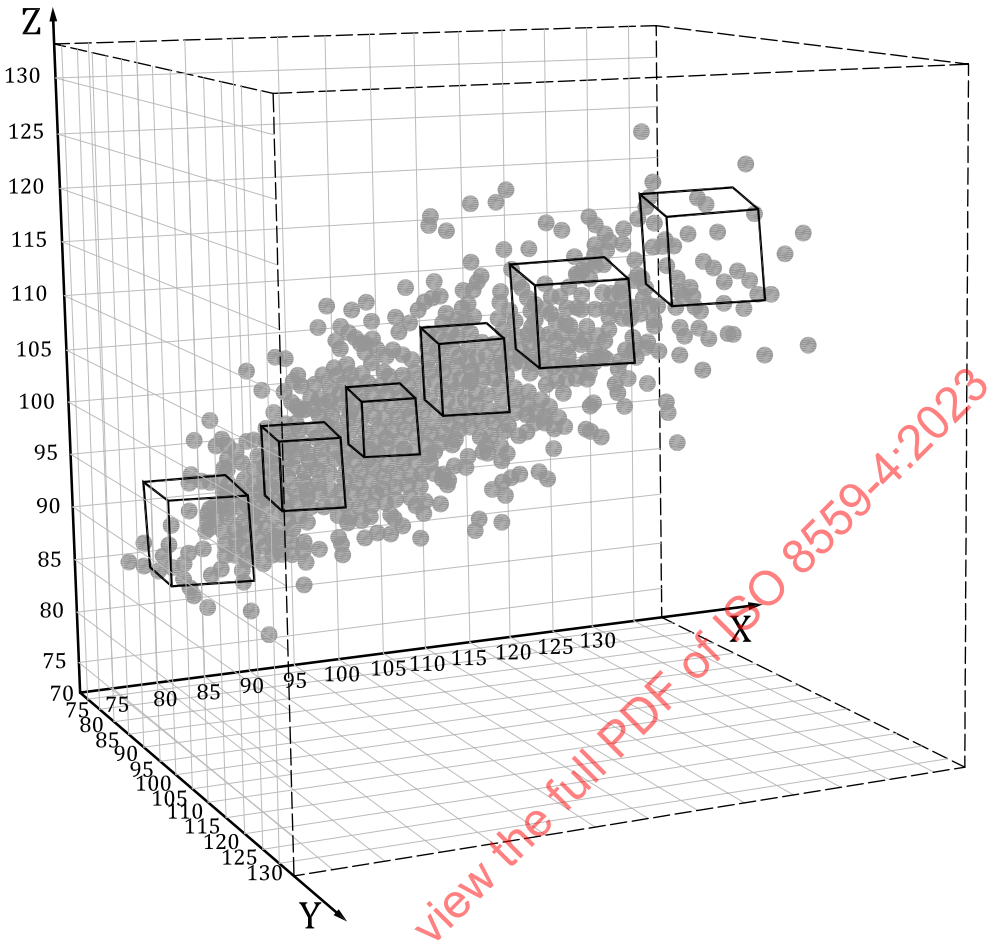
Data base: France. Gender: women.

Criteria: aged from 45 to 65 years old, with Body Mass Index (BMI) between 18 and 34.

Number of the total cases (i.e. number of persons) of the specified targeted population of the data base: 216 014 of 6 822 447 people.

A.2 Coverage ratios

Figure A.1 shows the boxes representing the body measurement table (Table A.1) and the targeted population (dots).



Key

X waist girth in cm
Y hip girth in cm
Z bust girth in cm

Figure A.1 — Box areas based on waist girth, hip girth and bust girth

The coverage ratios are summarized in Table A.2 in relation to the targeted population of the data base.

Table A.2 — Coverage ratios

	Size 1	Size 2	Size 3	Size 4	Size 5	Size 6	total
Coverage ratio %	0,67 %	0,83 %	0,54 %	0,38 %	0,64 %	0,11 %	3,17 %
Targeted population of the data base	45 394	56 352	36 785	25 828	43 829	7 827	216 014

Annex B
(informative)

Example of a coverage ratio based on two selected body dimensions

B.1 Input data

B.1.1 Identification of the body measurement table

Table B.1 shows an extract of an example of body measurement table (6 sizes and 2 body dimensions) for women.

Table B.1 — Example of body measurement table (extract)

	Size 1		Size 2		Size 3		Size 4		Size 5		Size 6	
Bust girth cm	81	87	88	92	92	96	96	100	101	107	108	114
Hip girth cm	85	91	92	96	96	100	100	104	105	111	112	118

The determination of the coordinates of the four corners of one rectangle is based on:

— the settings of each axis for each selected body dimension;

EXAMPLE 1 From Table B.1: one axis for bust girth and the second axis for hip girth. Each axis is graduated in cm with increasing values. Axis are orthogonal between each other.

— the combinations of the limits of the intervals for each size.

EXAMPLE 2 From Table B.1, for "Size 1" (axis chosen in the order as given in Example 1), the coordinates of the four corners are: (81, 85), (81, 91), (87, 85) and (87, 91).

