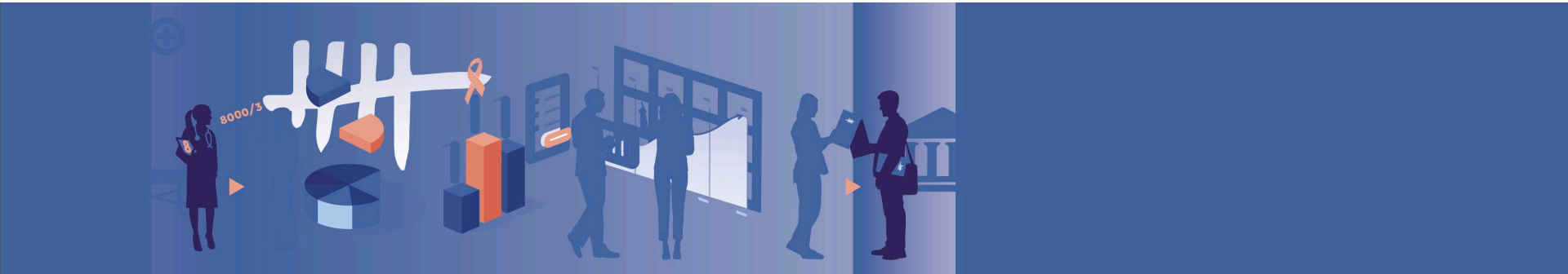


Ensuring Data Validity and Accuracy : Shiny-Based tools for Raw Data

Applications for Evaluating Raw Data from Hospitals
and Pathological Anatomy Laboratories



Introduction

1. Belgian Cancer Registry's mission
2. Understanding the Data Landscape
3. Data Processing and Quality Evaluation
4. Solutions using Shiny Applications
5. Impact and future directions



Belgian Cancer Registry's mission

The Belgian Cancer Registry (BCR)'s mission is to **collect, complete, validate, analyse** and **make cancer data accessible** in Belgium while simultaneously **protecting** it.

BCR operates under a **legal framework** established by the **Belgian Health Law of December 2006**, which defines its activities and objectives.

Core activities :

**Descriptive
Epidemiology**

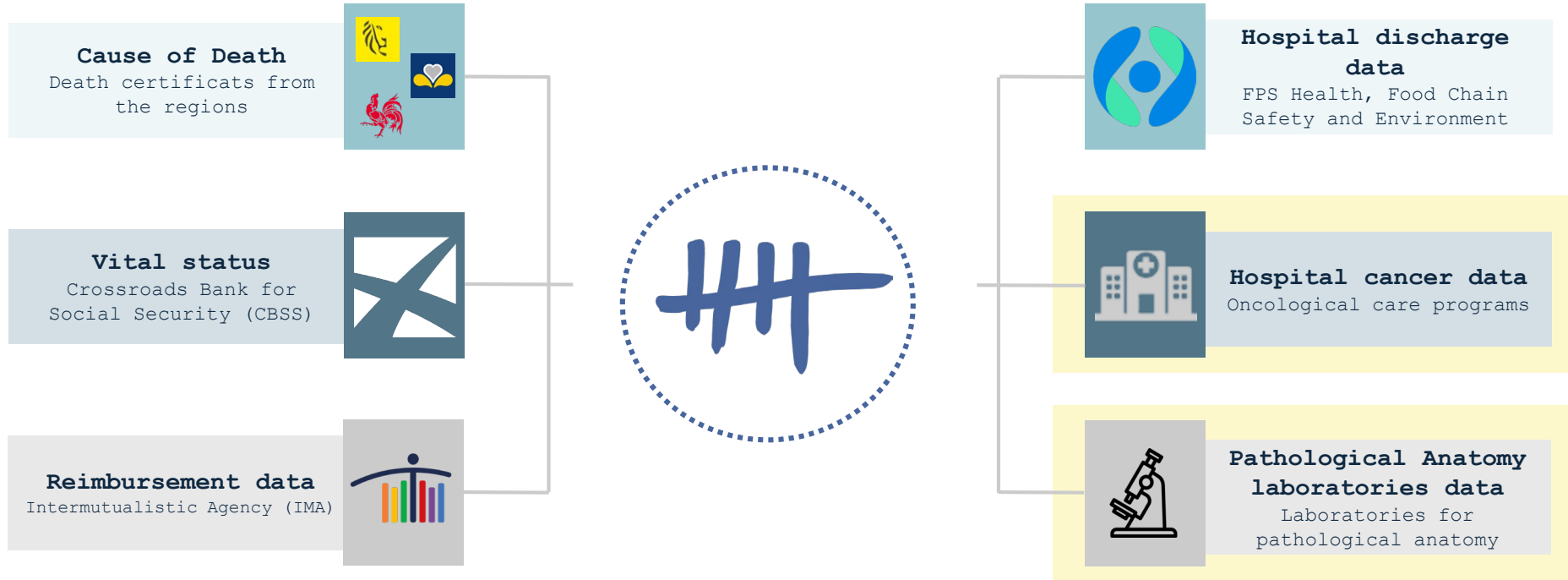
**Supporting Cancer
Screening Programs**

Research

**Data Completeness and
Quality**



Understanding the Data Landscape



Focus on Hospital and Pathological Anatomy Laboratories Data



Description of the data received from hospitals



Frequency of Data Submission

Sent **1 time per year**

Types of Data

Structured data

Data Level

Hospital
N°

SSN

Diagnos
e

Description of the data received from hospitals

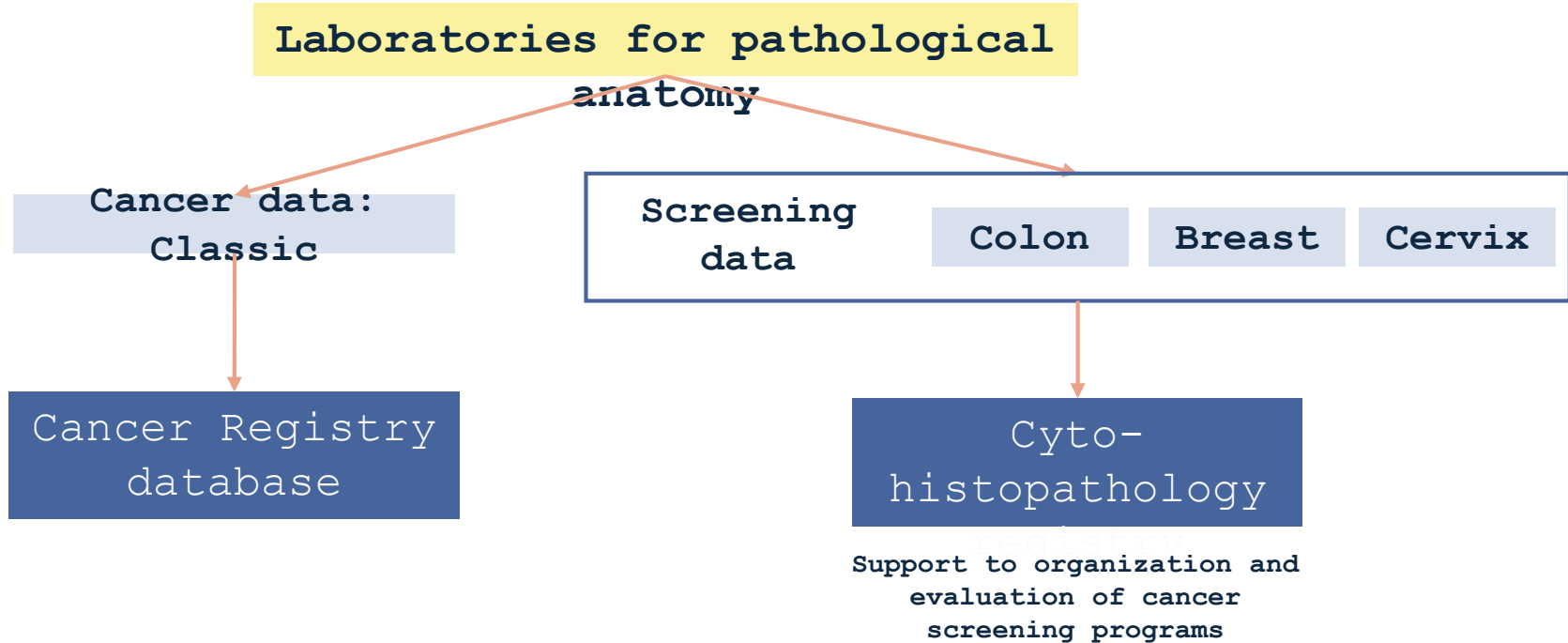


Fields

- Hospital's information
- Patients' administrative data
- Date of incidence
- Basis of diagnosis
- Topography ICD-O3
- Morphology and behaviour ICD-O3

