EUROCAT Data Management Software
Analyse data
Statistical surveillance - Trends

European Commission

Introduction

- DMS performs the trends analysis according to the methodology described in the Statistical monitoring protocol.

- The analysis can run on one or several centres. If two or more centres are selected, the program also outputs pan-centre/pan-European results, based on the aggregation of the data from the individual centres selected.

- Section 1 (*respectively* section 2) shows how the trends analysis run for 1 registry selected (*resp.* 2 or more registries selected)

- The trends analysis requires to install the « *R distribution for Eurocat DMS.msi* » and to save the appropriate collection of R libraries. Please, follow instructions in section 3.
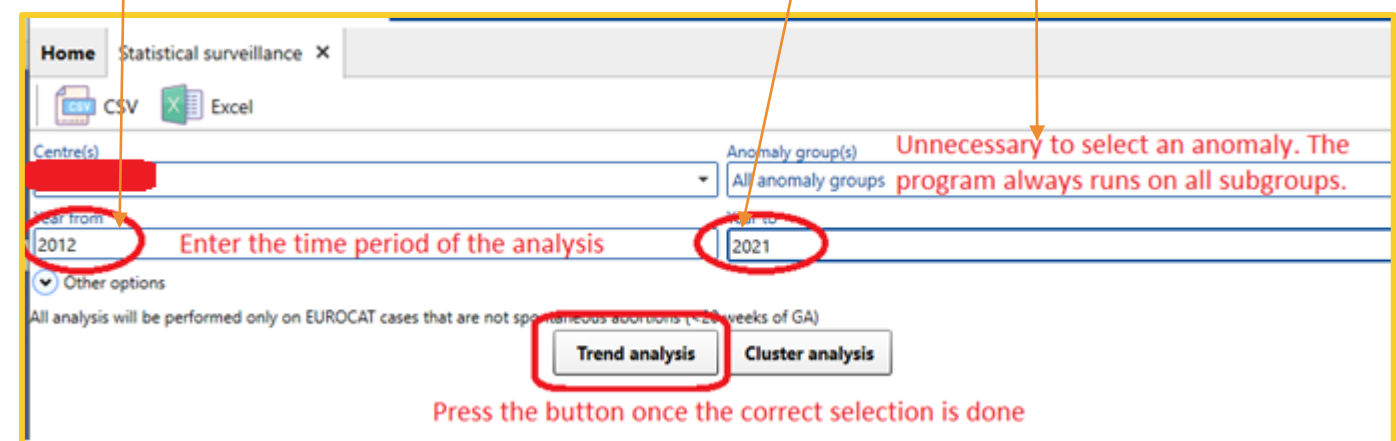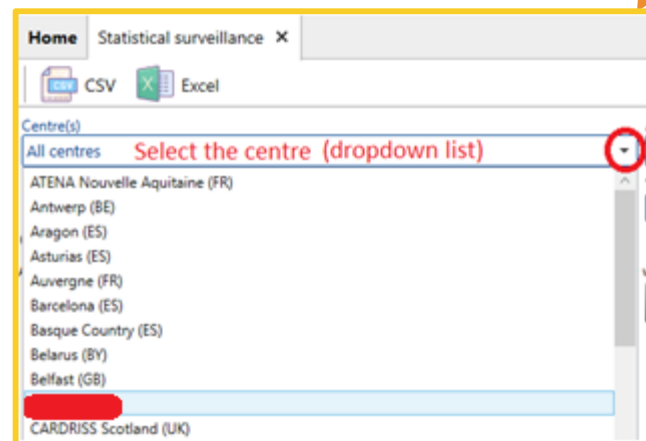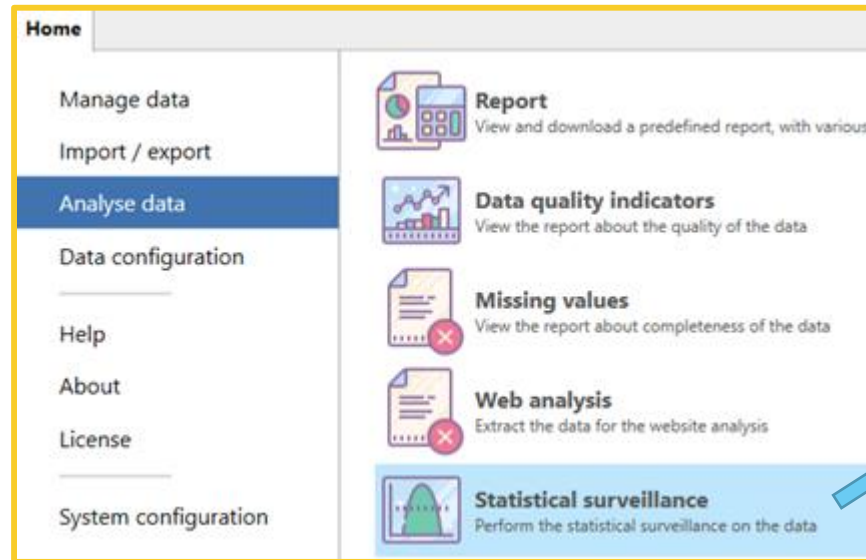
Table of contents

1. Run trends analysis for 1 registry

European Commission
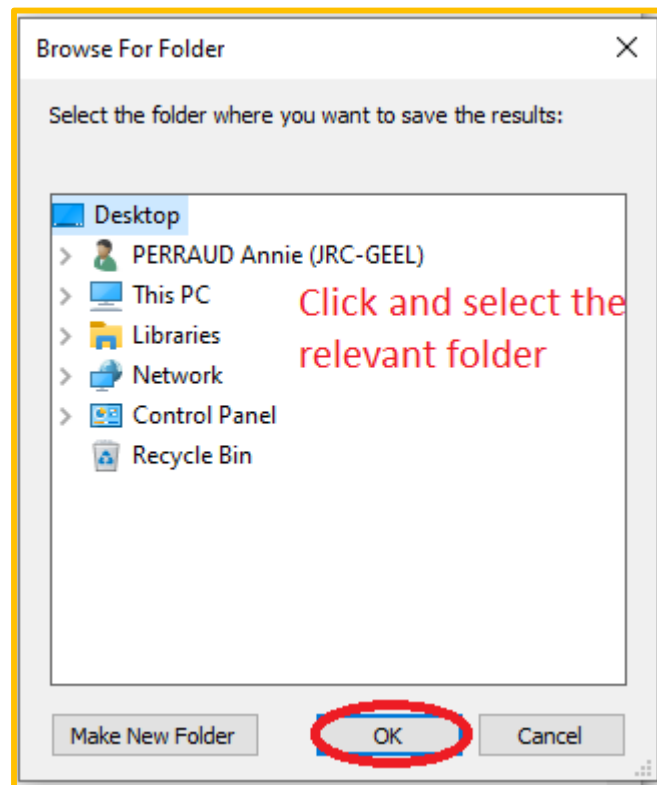
Run trends analysis in the DMS
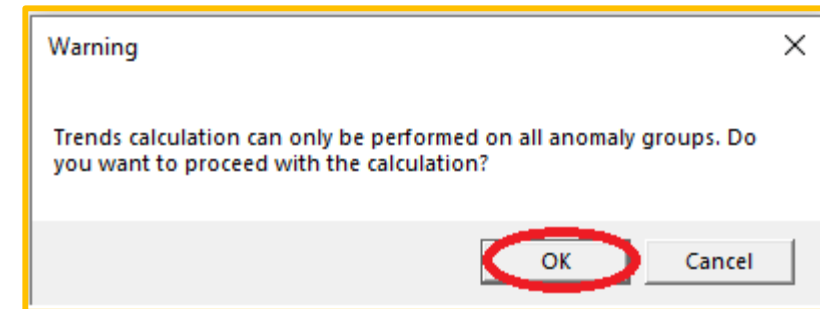## *1 local registry selected*

Run trends analysis in the DMS
1 local registry selected

1. A pop-up window asks to locate the folder where you want to save the outputs of the R script (graphs and csv).

2. A pop-up message warns that the analysis will run on all the anomaly subgroups.

Run trends analysis in the DMS
1 local registry selected

Once the analysis has run, DMS displays:

1. a table with the total number of births in the selected registry

Births -

year	total
2012	36933
2013	35899
2014	35346
2015	33849
2016	33026
2017	32484
2018	32025
2019	31734
2020	31329
2021	32448

2. a summary of the detected trends in the selected registry
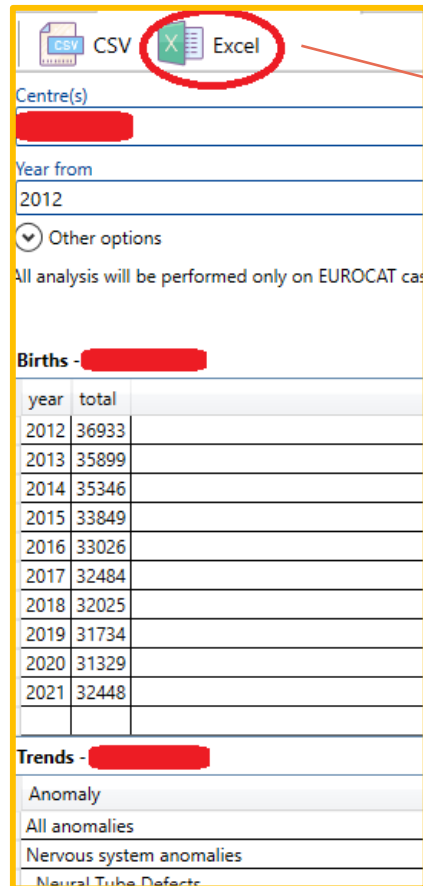
Trends -