B.1.2 Identification of the data base used for the comparisons and list of the criteria applied to select body dimensions of the targeted population of the data base

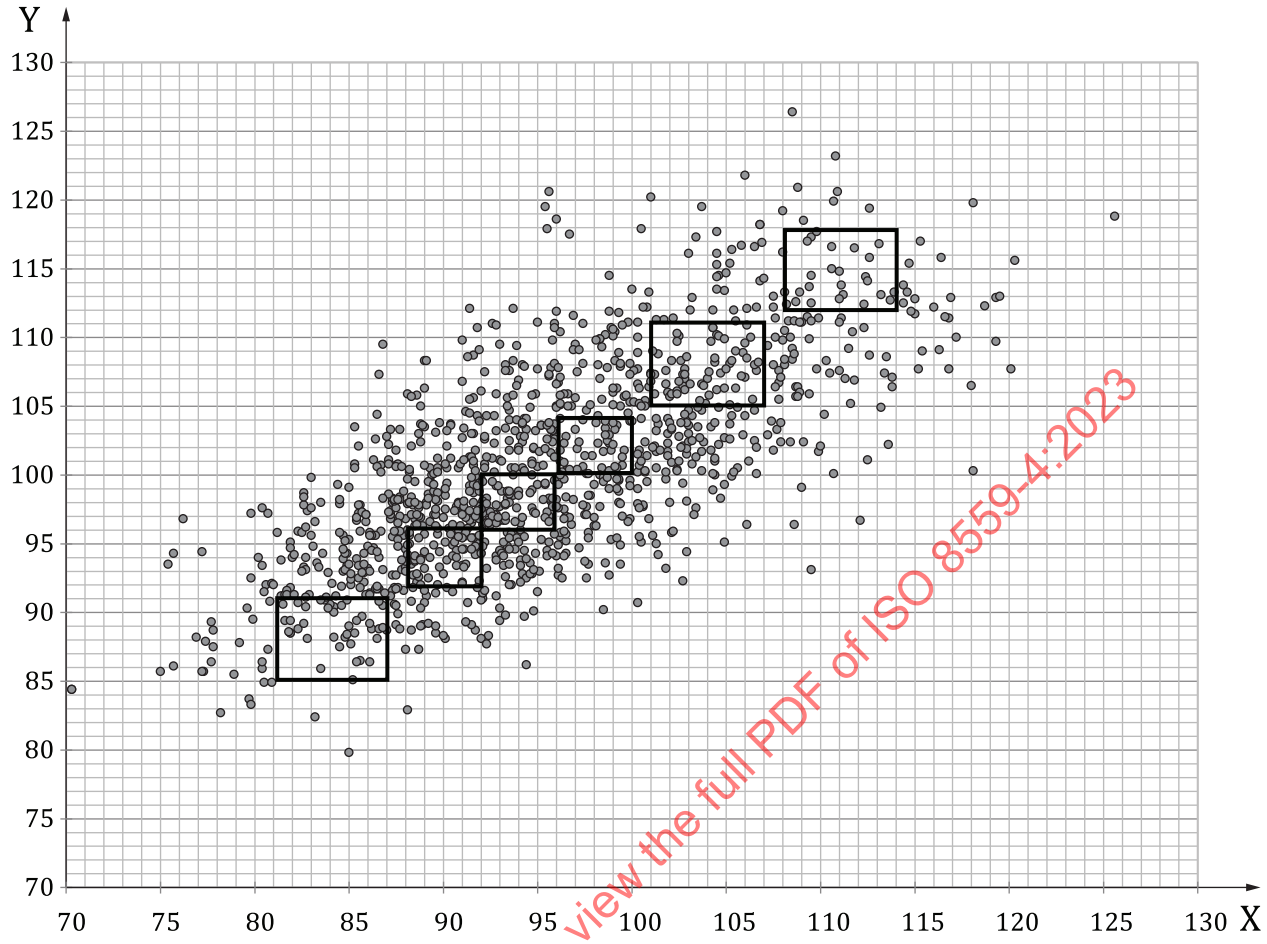
Data base: France. Gender: women.

Criteria: aged from 45 to 65 years old, with Body Mass Index (BMI) between 18 and 34.

Number of the total cases (i.e. number of persons) of the specified targeted population of the data base: 1 699 938 of 6 822 447 people.

B.2 Coverage ratios

Figure B.1 shows the rectangles representing the body measurement table (Table B.1) and the targeted population (dots) of the data base.



Key

X bust girth in cm

Y hip girth in cm

coordinates (bust girth, hip girth) of a person

area delimited by the intervals of the two body dimensions from the body measurement Table B.1

Figure B.1 — Rectangle areas based on bust girth and hip girth

The coverage ratios are summarized in Table B.2 in relation to the targeted population of the data base.

Table B.2 — Coverage ratios

	Size 1	Size 2	Size 3	Size 4	Size 5	Size 6	total
Coverage ratio %	3,43 %	5,21 %	5,39 %	3,53 %	5,29 %	2,06 %	24,92 %
Targeted population of the data base	234 015	355 328	367 850	241 059	360 806	140 879	1 699 938

Annex C
(informative)

Simplification of a coverage ratio calculation based on one body dimension case, as a starting point for an optimization approach of a body measurement table.

C.1 Input data

C.1.1 Identification of the body measurement table

Table C.1 shows an extract of an example of body measurement table (6 sizes and 1 body dimension) for women.

Table C.1 — Example of body measurement table (extract)

	Size 1		Size 2		Size 3		Size 4		Size 5		Size 6	
Bust girth range cm	81	87	88	92	92	96	96	100	101	107	108	114
Bust girth class centre cm	84		90		94		98		104		111	

C.1.2 Identification of the data base used for the comparisons and list of the criteria applied to select body dimensions of the targeted population

Data base: France. Gender: women.

Criteria: aged from 45 to 65 years old, with Body Mass Index (BMI) between 18 and 34.

Number of the total cases (i.e. number of persons) of the specified targeted population of the data base: 5 841 774 of 6 822 447 people.

C.2 Coverage ratios

Figure C.1 shows the aligned dots (targeted population of the data base) representing one body measurement table (see Table C.1) in relation to the sizes. a dot alignment is obtained from the dot cloud by gathering all the dots of the selected body dimension for one size whose values are inferior or equal to the chosen size.