- Differentiation grade
- TNM
- Overview treatment (given and planned)
- WHO performance score
- Comments

Description of the data received from Pathological Anatomy Laboratories





Description of the data received from Pathological Anatomy Laboratories

Frequency of Data Submission

Sent **3 times** per year

Types of Data

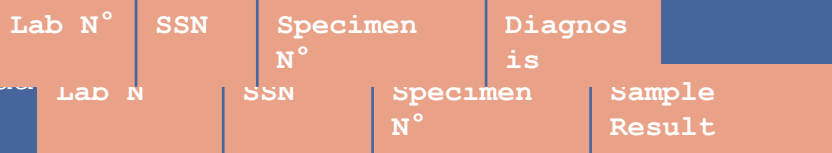
Structured data

Unstructured data (Protocols)

Data Level

Structured Data

- Cancer data
- Screening



Unstructured Data (Protocols) Specimen N°

Description of the data received from Pathological Anatomy Laboratories

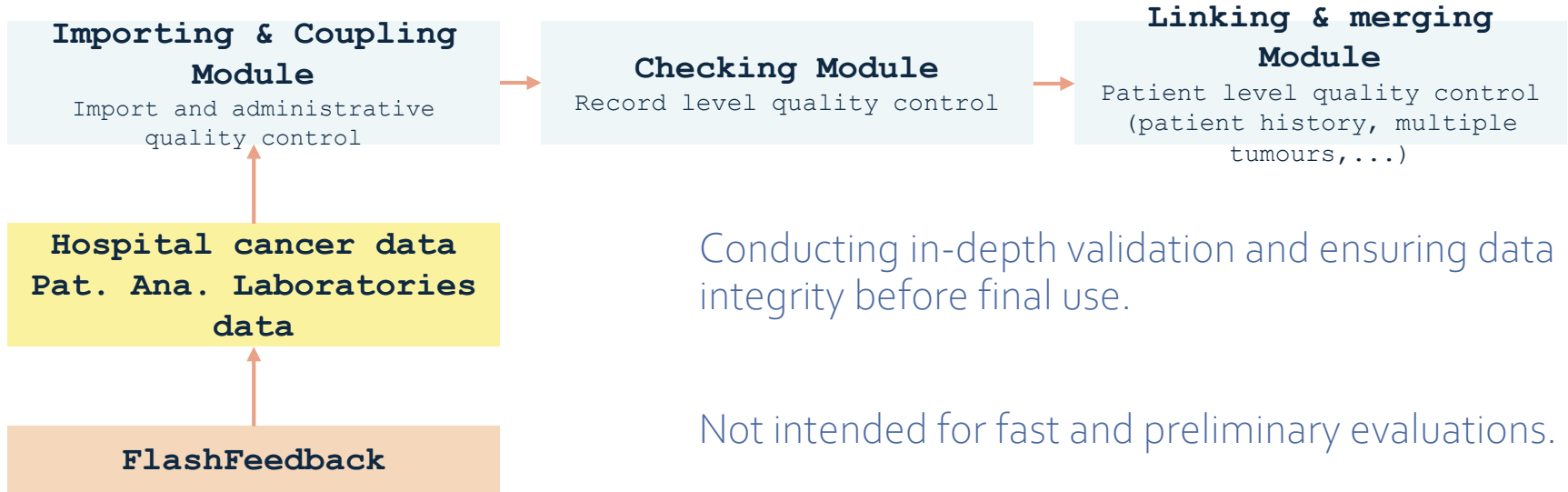


Fields (Structured data)

- Laboratory's information
 - Patients' administrative data
 - Specimen collection date
 - Topography (Organ Code)
- Morphology (Lesion Code)
 - Differentiation grade
 - Specific fields (Laterality, HPV result, HPV types, TNM)

Data Processing and Quality Evaluation

The Cancer Registration and Linking System (CRLS) is the main tool used for verifying, validating, and integrating cancer data from various sources.



Conducting in-depth validation and ensuring data integrity before final use.

Not intended for fast and preliminary evaluations.

Previous Feedback on Raw data

FlashFeedback Hospitals Raw data



- **Filtering** in the initial Excel file to check for missing values or inconsistencies
- **Copy-pasting** records needing hospital rechecks into an Excel file (Quality Control File)
- **Four-eyes check**

Risks:

- **Human errors**
- **Time-consuming**

Feedback Pathological Anatomy Laboratories data



- Feedback are sent only **after full-year** data is received
- **Pre-processed** data within the CRLS
- **Linked** to other data sources

Disadvantages:

- **Delayed** feedback
- **Reduced responsiveness** to data quality issues
- Preventing laboratories from **seeing the actual quality and completeness** of their data

Solutions with Shiny Applications

What is R?

- Open-Source and Free Software Environment
- Extensive Library of packages
- Community Support



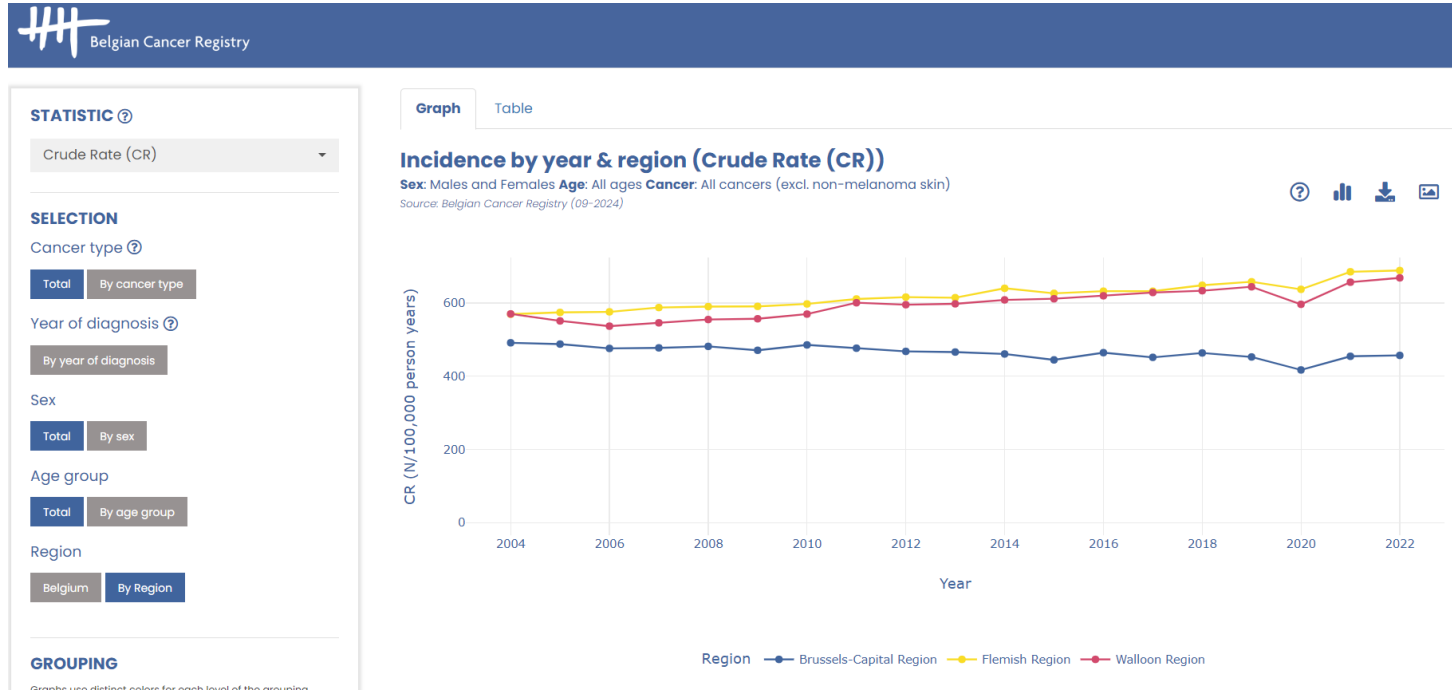
What is Shiny?