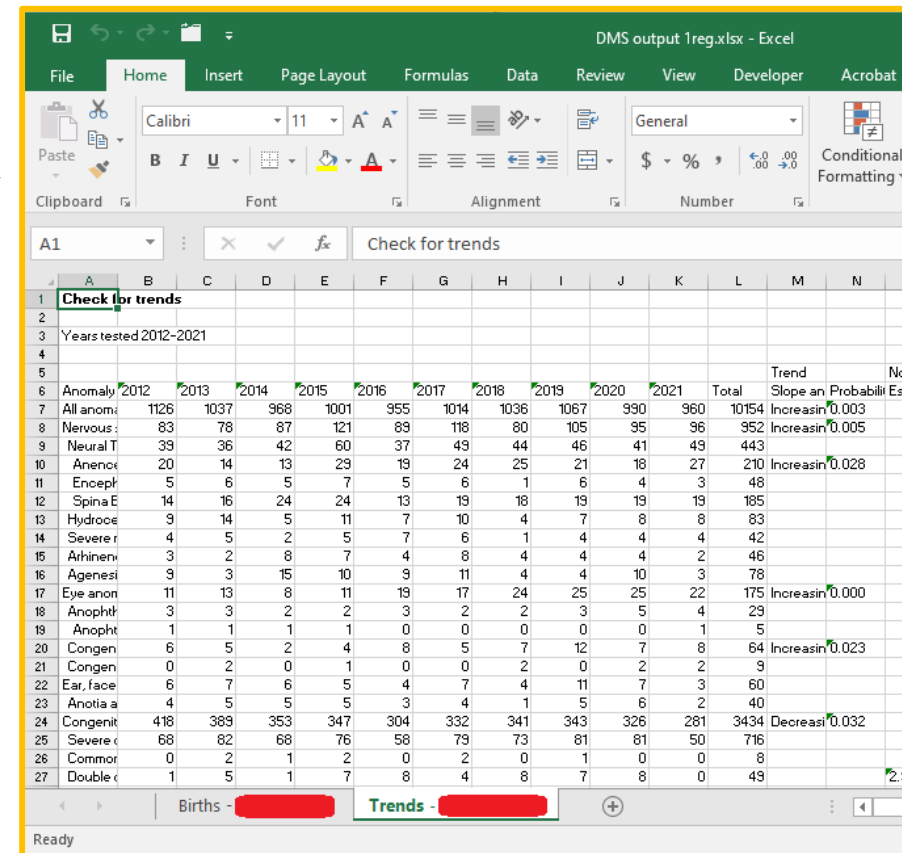| Anomaly	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Total	SlopeAndPercentageChange
All anomalies	1126	1037	968	1001	955	1014	1036	1067	990	960	10154	Increasing: 1.0% (95% CI 0.4% to 1.7%
Nervous system anomalies	83	78	87	121	89	118	80	105	95	96	952	Increasing: 3.2% (95% CI 1.0% to 5.5%
Neural Tube Defects	39	36	42	60	37	49	44	46	41	49	443	
Anencephaly and similar	20	14	13	29	19	24	25	21	18	27	210	Increasing: 5.4% (95% CI 0.6% to 10.4%
Encephalocele and meningocele	5	6	5	7	5	6	1	6	4	3	48	
Spina Bifida	14	16	24	24	13	19	18	19	19	19	185	
Hydrocephaly	9	14	5	11	7	10	4	7	8	8	83	
Severe microcephaly	4	5	2	5	7	6	1	4	4	4	42	
Arhinencephaly / holoprosencephaly	3	2	8	7	4	8	4	4	4	2	46	
Agenesis of corpus callosum	9	3	15	10	9	11	4	4	10	3	78	
Eye anomalies	11	13	8	11	19	17	24	25	25	22	175	Increasing: 13.1% (95% CI 7.3% to 19.2
Anophthalmos / microphthalmos	3	3	2	2	3	2	2	3	5	4	29	
Anophthalmos	1	1	1	1	0	0	0	0	0	1	5	
Congenital cataract	6	5	2	4	8	5	7	12	7	8	64	Increasing: 10.5% (95% CI 1.4% to 20.5
Congenital glaucoma	0	2	0	1	0	0	2	0	2	2	9	
Ear, face and neck anomalies	6	7	6	5	4	7	4	11	7	3	60	
Anotia and atresia / stenosis / stricture of external auditory canal	4	5	5	5	3	4	1	5	6	2	40	
Congenital Heart Defects	418	389	353	347	304	332	341	343	326	281	3434	Decreasing: -1.3% (95% CI -2.4% to -0
Severe congenital heart defects	68	82	68	76	58	79	73	81	81	50	716	
Common arterial truncus	0	2	1	2	0	2	0	1	0	0	8	
Double outlet right ventricle	1	5	1	7	8	4	8	7	8	0	49	

Run trends analysis in the DMS
1 local registry selected

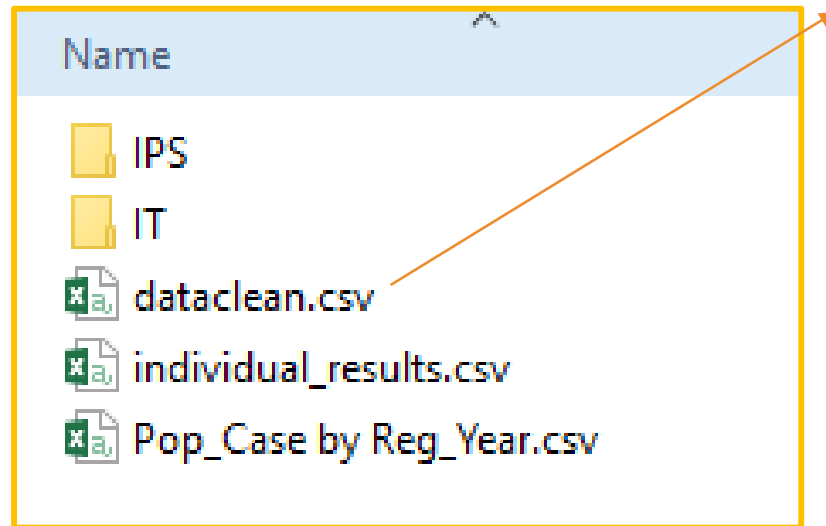The tables can be exported to Excel ➔ 1 spreadsheet per table

If you choose to export to csv, DMS will create one csv file per table (i.e. one for the total number of births and one for the summary of the trends).

Excel may give an error when opening the *.xlsx* generated. Please ignore it.

Run trends analysis in the DMS
1 local registry selected

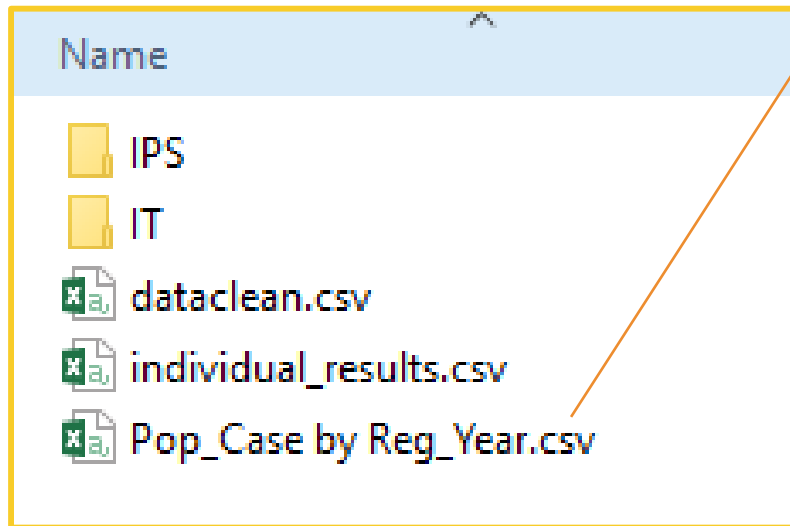In the folder you selected in step 2 (see page 6), the program has created 2 folders and 3 csv files.

dataclean.csv: input data prepared for analysis

	A	B	C	D	E	F	G	H	I	J
1	reg	anom	year	case	pop	ganom	nyears	minyr	descanom	regna
2		1	2012	1126	36933	0	10	2012	All anoma	
3		1	2013	1037	35899	0	10	2012	All anoma	
4		1	2014	968	35346	0	10	2012	All anoma	
5		1	2015	1001	33849	0	10	2012	All anoma	
6		1	2016	955	33026	0	10	2012	All anoma	
7		1	2017	1014	32484	0	10	2012	All anoma	
8		1	2018	1036	32025	0	10	2012	All anoma	
9		1	2019	1067	31734	0	10	2012	All anoma	
10		1	2020	990	31329	0	10	2012	All anoma	
11		1	2021	960	32448	0	10	2012	All anoma	
12		2	2012	83	36933	1	10	2012	Nervous s	
13		2	2013	78	35899	1	10	2012	Nervous s	