- A R package to build interactive web applications directly from R
- User-Friendly interface
- Real-Time Data Interaction



Solutions with Shiny Applications

Example of R Shiny Application: https://belgian-cancer-registry.shinyapps.io/data_app/



Shiny Applications - Hospitals' Raw data



Shiny app

Shows only the records
**that require decision-
making**



Records with **field missing** or
presenting **inconsistency** and
with a comment

Records with field
missing or presenting
inconsistency and
without a comment



Quality Control File

Shiny Applications - Hospitals' Raw data



Flash Feedback - Hospitals

Information

User :

Last modifications :

File Uploaded :

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Submit the data for the benchmarking

Submit

Information Original Table Laterality & sublocation TNM - cTNM TNM - pTNM (with Surgery) TNM - pTNM (without Surgery) TNM Impossible Ann Arbor

Specify Additional Checks

Overview

Flash Feedback App is an app that help you to make the checks for the records sent by the hospitals (via WBCR and Batch Files). You can also create the report and create the QC File.

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Features

+

Updates - FlashFeedback 2023

+

Benchmarking : Data already submitted

Show 10 entries Search:

Z_HOP	YEAR_HOP	USER_commit	Date_commit
AB	AB	All	All

No data available in table

Showing 0 to 0 of 0 entries Previous Next

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- **COLUMNS TO HAVE IN THE EXCEL FILES:** FFB YYYY - ZXXX.xlsx and CF_CONV-ZXXX-YYYY.xlsx

Features +

Updates - FlashFeedback 2023 +

Benchmarking : Data already submitted

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Z_HOP	YEAR_HOP	USER_commit	Date_commit
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Additional Checks

Laterality & sublocation

Sublocation of skin tumors (C44.9)

Description:
 • Cases with diagnosis : C44.9
 • Behaviour : /2 (in situ) & /3 (invasive)

Show/Hide Columns

Showing 0 to 0 of 0 entries

IncidenceDate	topography	laterality	histology	behaviour	differentiation	cT	cN	cM	pT	pN	pM	comments	comments_val	QC (Y/N)	AviS
No data available in table															

Show 10 entries Previous Next

NO RECORD with:
 - **Diagnosis C44.9 +**
 - **Behaviour : Invasive or In situ +**
 - **Comment that could justify the non-specificity**

Laterality of skin tumors (C44)

Description:
 • Cases with diagnosis : C44
 • Behaviour : /2 (in situ) & /3 (invasive)
 • Laterality not equal to G or D

Show/Hide Columns

Showing 1 to 10 of 17 entries

IncidenceDate	topography	laterality	histology	behaviour	differentiation	cT	cN	cM	pT	pN	pM	comments	comments_val	QC (Y/N)	AviS
1 2024-XX-XX	C44.4	Unknown	8070	3	2 - Moderately differentiated				2			Vertex skin	Y	Agree	
2 2024-XX-XX	C44.4	Unknown	8070	3	1 - Well differentiated				1			location: vertex	Y	Agree	
3 2024-XX-XX	C44.3	Unknown	8070	2					is			location: back of the nose	Y	Agree	
4 2024-XX-XX	C44.4	Unknown	8070	3	4 - Undifferentiated							location: top of the skull	Y	Agree	
5 2024-XX-XX	C44.4	Unknown	8070	3	1 - Well differentiated							Location: median frontoparietal vertex	Y	Agree	
6 2024-XX-XX	C44.4	Unknown	8070	2					is			location: top of the back	Y	Agree	
7 2024-XX-XX	C44.3	Unknown	8070	3								lesion at the back of the nose without more details	Y	Agree	
8 2024-XX-XX	C44.4	Unknown	8081	2					is			anterior and posterior vertex	Y	Agree	
9 2024-XX-XX	C44.5	Unknown	9700	3								Transforming cutaneous T-cell lymphoma	Y	Agree	
10 2024-XX-XX	C44.5	Unknown	8070	3					1			between the 2 shoulder blades	Y	Agree	

Show 10 entries Previous Next

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Laterality & sublocation

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Description :
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Show/Hide Columns

Showing 0 to 0 of 0 entries

incidenceDate	topography	laterality	histology	behaviour	differentiation	cT	cN	cM	pT	pN	pM	comments	comments_val	QC (Y/N)	Avis
No data available in table															

Show 10 entries

Laterality of skin tumors (C44)

Description :
 • Cases with diagnosis : C44
 • Behaviour : /2 (in situ) & /3 (invasive)
 • Laterality not equal to G or D

Show/Hide Columns

Showing 1 to 10 of 7 entries

incidenceDate	topography	laterality	histology	behaviour	differentiation	cT	cN	cM	pT	pN	pM	comments	comments_val	QC (Y/N)	Avis
1 2024-XX-XX	C44.4	Unknown	8070	3	2 - Moderately differentiated				2			Vertex skin	Y	Agree	
2 2024-XX-XX	C44.4	Unknown	8070	3	1 - Well differentiated				1			location: vertex	Y	Agree	
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9 2024-XX-XX	C44.5	Unknown	9700	3								Transforming cutaneous T-cell lymphoma	Y	Agree	
10 2024-XX-XX	C44.5	Unknown	8070	3					1			between the 2 shoulder blades	Y	Agree	

Show 10 entries

Previous 1 2 Next

Shiny Applications - Hospitals' Raw data



Laterality of skin tumors (C44)

Description:

- Cases with diagnosis : C44
- Behaviour : /2 (In situ) & /3 (Invasive)
- Laterality not equal to G or D

Show/Hide Columns

Showing 1 to 10 of 17 entries

	IncidenceDate	topography	laterality	histology	behaviour	differentiation	cT	cN	cM	pT	pN	pM	comments	comments_val	QC (Y/N)	Avis
1	2024-XX-XX	C44.4	Unkown	8070	3	2 - Moderately differentiated				2			Vertex skin		Y	Agree
2	2024-XX-XX	C44.4	Unkown	8070	3	1 - Well differentiated				1			location: vertex		Y	Agree
3	2024-XX-XX	C44.3	Unkown	8070	2					is			location: back of the nose		N	Agree
4	2024-XX-XX	C44.4	Unkown	8070	3	4 - Undifferentiated							location: top of the skull		Y	Agree
5	2024-XX-XX	C44.4	Unkown	8070	3	1 - Well differentiated							Location: median frontoparietal vertex		N	Agree
6	2024-XX-XX	C44.4	Unkown	8070	2					is			location: top of the back		Y	Agree
7	2024-XX-XX	C44.3	Unkown	8070	3								lesion at the back of the nose without more details		N	Agree
8	2024-XX-XX	C44.4	Unkown	8081	2					is			anterior and posterior vertex		Y	Agree
9	2024-XX-XX	C44.5	Unkown	9700	3								Transforming cutaneous T-cell lymphoma		Y	Agree
10	2024-XX-XX	C44.5	Unkown	8070	3					1			between the 2 shoulder blades		N	Agree

Show 10 entries

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Description :

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Show/Hide Columns

Showing 0 to 0 of 0 entries

IncidenceDate topography laterality histology behaviour differentiation cT cN cM pT pN pM comments comments_val QC (Y/N) Avis

No data available in table

Show 10 entries

Previous Next

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Showing 1 to 10 of 17 entries

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6	2024-XX-XX	C44.4	Unkown	8070	2					is			location: top of the back	Y	Agree	
7	2024-XX-XX	C44.3	Unkown	8070	3								lesion at the back of the nose without more details			Agree
8	2024-XX-XX	C44.4	Unkown	8081	2					is			anterior and posterior vertex	Y	Agree	
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10	2024-XX-XX	C44.5	Unkown	8070	3					1			between the 2 shoulder blades			Agree

Show 10 entries

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IncidenceDate topography laterality histology behaviour differentiation cT cN cM pT pN pM comments comments_val QC (y/N) Avis

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Previous Next

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9	2024-XX-XX	C44.5	Unknown	9700	3								Transforming cutaneous T-cell lymphoma		Y	Agree
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Features +

Updates - FlashFeedback 2023 +

Benchmarking : Data already submitted

Show 10 entries Search:

Z_HOP	YEAR_HOP	USER_commit	Date_commit
All	All	All	All
Z000	2024	Olive	2024-09-26

Showing 1 to 1 of 1 entries Previous 1 Next

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Shiny Applications - Hospitals' Raw data



Quality Control File: File sent to the hospitals gathering the records to complete/check

Dear registration staff, we kindly ask you to complete the information below (blue boxes) and send it back to us by sFTP. Thanks in advance.
Please color additions (yellow) so we can easily see what information has been added.
Be careful, this document contains a lot of columns (don't forget to move the cursor to the right). Please answer all questions (column A) in the blue boxes or in the comments filed (column R). Please do not add additional columns.

Question(s) from BCR	SSN	Birth date	Incidence date	Topograp	Laterality	Histolog	Behavior	pT	pN	Comments
Complete or justify the laterality	XXXXXX01-XX/XX	19XX-XX-XX	2024-XX-XX	C44.4	Uknown	8070	3	2		Vertex skin
Complete or justify the laterality	XXXXXX02-XX/XX	19XX-XX-XX	2024-XX-XX	C44.4	Uknown	8070	3	1		location: vertex
Complete or justify the laterality	XXXXXX04-XX/XX	19XX-XX-XX	2024-XX-XX	C44.4	Uknown	8070	3			location: top of the skull
Complete or justify the laterality	XXXXXX06-XX/XX	19XX-XX-XX	2024-XX-XX	C44.4	Uknown	8070	2	is		location: top of the back
Complete or justify the laterality	XXXXXX07-XX/XX	19XX-XX-XX	2024-XX-XX	C44.3	Uknown	8070	3	1		
Complete or justify the laterality	XXXXXX08-XX/XX	19XX-XX-XX	2024-XX-XX	C44.4	Uknown	8070	3	2		
Complete or justify the laterality	XXXXXX09-XX/XX	19XX-XX-XX	2024-XX-XX	C44.4	Uknown	8070	3	2	x	x
Complete or justify the laterality	XXXXXX12-XX/XX	19XX-XX-XX	2024-XX-XX	C44.5	Uknown	9700	3			Transforming cutaneous T-cell lymphoma
Complete or justify the laterality	XXXXXX14-XX/XX	19XX-XX-XX	2024-XX-XX	C44.5	Uknown	8720	3	1a		Vertex skin
Complete or justify the laterality	XXXXXX15-XX/XX	19XX-XX-XX	2024-XX-XX	C44.4	Uknown	8070	3			
Complete or justify the laterality	XXXXXX16-XX/XX	19XX-XX-XX	2024-XX-XX	C44.5	Uknown	8070	2	is		location: suprapubic skin
Complete or justify the laterality	XXXXXX17-XX/XX	19XX-XX-XX	2024-XX-XX	C44.5	Uknown	8077	2	is		Anal condyloma in severe, high-grade dysplasia
Complete or justify the laterality	XXXXXX18-XX/XX	19XX-XX-XX	2024-XX-XX	C44.4	Uknown	8071	3			location: vertex
Complete or justify the laterality	XXXXXX19-XX/XX	19XX-XX-XX	2024-XX-XX	C44.5	Uknown	8070	2			location: vertex
Complete or justify the laterality	XXXXXX20-XX/XX	19XX-XX-XX	2024-XX-XX	C44.6	Uknown	8093	3			location: anterior surface of the right arm
Complete or justify the laterality	XXXXXX21-XX/XX	19XX-XX-XX	2024-XX-XX	C44.4	Uknown	8832	3			
Complete or justify the laterality+There is an inconsistency between the behavior of the tumor and the pTNM, is a correction useful?	XXXXXX22-XX/XX	19XX-XX-XX	2024-XX-XX	C44.5	Uknown	8051	3	is		Vertex skin

Reason(s) for including the records in the file

The fields to complete/check

Shiny Applications - Hospitals' Raw data



QualityControl File: File sent to the hospitals gathering the records to complete/check

Dear registration staff, we kindly ask you to complete the information below (blue boxes) and send it back to us by sFTP. Thanks in advance.
Please color additions (yellow) so we can easily see what information has been added.
Be careful, this document contains a lot of columns (don't forget to move the cursor to the right). Please answer all questions (column A) in the blue boxes or in the comments filed (column R). Please do not add additional columns.

Question(s) from BCR	SSN	Birth date	Incidence date	Topograp	Laterality	Histolog	Behavior	pT	pN	Comments
Complete or justify the laterality	XXXXXX01-XX/XX	19XX-XX-XX	2024-XX-XX	C44.4	Unknown	8070	3	2		Vertex skin
Complete or justify the laterality	XXXXXX02-XX/XX	19XX-XX-XX	2024-XX-XX	C44.4	Unknown	8070	3	1		location: vertex
Complete or justify the laterality	XXXXXX04-XX/XX	19XX-XX-XX	2024-XX-XX	C44.4	Unknown	8070	3			location: top of the skull
Complete or justify the laterality	XXXXXX06-XX/XX	19XX-XX-XX	2024-XX-XX	C44.4	Unknown	8070	2	is		location: top of the back
Complete or justify the laterality	XXXXXX07-XX/XX	19XX-XX-XX	2024-XX-XX	C44.3	Unknown	8070	3	1		
Complete or justify the laterality	XXXXXX08-XX/XX	19XX-XX-XX	2024-XX-XX	C44.4	Unknown	8070	3	2		
Complete or justify the laterality	XXXXXX09-XX/XX	19XX-XX-XX	2024-XX-XX	C44.4	Unknown	8070	3	2	x	x
Complete or justify the laterality	XXXXXX12-XX/XX	19XX-XX-XX	2024-XX-XX	C44.5	Unknown	9700	3			Transforming cutaneous T-cell lymphoma
Complete or justify the laterality	XXXXXX14-XX/XX	19XX-XX-XX	2024-XX-XX	C44.5	Unknown	8720	3	1a		Vertex skin
Complete or justify the laterality	XXXXXX15-XX/XX	19XX-XX-XX	2024-XX-XX	C44.4	Unknown	8070	3			
Complete or justify the laterality	XXXXXX16-XX/XX	19XX-XX-XX	2024-XX-XX	C44.5	Unknown	8070	2	is		location: suprapubic skin
Complete or justify the laterality	XXXXXX17-XX/XX	19XX-XX-XX	2024-XX-XX	C44.5	Unknown	8077	2	is		Anal condyloma in severe, high-grade dysplasia
Complete or justify the laterality	XXXXXX18-XX/XX	19XX-XX-XX	2024-XX-XX	C44.4	Unknown	8071	3			location: vertex
Complete or justify the laterality	XXXXXX19-XX/XX	19XX-XX-XX	2024-XX-XX	C44.5	Unknown	8070	2			location: vertex
Complete or justify the laterality	XXXXXX20-XX/XX	19XX-XX-XX	2024-XX-XX	C44.6	Unknown	8093	3			location: anterior surface of the right arm
Complete or justify the laterality	XXXXXX21-XX/XX	19XX-XX-XX	2024-XX-XX	C44.4	Unknown	8832	3			
Complete or justify the laterality+There is an inconsistency between the behavior of the tumor and the pTNM, is a correction useful?	XXXXXX22-XX/XX	19XX-XX-XX	2024-XX-XX	C44.5	Unknown	8051	3	is		Vertex skin

Laterality missing

Inconsistency between behavior and pTNM

Shiny Applications - Hospitals' Raw data



Flash Feedback – Hospitals

Information

User : Olive
Last modifications :
File Uploaded : FFB 2024 – Z000#Popeye#2024-09-10

Language selection

Nederlands

Upload another .xlsx file

Upload another Hospital

Download Word document (.docx)

Download Report (.docx)

Bench : 1 hospital(s) has/have been submitted for the year 2024.

Download the last data version (.xlsx)

Download Data

Download QC File (.xlsx)

Download QC File

Submit the data for the benchmarking

Submit

Information Original Table Laterality & sublocation TNM - cTNM TNM - pTNM (with Surgery) TNM - pTNM (without Surgery) TNM Impossible Ann Arbor Specify

Additional Checks

Overview

Flash Feedback App is an app that help you to make the checks for the records sent by the hospitals (via WBCR and Batch Files). You can also create the report and create the QC File.