Name

IPS

IT

dataclean.csv

individual_results.csv

Pop_Case by Reg_Year.csv

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Run trends analysis in the DMS
1 local registry selected

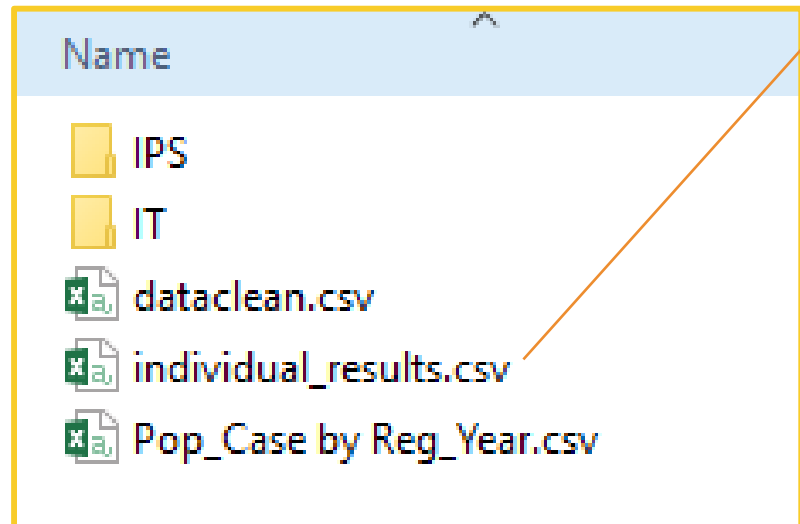In the folder you selected in step 2 (see page 6), the program has created 2 folders and 3 csv files.

Pop_Case by Reg_year.csv: total number of cases by year and by registry

Run trends analysis in the DMS
1 local registry selected

In the folder you selected in step 2 (see), the program has created 2 folders and 3 csv files.

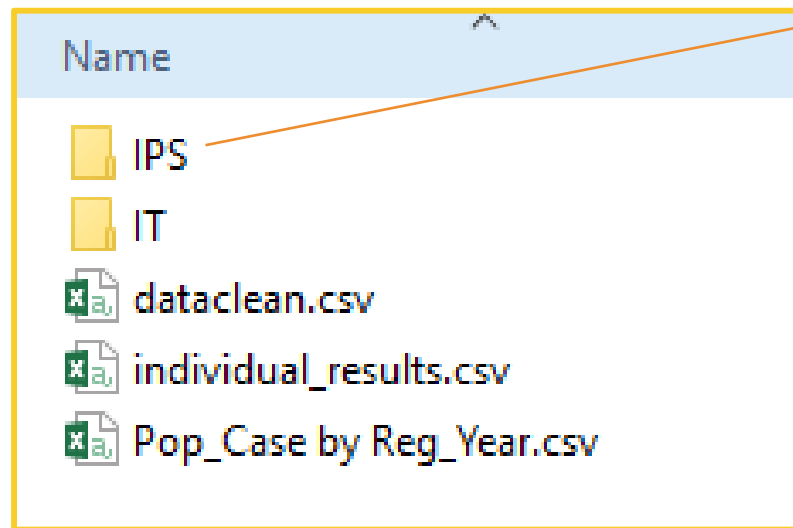individual_results.csv: detailed results of the linear and spline models, for the local registry selected in each anomaly group

Run trends analysis in the DMS
1 local registry selected

In the folder you selected in step 2 (see), the program has created 2 folders and 3 csv files.

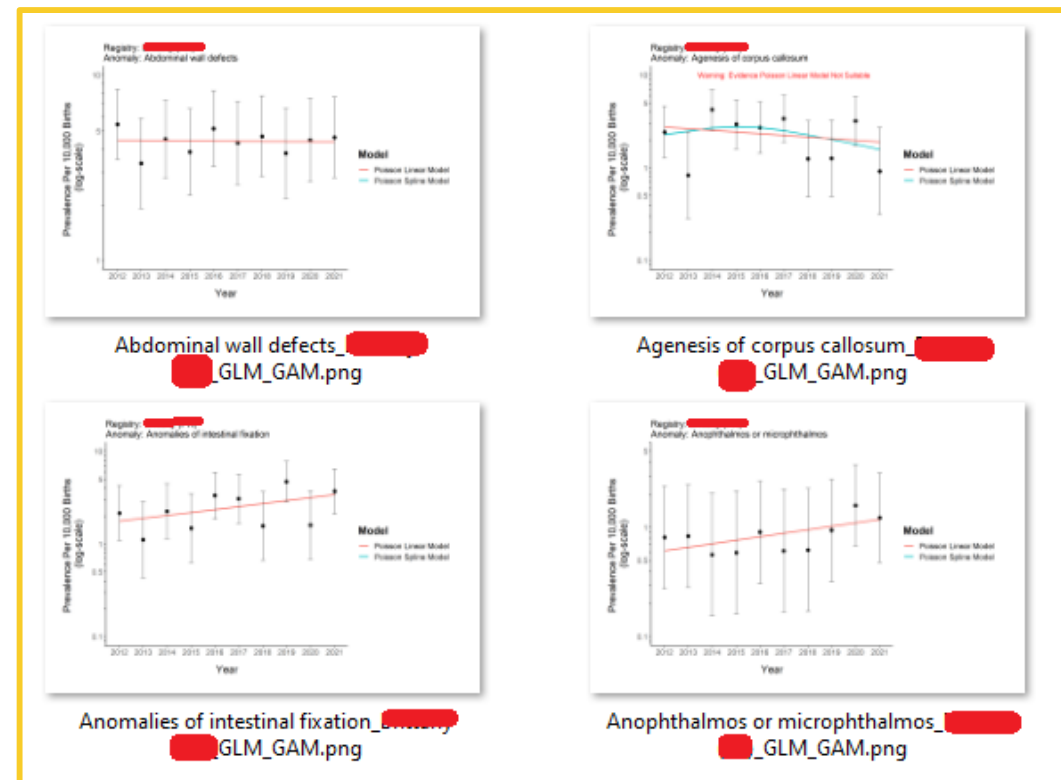IPS: Fitted prevalence graphs by anomaly group

Run trends analysis in the DMS
1 local registry selected

In the folder you selected in step 2 (see page 6), the program has created 2 folders and 3 csv files.
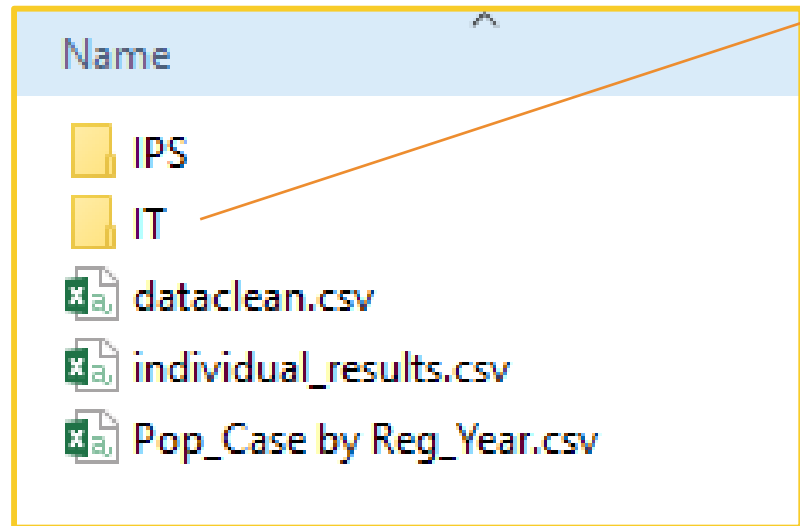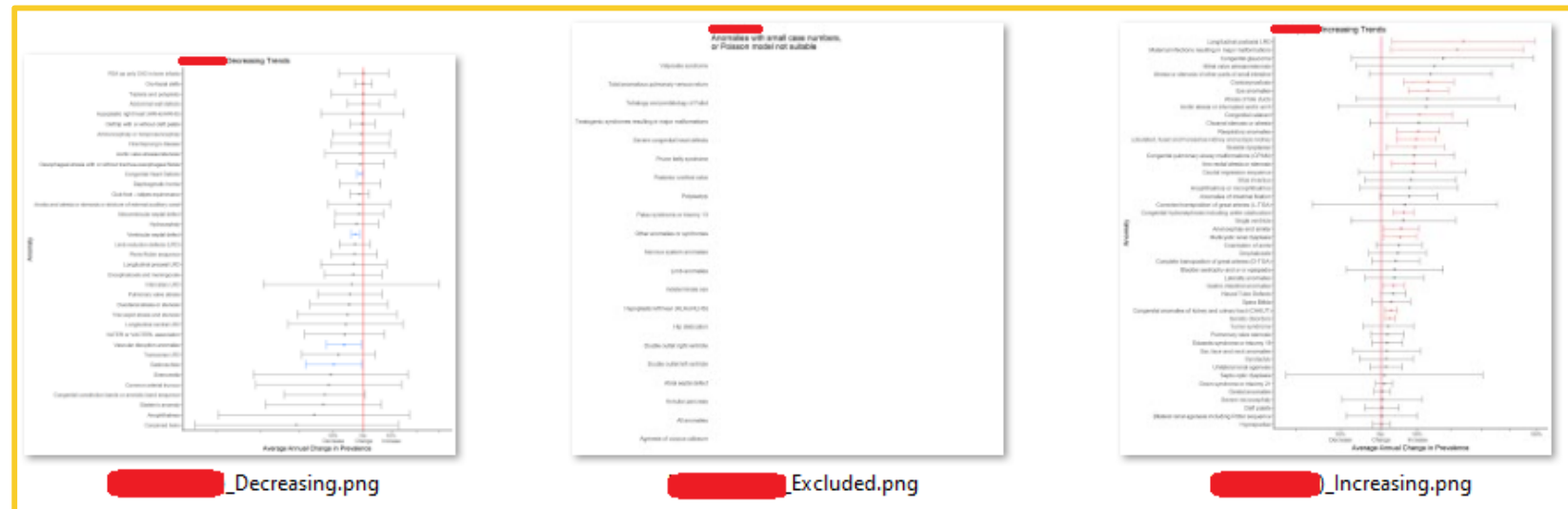
IT: Forest plot of decreasing/increasing trends + list of anomaly groups excluded (e.g. too few cases)