Formats

- **EXCEL FILES NAMES:** The excel files with the data to import must have the names : **FFB YYYY - ZXXX.xlsx** or **CF_CONV-ZXXX-YYYY.xlsx** (with YYYY : Incidence Year; XXX: Hospital Z-code)
- **COLUMNS TO HAVE IN THE EXCEL FILES:** FFB YYYY - ZXXX.xlsx and CF_CONV-ZXXX-YYYY.xlsx

Features +

Updates - FlashFeedback 2023 +

Benchmarking : Data already submitted

Show 10 entries Search:

Z_HOP	YEAR_HOP	USER_commit	Date_commit
All	All	All	All
Z000	2024	Olive	2024-09-26

Showing 1 to 1 of 1 entries Previous 1 Next

Data Sources and Acknowledgments

- WBCR and Batch data from the hospitals.
- Shiny app developed using RStudio and the shiny package.



kankerregister.org
registreducancer.org

Shiny Applications - Hospitals' Raw data



Feedback Report: Overview of the data, including its quality and completeness

Belgian Cancer Registry

Hospital Z000

Feedback – Incidence year 2024

Table of contents

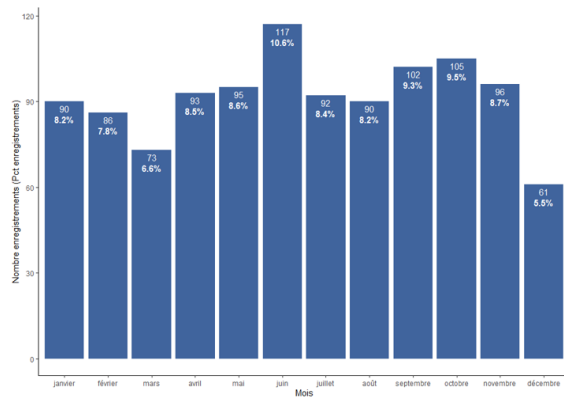
- 1 Introduction 2
- 2 Delivery of the records 2
- 3 Distribution of the records 2
 - 3.1 Distribution of the records per month 3
 - 3.2 Distribution of the records by primary location of tumors 4
 - 3.3 Distribution of the records by tumor behavior 5
- 4 Specificity of the laterality and the sublocation (Tumors behavior (2 & 3)) 6
- 5 Registration of the TNM classification 6
- 6 Lymphoma staging 9
- 7 Cancers peu spécifiés ou à confirmer 11
- 8 WHO performance score 12
- 9 Treatment variable 12
- 10 Other remarks 13

kankerregister.org
registreducancer.org

Feedback data 2024 - Hospital Z00

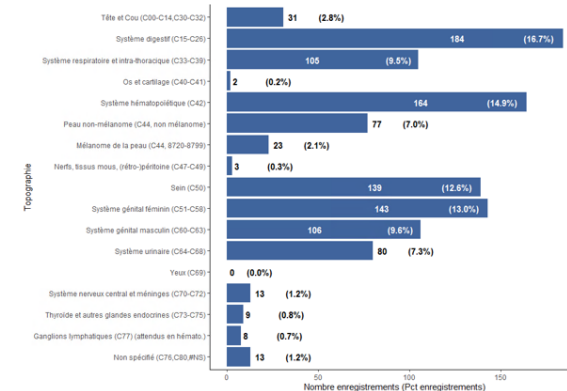
3.1 Distribution of the records per month

It is normal to have a distribution of records over the entire year. A low number of records in some months may be a signal of missing records.



3.2 Distribution of the records by primary location of tumors

In this table, you can observe the distribution of your records according to the primary location of the tumors.



You can find our inclusion criteria for tumor registration via this link: [En général | Belgian Cancer Registry \(kankerregister.org\)](https://www.kankerregister.org/en/generel) - Formation 'Que faut-il enregistrer ?'.

Shiny Applications - Hospitals' Raw data



Feedback: Overview of the data, including its quality and completeness

Belgian Cancer Registry

Hospital Z000

Feedback – Incidence year 2024

Table of contents

1	Introduction	2
2	Delivery of the records	2
3	Distribution of the records	2
3.1	Distribution of the records per month	3
3.2	Distribution of the records by primary location of tumors	4
3.3	Distribution of the records by tumor behavior	5
4	Specificity of the laterality and the sublocation (Tumors behavior /2 & /3)	6
5	Registration of the TNM classification	6
6	Lymphoma staging	9
7	Cancers peu spécifiés ou à confirmer	11
8	WHO performance score	12
9	Treatment variable	12
10	Other remarks	13

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registreducancer.org

Feedback data 2024 - Hospital Z00 1

4 SPECIFICITY OF THE LATERALITY AND THE SUBLOCATION (TUMORS BEHAVIOR /2 & /3)

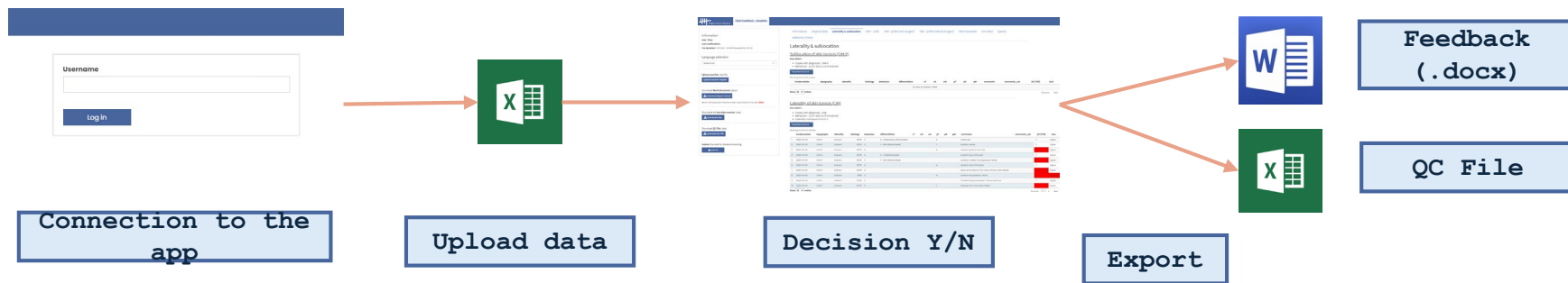
Recording the sublocation and laterality of tumors is important, among others in the context of multiple tumors. This information must therefore be provided to us.

	Total Number	Number specified	Number specified or justified in comment	% specified or justified
Sublocation of skin tumors (C44)	100	100	100	100%
Laterality of skin tumors (C44)	100	78	82	82%
Sublocation of colon tumors (C18)	78	73	73	94%
Sublocation of stomach tumors (C16)	16	14	14	88%
Laterality of breast tumors (C50)	136	136	136	100%
Laterality tumors of the kidney and renal pelvis (C64-C65)	25	25	25	100%

Shiny Applications - Hospitals' Raw data



Process Flow



Shiny App – Pathological Anatomy Laboratories' Raw data



An overview of the raw data after each delivery to the BCR

- Assess the performance
- Observe evolution
- Increase the possibilities for interaction between pathological anatomy laboratories and the Belgian Cancer Registry



Shiny App – Pathological Anatomy Laboratories' Raw data

Belgian Cancer Registry

Colon Breast Cervix Classic

Project: COLON BREAST CERVIX CLASSIC

Lab. selection: L001 LAB SOMEWHERE

Period max.: 2024-T1

Period min.: 2022-T1

Language for the report: Dutch

Download Report (.docx)

COLON - L001 LAB SOMEWHERE - 2024 - T1

Summary

Administrative data - Project: COLON - L001 LAB SOMEWHERE - 2024 - T1

4.000 Number of UNIQUE SPECIMEN NUMBERS	9/3975 ✗ Numerator: Number of NISS MISSING Denominator: Number of unique specimen numbers (for the persons with COUNTRY_RCS = BE or NK/NA)	0/4000 ✓ Numerator: Number of SAMPLE DATE missing Denominator: Number of unique specimen numbers
13/4000 ✗ Numerator: Number of REQUESTING HOSPITAL missing Denominator: Number of unique specimen numbers	5/4000 ✗ Numerator: Number of REQUESTING HOSPITAL out of range Denominator: Number of unique specimen numbers	0/4000 ✓ Numerator: Number of PROTOCOLS missing Denominator: Number of unique specimen numbers

Evolution of the number of UNIQUE SPECIMEN NUMBERS



Shiny App – Pathological Anatomy Laboratories' Raw Data



Belgian Cancer Registry | Colon Breast Cervix Classic

Project: COLON BREAST CERVIX CLASSIC

Lab. selection: L001 LAB SOMEWHERE

Period max.: 2024-T1

Period min.: 2022-T1

Language for the report: Dutch

Download Report (.docx)

COLON - L001 LAB SOMEWHERE - 2024 - T1

Summary

Administrative data - Project: COLON - L001 LAB SOMEWHERE - 2024 - T1

4.000 Number of UNIQUE SPECIMEN NUMBERS	9/3975 ✖ Numerator: Number of NISS MISSING Denominator: Number of unique specimen numbers (for the persons with COUNTRY_RES = BE or NK/NA)	0/4000 ✔ Numerator: Number of SAMPLE DATE missing Denominator: Number of unique specimen numbers
13/4000 ✖ Numerator: Number of REQUESTING HOSPITAL missing Denominator: Number of unique specimen numbers	5/4000 ✖ Numerator: Number of REQUESTING HOSPITAL out of range Denominator: Number of unique specimen numbers	0/4000 ✔ Numerator: Number of PROTOCOLS missing Denominator: Number of unique specimen numbers