2. Run trends analysis for 2 or more registries

Run trends analysis in the DMS
2 or more local registries selected

Home
- Manage data
- Import / export
- **Analyse data**
- Data configuration
- Help
- About
- License
- System configuration

Report
View and download a predefined report, with various

Data quality indicators
View the report about the quality of the data

Missing values
View the report about completeness of the data

Web analysis
Extract the data for the website analysis

Statistical surveillance
Perform the statistical surveillance on the data

Home | Statistical surveillance ✕

CSV | Excel

Centre(s)
All centres

Anomaly group(s)
All anomaly groups

Year from

Year to

⊙ Other options

All analysis will be performed only on EUROCAT cases that are not spontaneous abortions (<20 weeks of GA)

Trend analysis | **Cluster analysis**

Home | Statistical surveillance ✕

CSV | Excel

Centre(s)
2 centres selected — select the centres (dropdown list)

- Scicilia (IT)
- Sicily (IT)
- Slovakia (SK)
- Slovenia (SI)
- Sofia (BG)
- Spain Hospital Network (ES)
- Strasbourg (FR)
- Styria (AT)
- Sweden (SE)
- Trento (IT)

CSV | Excel

Centre(s)
2 centres selected

Anomaly group(s)
All anomaly groups — Unnecessary to select an anomaly. The program always run on all the subgroups.

Year from
2012 — enter the time period of the analysis

Year to
2021

⊙ Other options

All analysis will be performed only on EUROCAT cases that are not spontaneous abortions (<20 weeks of GA)

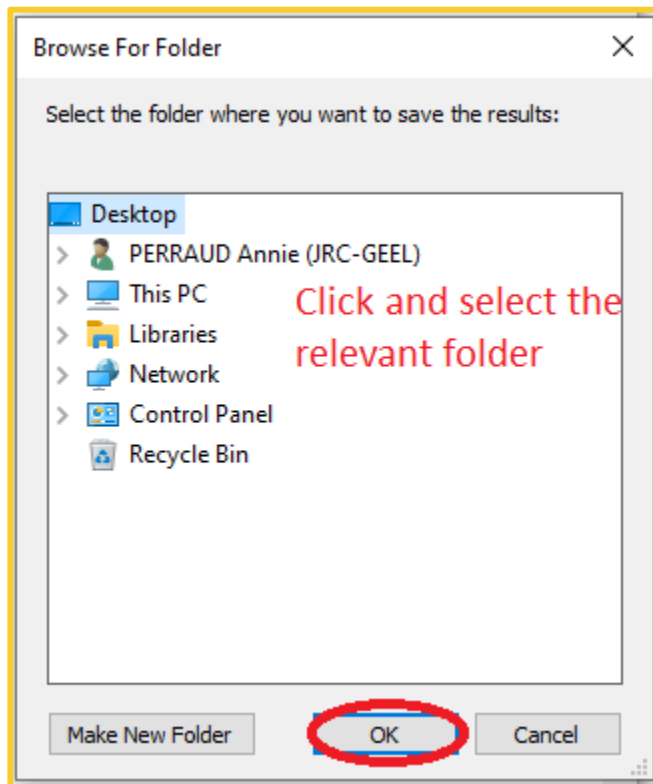**Trend analysis** | **Cluster analysis** — When the selection is correct, press the Trend analysis button
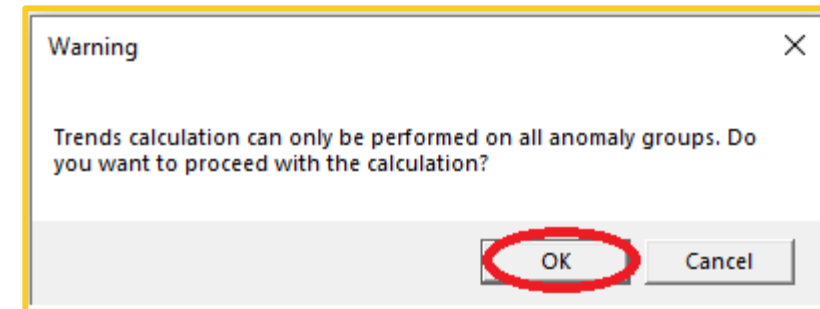
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Run trends analysis in the DMS
2 or more local registries selected

1. A pop-up window asks to locate the folder where you want to save the outputs of the R script (graphs and csv).

2. A pop-up message warns that the analysis will run on all the anomaly subgroups.

Run trends analysis in the DMS
2 or more local registries selected

Once the analysis has run, DMS displays:

1 – a table with the total number
of births in each of the selected registry

2 – a summary of the detected trends in each of the
selected registry and at « pan-European » level

Births - ▮▮▮▮▮▮

year	total
2012	31179
2013	29640
2014	29573
2015	29777
2016	29480
2017	28398
2018	27690
2019	26767
2020	26135

Births - ▮▮▮▮▮▮

year	total
2012	52246
2013	49976
2014	40975

Trends - ▮▮▮▮▮▮

Anomaly	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Total	SlopeAndPercentageCha
All anomalies	516	572	508	357	492	507	607	508	462		4529	Increasing: 1.8% (95% CI
Nervous system anomalies	69	55	59	58	66	72	57	60	46		542	
Neural Tube Defects	30	24	18	27	36	42	36	32	25		270	Increasing: 5.2% (95% CI
Anencephaly and similar	12	11	4	14	15	20	14	15	11		116	
Encephalocele and meningocele	2	6	4	2	5	4	6	7	6		42	
Spina Bifida	16	7	10	11	16	18	16	10	8		112	
Hydrocephaly	20	14	17	17	11	19	8	10	8		124	Decreasing: -7.1% (95%

Trends - ▮▮▮▮▮▮

Anomaly	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Total	SlopeAndPe
All anomalies	1061	1121	1032	758	782	917	1037	932	773		8413	
Nervous system anomalies	134	147	129	98	102	117	101	116	99		1043	
Neural Tube Defects	64	74	59	56	64	58	60	69	51		555	
Anencephaly and similar	26	24	21	20	29	24	25	35	20		224	
Encephalocele and meningocele	6	8	5	7	2	5	7	9	4		53	
Spina Bifida	32	42	33	29	33	29	28	25	27		278	
Hydrocephaly	29	24	21	24	20	26	9	19	19		191	

Trends - pan-European

Anomaly	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Total	SlopeAndPerce
All anomalies	1577	1693	1540	1115	1274	1424	1644	1440	1235		12942	
Nervous system anomalies	203	202	188	156	168	189	158	176	145		1585	
Neural Tube Defects	94	98	77	83	100	100	96	101	76		825	
Anencephaly and similar	38	35	25	34	44	44	39	50	31		340	Increasing: 4.6%
Encephalocele and meningocele	8	14	9	9	7	9	13	16	10		95	
Spina Bifida	48	49	43	40	49	47	44	35	35		390	
Hydrocephaly	49	38	38	41	31	45	17	29	27		315	Decreasing: -5.2

Run trends analysis in the DMS
2 or more local registries selected

The tables can be exported to Excel ➔ 1 spreadsheet per table
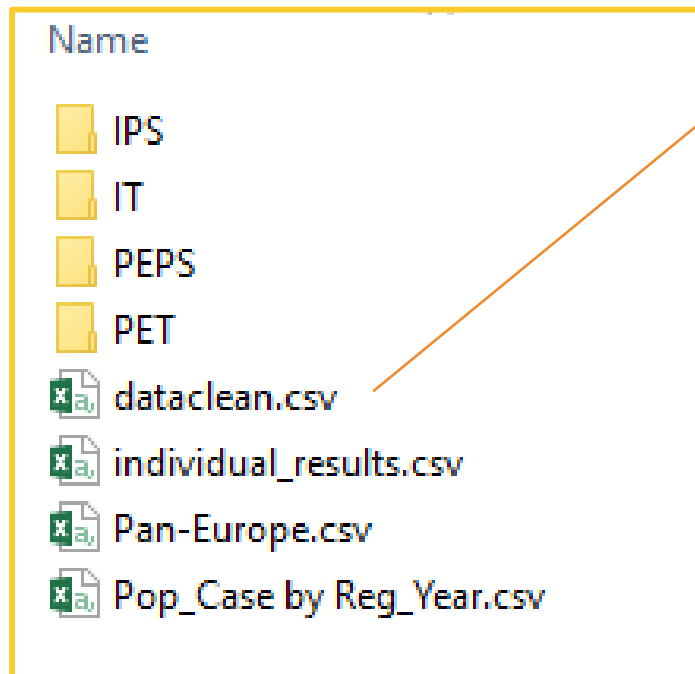

If you choose to export to csv, DMS will create one csv file per table (i.e. one for the total number of births and one for the summary of the trends).

Excel may give an error when opening the *.xlsx* generated. Please ignore it.

Run trends analysis in the DMS
2 or more local registries selected

In the folder you selected in step 2 (see page 16), the program has created 4 folders and 4 csv files.

dataclean.csv: input data prepared for analysis

Run trends analysis in the DMS
2 or more local registries selected

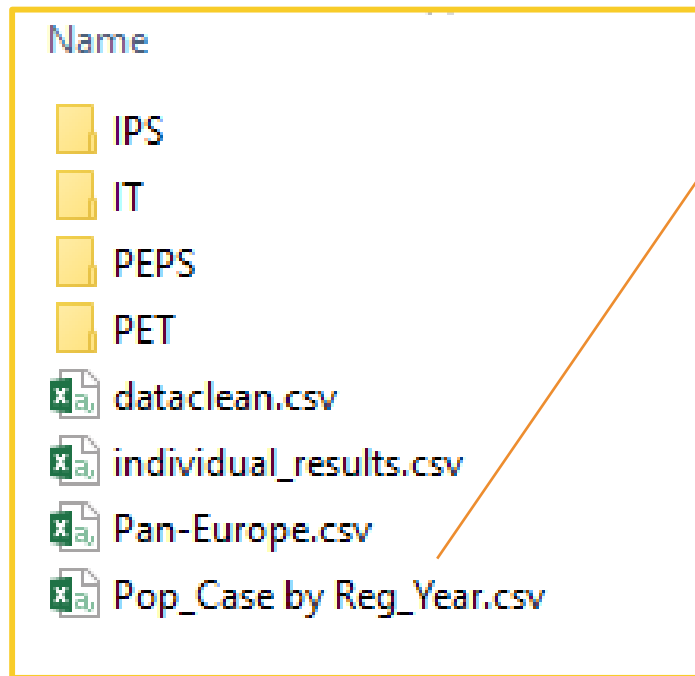In the folder you selected in step 2 (see page 16), the program has created 4 folders and 4 csv files.

Pop_Case by Reg_Year.csv: total number of cases by year and by registry

Name
IPS
IT
PEPS
PET
dataclean.csv
individual_results.csv
Pan-Europe.csv
Pop_Case by Reg_Year.csv

	A	B	C	D	E
1	reg	year	pop	case	
2		2012	3273795	2113	
3		2012	5485830	4074	
4		2013	3112200	2258	
5		2013	5247480	4194	
6		2014	3105165	1917	
7		2014	5236875	3838	
8		2015	3126585	1570	
9		2015	5204745	3194	
10		2016	3095400	2061	
11		2016	5145420	3462	
12		2017	2981790	2052	
13		2017	5004825	3737	
14		2018	2907450	2353	
15		2018	4881555	4092	
16		2019	2810535	2027	
17		2019	4747995	3682	
18		2020	2744175	1788	
19		2020	4526130	3116	
20					

Run trends analysis in the DMS
2 or more local registries selected

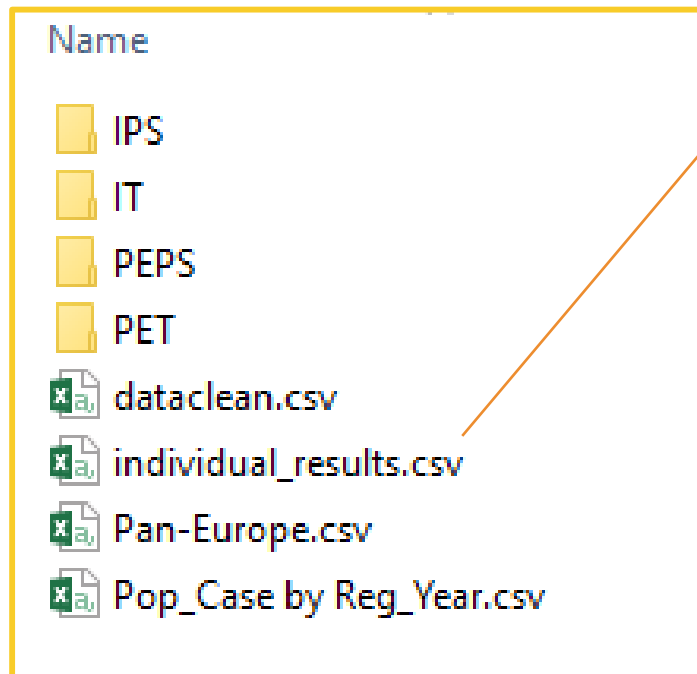In the folder you selected in step 2 (see page 16), the program has created 4 folders and 4 csv files.
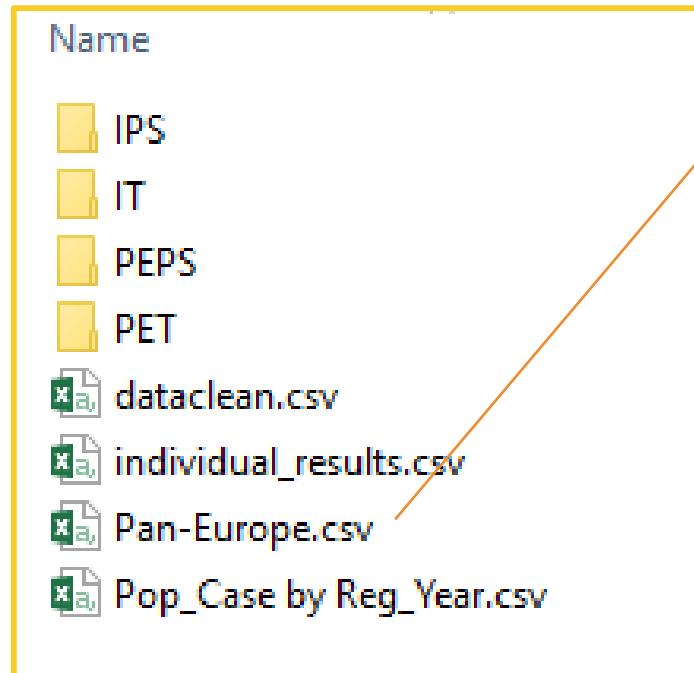
individual_results.csv: detailed results of the linear and spline models, by individual registry for each anomaly group

Name
IPS
IT
PEPS
PET
dataclean.csv
individual_results.csv
Pan-Europe.csv
Pop_Case by Reg_Year.csv

reg	regname	ganom	descanom	year	case	pop	nyears	minyr	ncase	prevalenc	prev.lci	prev.uci	p.log.inte
		0	All anoma	2012	516	31179	9	2012	4529	0.01655	0.015192	0.018026	-4.04364
		0	All anoma	2013	572	29640	9	2012	4529	0.019298	0.017793	0.020928	-4.04364
		0	All anoma	2014	508	29573	9	2012	4529	0.017178	0.015758	0.018723	-4.04364
		0	All anoma	2015	357	29777	9	2012	4529	0.011989	0.010814	0.01329	-4.04364
		0	All anoma	2016	492	29480	9	2012	4529	0.016689	0.015289	0.018216	-4.04364
		0	All anoma	2017	507	28398	9	2012	4529	0.017853	0.016377	0.01946	-4.04364
		0	All anoma	2018	607	27690	9	2012	4529	0.021921	0.020262	0.023713	-4.04364
		0	All anoma	2019	508	26767	9	2012	4529	0.018979	0.017412	0.020684	-4.04364
0		0	All anoma	2020	462	26135	9	2012	4529	0.017677	0.016149	0.019347	-4.04364
1		1	Nervous s	2012	69	31179	9	2012	542	0.002213	0.001749	0.0028	-6.16778
2		1	Nervous s	2013	55	29640	9	2012	542	0.001856	0.001426	0.002414	-6.16778
3		1	Nervous s	2014	59	29573	9	2012	542	0.001995	0.001547	0.002572	-6.16778
4		1	Nervous s	2015	58	29777	9	2012	542	0.001948	0.001507	0.002517	-6.16778

Run trends analysis in the DMS
2 or more local registries selected

In the folder you selected in step 2 (see page 16), the program has created 4 folders and 4 csv files.