Evolution of the number of UNIQUE SPECIMEN NUMBERS



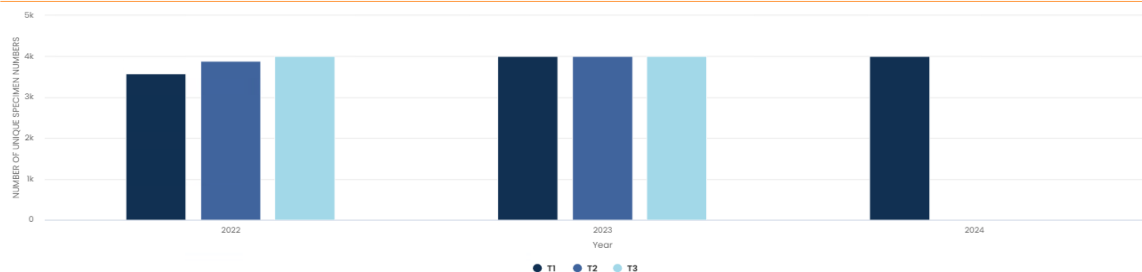
Shiny App – Pathological Anatomy Laboratories' Raw data



Administrative data - Project: COLON - L001 LAB SOMEWHERE - 2024 - T1

<p>4.000</p> <p>Number of UNIQUE SPECIMEN NUMBERS</p>	<p>9/3975 ❌</p> <p>Numerator: Number of NISS MISSING Denominator: Number of unique specimen numbers (for the persons with COUNTRY_RES = BE or NK/NA)</p>	<p>0/4000 ✅</p> <p>Numerator: Number of SAMPLE DATE missing Denominator: Number of unique specimen numbers</p>
<p>13/4000 ❌</p> <p>Numerator: Number of REQUESTING HOSPITAL missing Denominator: Number of unique specimen numbers</p>	<p>5/4000 ❌</p> <p>Numerator: Number of REQUESTING HOSPITAL out of range Denominator: Number of unique specimen numbers</p>	<p>0/4000 ✅</p> <p>Numerator: Number of PROTOCOLS missing Denominator: Number of unique specimen numbers</p>

Evolution of the number of UNIQUE SPECIMEN NUMBERS



Shiny App – Pat. Ana. Laboratories' Raw data



Code Organ - Project: COLON - L001 LAB SOMEWHERE - 2024 - T1

0/4000



Numerator: Number of CODE ORGAN missing
Denominator: Number of unique specimen numbers

0/4000



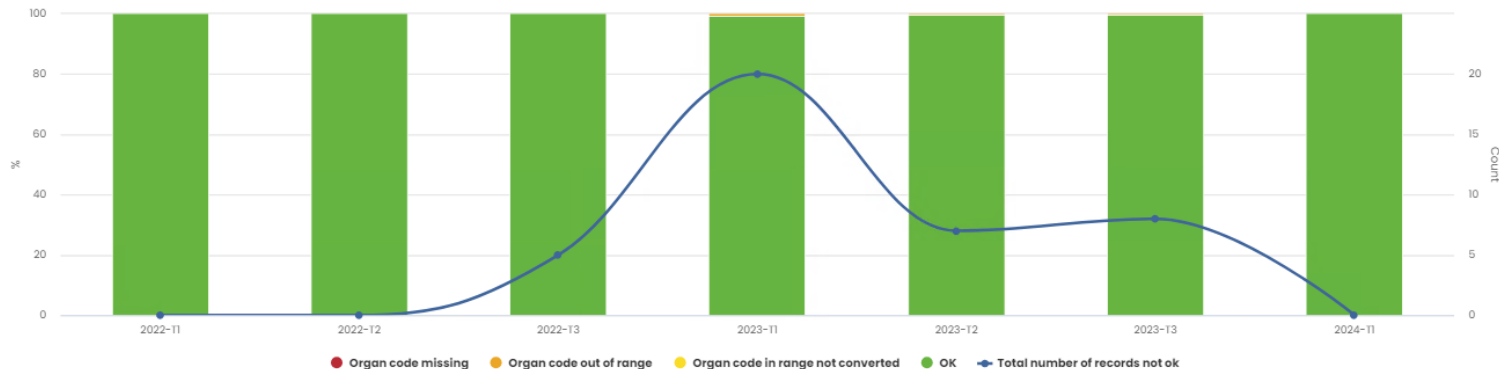
Numerator: Number of CODE ORGAN out of range
Denominator: Number of unique specimen numbers with code organ not missing

0/4000



Numerator: Number of CODE ORGAN in range but not converted
Denominator: Number of unique specimen numbers with code organ not missing and in the range

Evolution of the codification for CODE ORGAN - Project : COLON



Shiny App – Pat. Ana. Laboratories' Raw data



Code Lesion Project: COLON - L001 LAB SOMEWHERE - 2024 - T1

5/4000

Numerator: Number of CODE LESION missing
Denominator: Number of unique specimen numbers

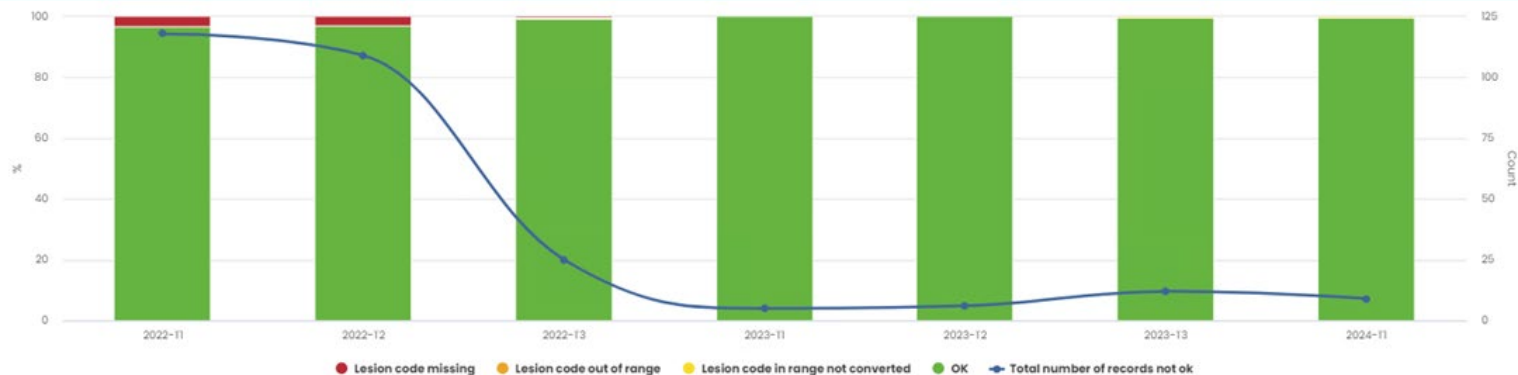


4/3995

Numerator: Number of CODE LESION NOT in Conversion List
Denominator: Number of unique specimen numbers with lesion not missing



Evolution of the codification for CODE LESION - Project : COLON





Shiny App – Pat. Ana. Laboratories' Raw data

Specific to the Project - Project: CERVIX - L001 LAB SOMEWHERE - 2024 - T1

194/3995 ❌

Numerator: Number of unique specimen numbers with cytology for Cervix with 1 code INSU
Denominator: Number of unique specimen numbers with cytology for Cervix

0/3995 ✅

Numerator: Number of unique specimen numbers (Cervix) WITHOUT EVALUATION for QUALITY OF SPECIMEN
Denominator: Number of unique specimen numbers with cytology for Cervix

98/674 ❌

Numerator: Number of unique specimen numbers (Cervix) with morphological code 'ASCU' WITHOUT HPV result
Denominator: Number of unique specimen numbers (Cervix) with morphological code 'ASCU'

0/1305 ✅

Numerator: Number of unique specimen numbers (Cervix) with HPV RESULT NOT CONVERTED
Denominator: Number of unique specimen numbers (Cervix) with HPV result sent

0/473 ✅

Numerator: Number of unique specimen numbers (Cervix) with HPV+ SENT BUT WITHOUT HPV type
Denominator: Number of unique specimen numbers (Cervix) with HPV+