Pan-Europe.csv: detailed results of the linear and spline models, at pan-European level for each anomaly group
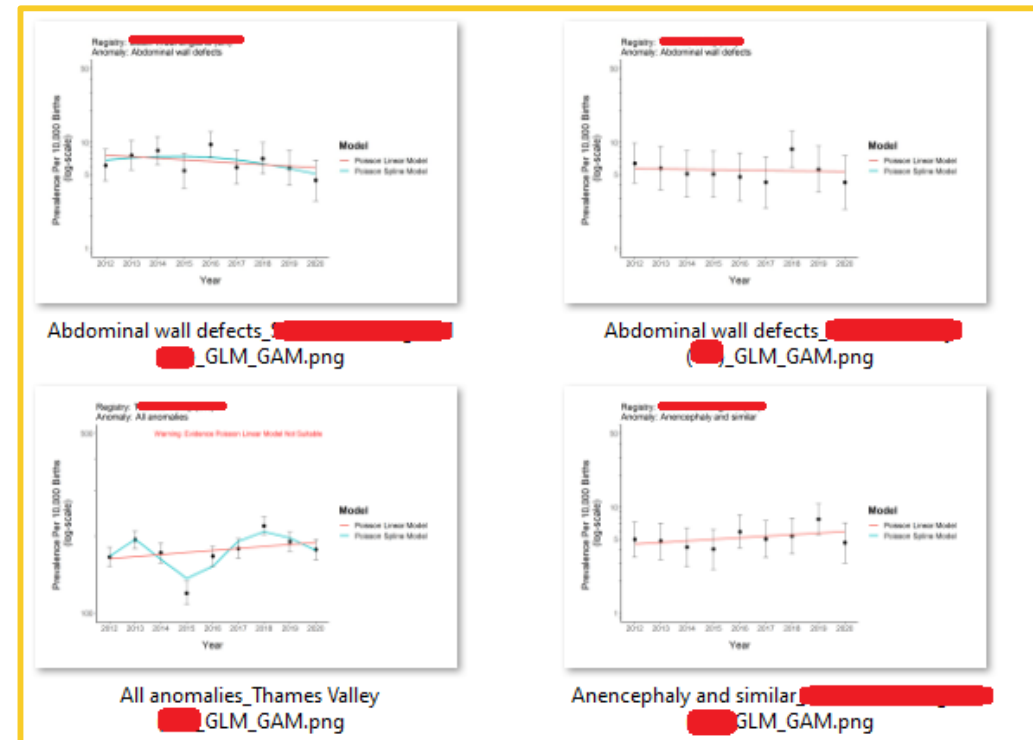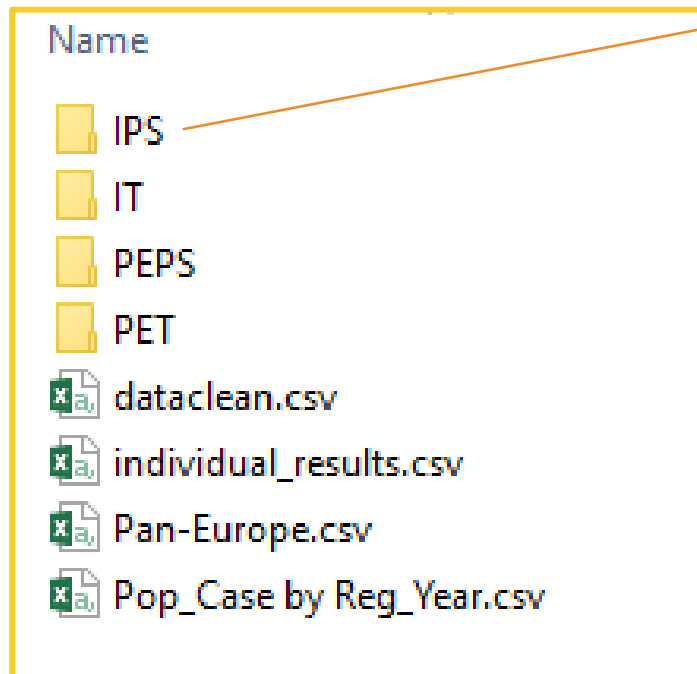
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Run trends analysis in the DMS
2 or more local registries selected

In the folder you selected in step 2 (see page 16), the program has created 4 folders and 4 csv files.

IPS: Fitted prevalence graphs for each individual registry by anomaly group

Name

- IPS
- IT
- PEPS
- PET
- dataclean.csv
- individual_results.csv
- Pan-Europe.csv
- Pop_Case by Reg_Year.csv

Abdominal wall defects_█████████
█████_GLM_GAM.png

Abdominal wall defects_███████████
(███)_GLM_GAM.png

All anomalies_Thames Valley
████_GLM_GAM.png

Anencephaly and similar_███████████
████_GLM_GAM.png

Run trends analysis in the DMS
2 or more local registries selected

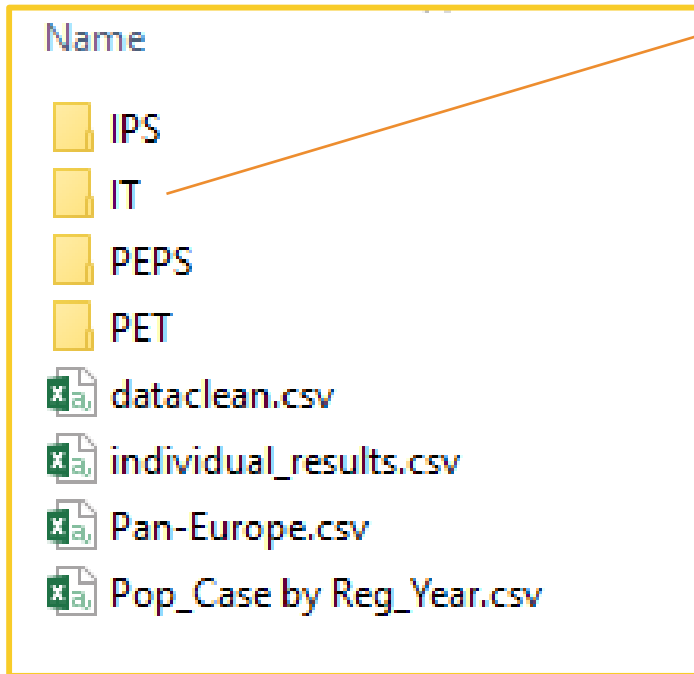In the folder you selected in step 2 (see page 16), the program has created 4 folders and 4 csv files.
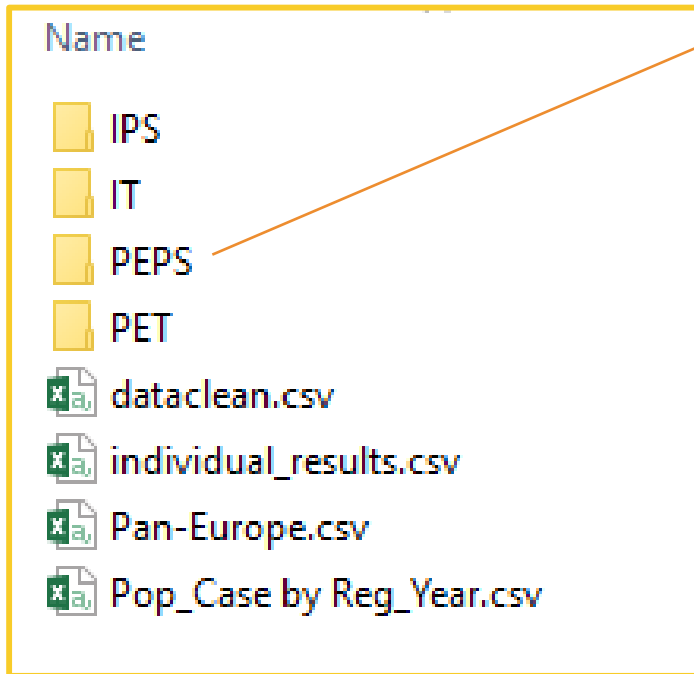

IT: Forest plot of decreasing/increasing trends for each individual registry + list of anomaly group excluded (e.g. too few cases)
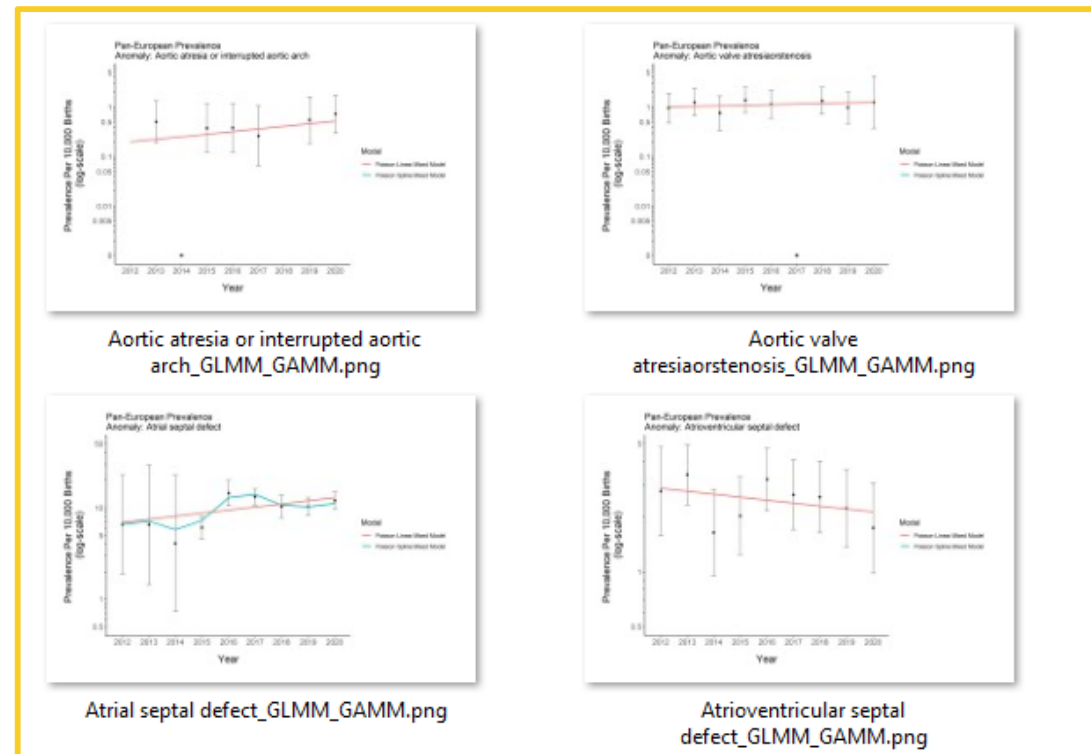
Run trends analysis in the DMS
2 or more local registries selected

In the folder you selected in step 2 (see page 16), the program has created 4 folders and 4 csv files.