Shiny App – Pat. Ana. Laboratories' Raw data



Code Lesion - Project: BREAST - L001 LAB SOMEWHERE - 2024 - T1

6/1953



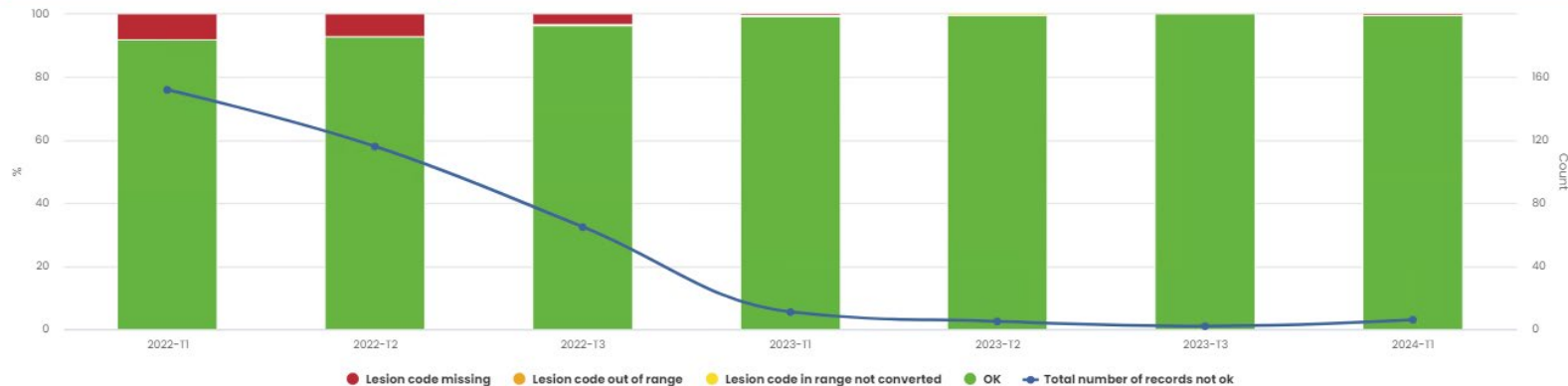
Numerator: Number of CODE LESION missing
Denominator: Number of unique specimen numbers

0/1947



Numerator: Number of CODE LESION NOT in Conversion List
Denominator: Number of unique specimen numbers with lesion not missing

Evolution of the codification for CODE LESION - Project : BREAST



Shiny App – Pat. Ana. Laboratories' Raw data



Records with LESION missing

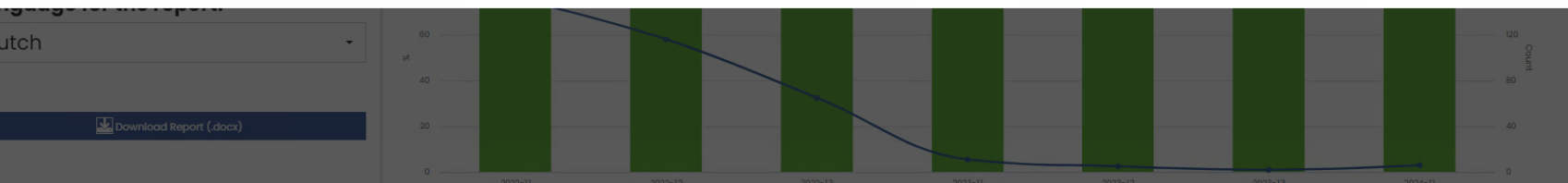
By clicking on a reference number you have access to all its records in a table below.

Excel Search:

specimen_number	YP	LAB	REQ_HOSP	lesion	organ	NISS	BIRTH_DATE	SEX	COUNTRY_RES	DATE_SPECIMEN	RIZIV_APPLICANT	diagnostic_procedure	laterality	DEGREE_CERTAIN_LESION	nomenclature_numbers
063a92240f2349a2	20241	L001	HOSPITAL - XXX		TEA503	fc8ac84ae2c6759c	XXXX-XX-XX	F	BE	YYYY-MM-DD	c781a5d74b010f74	XYZZZZZ			588
1acc585758044e14	20241	L001	HOSPITAL - XXX		T04020	338b2d861f1f519b	XXXX-XX-XX	F	BE	YYYY-MM-DD	6e25f2048492814f	XYZZZZZ			588
281d6122e3e4d8ed	20241	L001	HOSPITAL - XXX		T04020	e9440441d425def7	XXXX-XX-XX	F	BE	YYYY-MM-DD	6e25f2048492814f	XYZZZZZ			588291,588070,588C
8f2f7e142e49f323	20241	L001	HOSPITAL - XXX		T04030	74d028237c5e9ea7	XXXX-XX-XX	F	BE	YYYY-MM-DD	6e25f2048492814f	XYZZZZZ			
cfec23c7296f19d8	20241	L001	HOSPITAL - XXX		T04030	b48f1bafc8524f4	XXXX-XX-XX	F	BE	YYYY-MM-DD	0572c2ec7127353e	XYZZZZZ			588254,588070,588070,588f
dbc35c13209d67d	20241	L001	HOSPITAL - XXX		T04030	2cde5be76cda34bd	XXXX-XX-XX	F	BE	YYYY-MM-DD	d38c1fcdf1fe6344	XYZZZZZ			58829

Showing 1 to 6 of 6 entries Previous Next

Close





Shiny App – Pat. Ana. Laboratories' Raw data

Code Lesion – Project: BREAST – L001 LAB SOMEWHERE – 2024 – T1

6/1953 ❌

Numerator: Number of CODE LESION missing
Denominator: Number of unique specimen numbers

0/1947 ✅

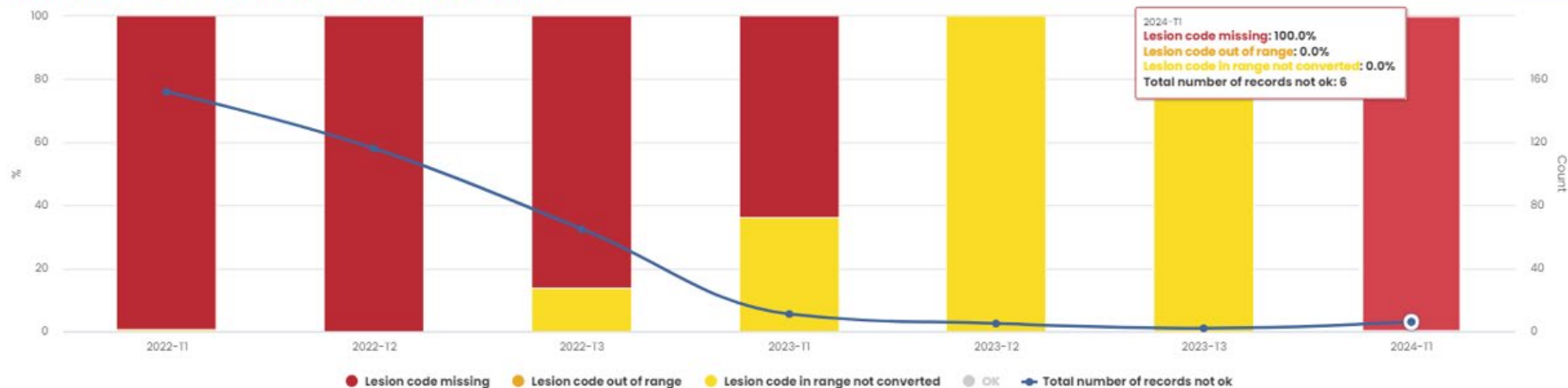
Numerator: Number of CODE LESION NOT in Conversion List
Denominator: Number of unique specimen numbers with lesion not missing



Shiny App – Pat. Ana. Laboratories' Raw data



Evolution of the codification for CODE LESION - Project : BREAST



Shiny App – Pathology Laboratories' Raw data



Project:

COLON BREAST CERVIX CLASSIC

Lab. selection:

L001 LAB SOMEWHERE

Period max.

2024-T1

Period min.

2022-T1

Language for the report:

Dutch

[Download Report \(.docx\)](#)

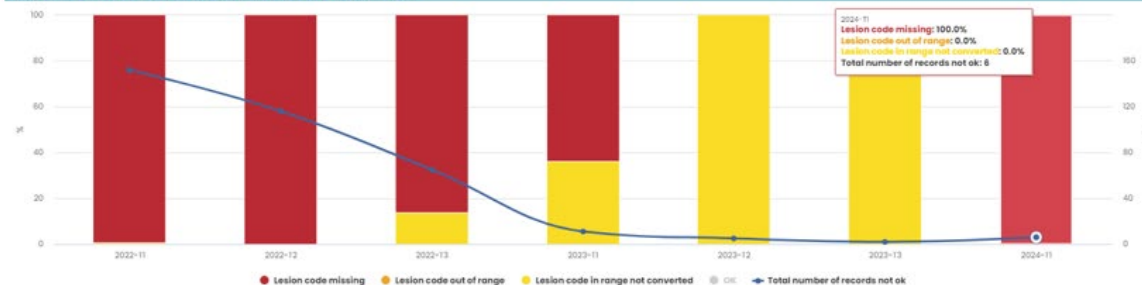
6/1953 ✘

Numerator: Number of CODE LESION missing
Denominator: Number of unique specimen numbers

0/1947 ✔

Numerator: Number of CODE LESION NOT in Conversion List
Denominator: Number of unique specimen numbers with lesion not missing

Evolution of the codification for CODE LESION - Project : BREAST



Specific to the Project – Project: BREAST – L001 LAB SOMEWHERE – 2024 – T1

350/1953 ✘

Numerator: Number of LATERALITY missing or not valid
Denominator: Number of unique specimen numbers

*Are considered as valid codes for the laterality: 1, 2, #NK or included in organ code or lesion code.