PEPS: Fitted prevalence graphs, at Pan-European level, by anomaly group

Run trends analysis in the DMS
2 or more local registries selected

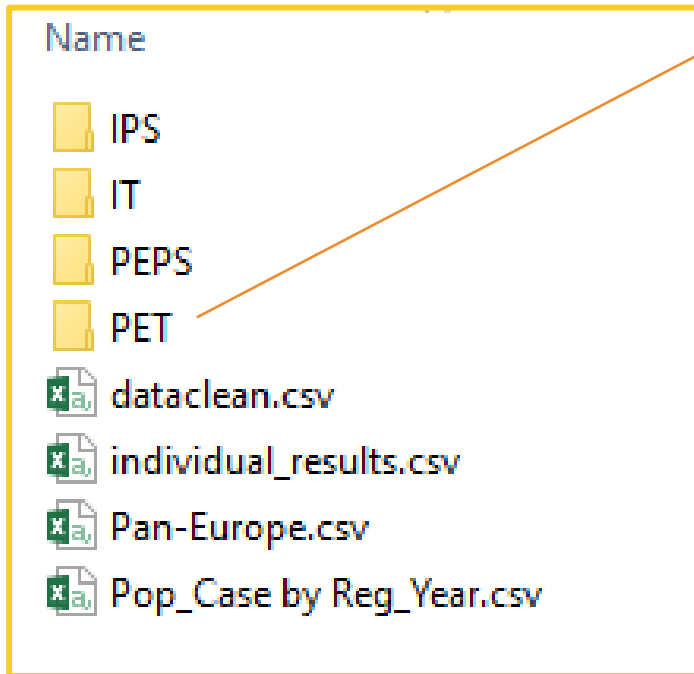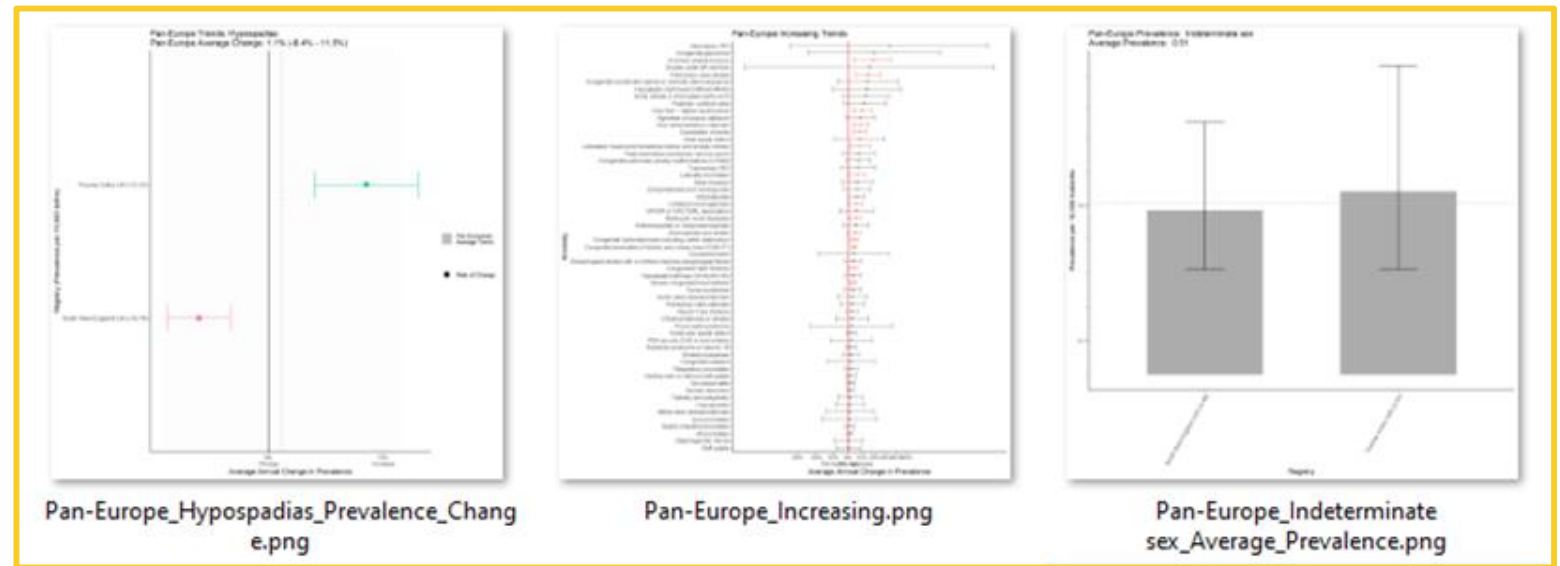In the folder you selected in step 2 (see page 16), the program has created 4 folders and 4 csv files.

PET: Forest plot of decreasing/increasing trends at Pan-European level + average prevalence by anomaly group + % change by registry
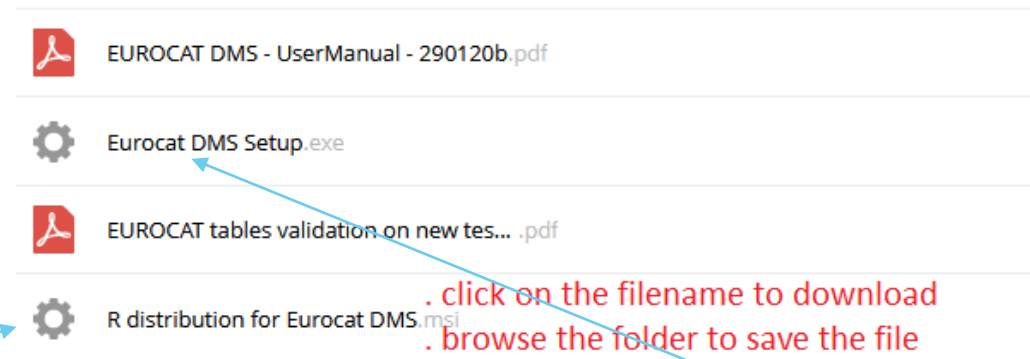
3. R distribution for DMS

Install the *R distribution for Eurocat DMS.msi*

Accessing the statistical moniroting functionnalities in the DMS implies to install a distribution of the free R software that is recognised by the DMS.

To request the installation files, please contact the JRC-EUROCAT central registry.