Shiny App – Pat. Ana. Laboratories' Raw data

Feedback Report: Overview of the data, performance of the lab and its evolution.



LAB SOMEWHERE

Feedback - Period : 2024 - T1

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- 1 SUMMARY - 2024 - T1 2
- 2 Evolution of the number of unique specimen Numbers delivered by Year*period 3
- 3 Evolution for administrative data 4
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 - 3.2 Breast 4
 - 3.3 Cervix 4
 - 3.4 Classic 4
- 4 Evolution of the ratios for organe Code & lésion code per Project*Period 5
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 - 4.2 Lesion Code 5
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 - 5.1 Colon 6
 - 5.2 Breast 6
 - 5.3 Cervix 6
 - 5.4 Classic 6



1 SUMMARY - 2024 - T1

INDICATEURS	COLON	BREAST	CERVIX	CLASSIC
N° of unique specimen numbers	4000	1953	4000	4000
Missing SSN	9/3975	4/1941	15/3980	24/3986
Requesting hospital missing	13/4000	2/1953	8/4000	305/4000
Protocol missing	0/4000	0/1953	0/4000	1/4000
Field : ORGAN				
Organ code missing	0/4000	0/1953	0/4000	1/4000
Organ code out of range	0/4000	0/1953	20/4000	-
Organ code in range but not converted	0/4000	0/1953	0/3980	-
Field: Morphology				
Lesion code missing	5/4000	6/1953	0/4000	0/4000
Lesion code incorrect	4/3995	0/1947	0/4000	-
Lesion code out of range	-	-	-	93/4000
Lesion code in range but incorrect*	-	-	-	18/3907
Specific per project				
Colon sublocation not specific	2211/4000	-	-	-
Laterality missing	-	350/1953	-	544/998
Quality sample = INSU	-	-	194/3995	-
Quality sample missing	-	-	0/3995	-
HPV result missing	-	-	98/674	-
HPV result format incorrect	-	-	0/1305	-
HPV type missing	-	-	0/473	-
Skin sublocation not specific	-	-	-	148/812

Indicators for which we believe particular attention could be paid in preparation for your next deliveries.

(*) Incorrect = These are unknown codes (outside of official and unofficial-accepted codes).





Shiny App – Pat. Ana. Laboratories' Raw data

Feedback Report: Overview of the data, performance of the lab and its evolution.

3 EVOLUTION FOR ADMINISTRATIVE DATA

3.1 Colon

* Be careful: the ratio is calculated per 1000 and not in %.

	Values 2023-T1	Ratio* (%) 2023-T1	Values 2023-T2	Ratio* (%) 2023-T2	Values 2023-T3	Ratio* (%) 2023-T3	Values 2024-T1	Ratio* (%) 2024-T1	Evolution
SSN missing	7 / 4000	1.75	3 / 4000	0.75	9 / 4000	2.25	9 / 4000	2.25	=
Requesting hospital missing	21 / 4000	5.25	43 / 4000	10.75	34 / 4000	8.50	15 / 4000	3.75	▼
Protocol missing	20 / 4000	5.00	8 / 4000	2.00	8 / 4000	2.00	0 / 4000	0.00	▼

3.2 Breast

* Be careful: the ratio is calculated per 1000 and not in %.

	Values 2023-T1	Ratio* (%) 2023-T1	Values 2023-T2	Ratio* (%) 2023-T2	Values 2023-T3	Ratio* (%) 2023-T3	Values 2024-T1	Ratio* (%) 2024-T1	Evolution
SSN missing	8 / 1937	3.10	15 / 2231	6.72	13 / 2214	5.87	4 / 1552	2.60	▼
Requesting hospital missing	10 / 1937	5.16	43 / 2231	19.27	25 / 2214	11.29	2 / 1552	1.02	▼
Protocol missing	0 / 1937	0.00	0 / 2231	0.00	2 / 2214	0.90	0 / 1552	0.00	▼

3.3 Cervix

* Be careful: the ratio is calculated per 1000 and not in %.

	Values 2023-T1	Ratio* (%) 2023-T1	Values 2023-T2	Ratio* (%) 2023-T2	Values 2023-T3	Ratio* (%) 2023-T3	Values 2024-T1	Ratio* (%) 2024-T1	Evolution
SSN missing	35 / 4000	8.75	31 / 4000	7.75	25 / 4000	6.25	15 / 4000	3.75	▼
Requesting hospital missing	9 / 4000	2.25	0 / 4000	0.00	8 / 4000	2.00	0 / 4000	0.00	=
Protocol missing	0 / 4000	0.00	0 / 4000	0.00	0 / 4000	0.00	0 / 4000	0.00	=

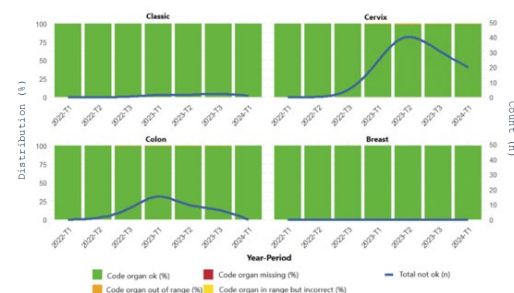
3.4 Classic

* Be careful: the ratio is calculated per 1000 and not in %.

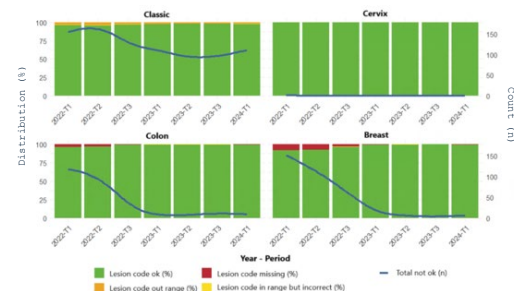
	Values 2023-T1	Ratio* (%) 2023-T1	Values 2023-T2	Ratio* (%) 2023-T2	Values 2023-T3	Ratio* (%) 2023-T3	Values 2024-T1	Ratio* (%) 2024-T1	Evolution
SSN missing	19 / 4000	4.75	23 / 4000	5.75	19 / 4000	4.75	24 / 4000	6.00	▲
Requesting hospital missing	231 / 4000	57.75	297 / 4000	74.25	323 / 4000	80.75	305 / 4000	76.25	▼
Protocol missing	4 / 4000	1.00	3 / 4000	0.75	0 / 4000	0.00	1 / 4000	0.25	▲

4 EVOLUTION OF THE RATIOS FOR ORGANE CODE & LÉSION CODE PER PROJECT PERIOD

4.1 Organ Code



4.2 Lesion Code





Shiny App – Pat. Ana. Laboratories' Raw data

Feedback Report: Overview of the data, performance of the lab and its evolution.

3.4 Classic

* Be careful: the ratio is calculated per **1000** and not in %.

	Values 2023-T1	Ratio* (‰) 2023-T1	Values 2023-T2	Ratio* (‰) 2023-T2	Values 2023-T3	Ratio* (‰) 2023-T3	Values 2024-T1	Ratio* (‰) 2024-T1	Evolution
SSN missing	19 / 4000	4.75	23 / 4000	5.75	19 / 4000	4.75	24 / 4000	6.00	▲
Requesting hospital missing	231 / 4000	57.75	297 / 4000	74.25	323 / 4000	80.75	305 / 4000	76.25	▼
Protocol missing	4 / 4000	1.00	3 / 4000	0.75	0 / 4000	0.00	1 / 4000	0.25	▲

Advantages and future directions

Advantages:

- Automated and Immediate Feedback
- User-Friendly and Accessible Interface
- Efficient Data Validation and Quality Control
- Customizable and Scalable Solutions
- Free of charge



Advantages and future directions

Future directions & Ongoing developments:



Shiny app to
calculate cancer
statistics

(incidence,
prevalence, survival
rates...)
Arthur Leloup
BCR - Data Scientist

Our workflows

Data analysis capabilities



Questions ?

Alexandre Audibert

Alexandre.audibert@registreducancer.org



Belgian Cancer Registry