EUROCAT DMS - UserManual - 290120b.pdf

Eurocat DMS Setup.exe

EUROCAT tables validation on new tes... .pdf

. click on the filename to download

R distribution for Eurocat DMS.msi

. browse the folder to save the file

The *.msi* must be run on the user Windows profile, after the main structure of the software (*.exe*) has been installed. An IT administrator of your organisation may need to enter his credentials to allow the installation.
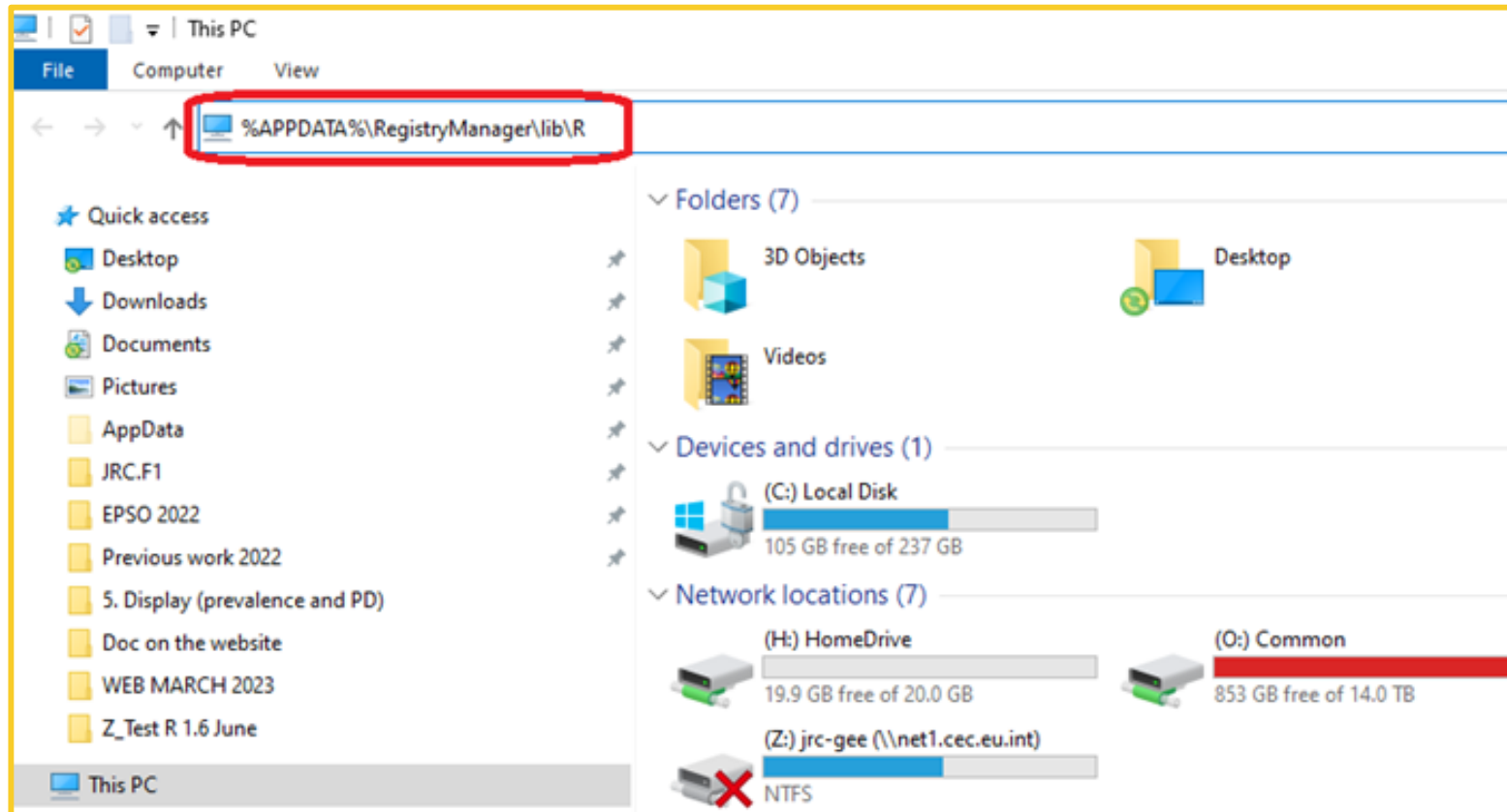
New R libraries for DMS - download

Once the R distribution has been installed (see page 28), the R libraries need to be updated. Please, proceed as indicated in the following slides.

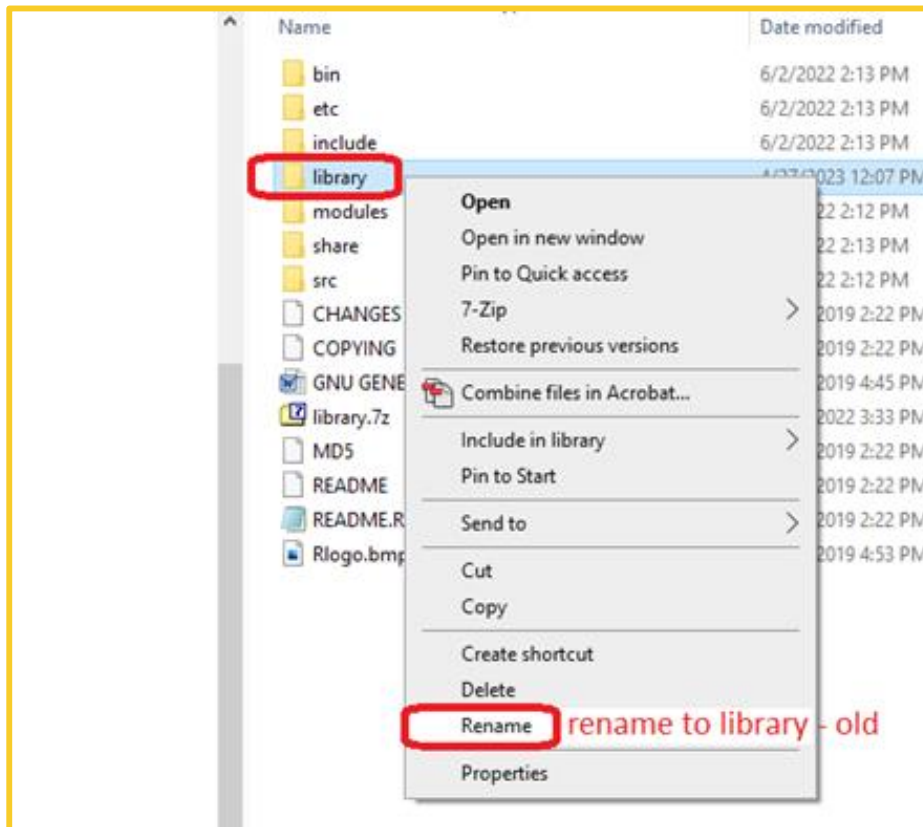1. Please contact the JRC-EUROCAT central registry to get the complete list of libraries.

New R libraries for DMS – locate the folder where the libraries will be saved

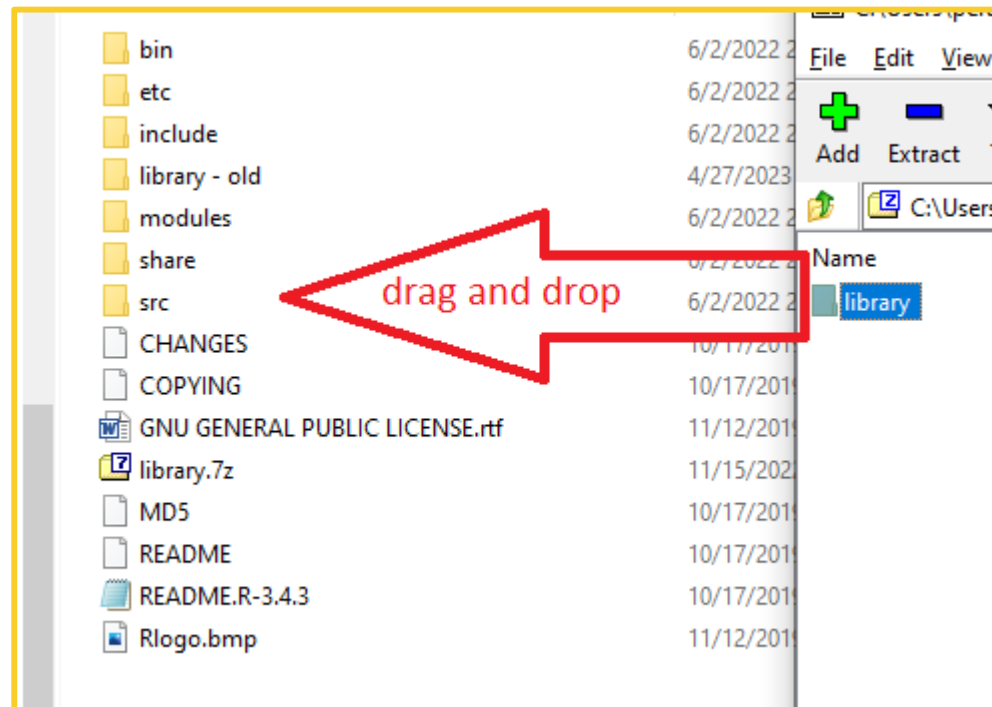2. In your File explorer, type %APPDATA%\RegistryManager\lib\R in the address bar and press ENTER:

New R libraries for DMS – rename existing folder
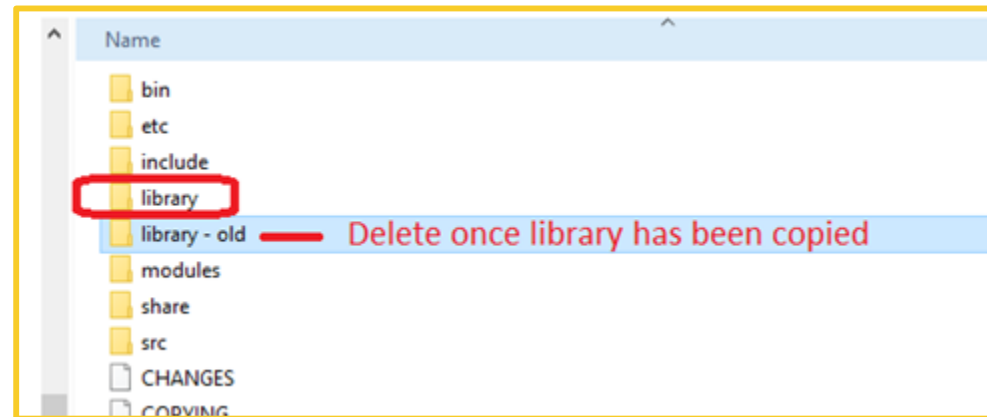
3. Rename the folder library to library - old

New R libraries for DMS – copy new R libraries

4. Open the *.zip* file you downloaded in step 1 (see page 29)

5. Drag and drop the folder named library in this file to the RegistryManager\lib\R

New R libraries for DMS – delete old R libraries

6. Wait until the folder is copied, then you can delete the folder library - old

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