-- icnarc\_\_03\_\_format\_other\_columns

-- This script creates 'icnarc\_03h\_renamed\_columns', where the columns that were not dates or times are formatted if needed, e.g. some records like ' ' are changed to null, and integers and floats are cast as these types. The columns are also renamed so that they are lowercase where words are separated by underscores.

-- Note that tables are created with the naming convention

-- icnarc\_XXy\_description, where

-- XX is the number, e.g. '01' relating to the script number

-- y is a letter, e.g. 'a' relating to the order of table creation within the script

-- Tables are dropped when no longer needed

-- Steps:

-- 1) Manually identified which columns required changes

-- 2) Drop the empty/meaningless columns

-- 3) Make changes required to the strings

-- 4) Make changes required to the integers

-- 5) Make changes required to the floats

-- 6) Change column names to lowercase, with words separated by underscores

-- 1) Manually identified which columns need changing

---- Use this to get a tally of the unique values in one column

-- SELECT

-- Discharge\_delay\_wip,

-- COUNT(Discharge\_delay\_wip) AS tally

-- FROM `yhcr-prd-phm-bia-core.CY\_MYSPACE\_EmW.icnarc\_02a\_most\_times\_nulled`

-- GROUP BY Discharge\_delay\_wip

-- ORDER BY Discharge\_delay\_wip;

---- Use this to compare tallies of two columns

-- SELECT

-- location\_prior\_to\_adm\_source,

-- COUNT(location\_prior\_to\_adm\_source) AS tally,

-- source\_of\_unit\_admission,

-- COUNT(source\_of\_unit\_admission) AS tally1

-- FROM `yhcr-prd-phm-bia-core.CY\_MYSPACE\_EmW.icnarc\_renamed\_columns`

-- GROUP BY location\_prior\_to\_adm\_source, source\_of\_unit\_admission

-- ORDER BY location\_prior\_to\_adm\_source, source\_of\_unit\_admission;

---- Use this to compare tallies of three columns

-- SELECT

-- CASE

-- WHEN outreach\_last\_visit\_date IS NOT NULL

-- THEN 'date\_provided' END AS outreach\_last\_visit\_date\_provided,

-- COUNT(CASE

-- WHEN outreach\_last\_visit\_date IS NOT NULL

-- THEN 'date\_provided' END) AS tally,

-- outreach\_scored\_on\_ward,

-- COUNT(outreach\_scored\_on\_ward) AS tally1,

-- outreach\_visited\_prior\_to\_adm,

-- COUNT(outreach\_visited\_prior\_to\_adm) AS tally2,

-- FROM `yhcr-prd-phm-bia-core.CY\_MYSPACE\_EmW.icnarc\_renamed\_columns`

-- GROUP BY outreach\_last\_visit\_date\_provided, outreach\_scored\_on\_ward, outreach\_visited\_prior\_to\_adm

-- ORDER BY outreach\_last\_visit\_date\_provided, outreach\_scored\_on\_ward, outreach\_visited\_prior\_to\_adm;

---- Use this to compare three columns, without tallies

-- SELECT

-- ICNARC\_comments,

-- ICNARC\_Comments\_v3,

-- new\_ICNARC\_comments

-- FROM `yhcr-prd-phm-bia-core.CY\_MYSPACE\_EmW.icnarc\_strings\_formatted`

-- GROUP BY ICNARC\_comments, ICNARC\_Comments\_v3, new\_ICNARC\_comments

-- ORDER BY ICNARC\_comments, ICNARC\_Comments\_v3, new\_ICNARC\_comments;

---- Use this to compare tallies of four columns

-- SELECT

-- CASE

-- WHEN height IS NOT NULL

-- THEN 'height\_provided' END AS height,

-- COUNT(CASE

-- WHEN height IS NOT NULL

-- THEN 'height\_provided' END) AS tally,

-- height\_estimate,

-- COUNT(height\_estimate) AS tally1,

-- height\_measured,

-- COUNT(height\_measured) AS tally2,

-- height\_not\_known,

-- COUNT(height\_not\_known) AS tally3

-- FROM `yhcr-prd-phm-bia-core.CY\_MYSPACE\_EmW.icnarc\_renamed\_columns`

-- GROUP BY height, height\_estimate, height\_measured, height\_not\_known

-- ORDER BY height, height\_estimate, height\_measured, height\_not\_known;

---- Comparing event\_date and unit\_admission\_date

-- SELECT

-- DATE\_DIFF(event\_date, unit\_admission\_date, DAY) AS days\_diff,

-- COUNT(DATE\_DIFF(event\_date, unit\_admission\_date, DAY)) AS tally,

-- FROM `yhcr-prd-phm-bia-core.CY\_MYSPACE\_EmW.icnarc\_renamed\_columns`

-- GROUP BY days\_diff

-- ORDER BY days\_diff;

--=================================

--Fine as a string

--Currently\_or\_recently\_pregnant

--Ethnicity

--Health\_authority (change 'NA' to null)

--Post\_code (change 21x 'UNKN' to null, 1x '0L14' to 'OL14')

--Sex

--Outcome\_of\_recent\_pregnancy

--Admission\_Type

--CPR\_24h\_prior\_unit\_admission (change 'No'to 'No CPR' - already got more 'No CPR' than 'No'. Also change 'Yes' to 'Yes but unknown CPR type'?)

--Critical\_care\_prior\_to\_adm

--Hospital\_Housing\_Location (see Hospital\_Housing\_Location1 - not exactly the same)

--Housing\_Transient\_Location

--ICNARC\_comments

--ICNARC\_Comments\_v3 (different to above. change ' ', ' ' to null; merge with ICNARC\_comments?)

--Location

--Location\_prior\_to\_adm\_source (change ' ' to null)

-----Other\_intermediate\_care\_area (null or PCU) [removed]

--Prior\_Location

--PriorAdm\_Ward (is '03 EMU' the same as '3', 'EMU'?)

--Re\_adm\_Reason

--Residence\_prior\_to\_admission

--Sector

--Source\_of\_unit\_admission

--Surgery\_classification (change ' ' to null, merge with Classification\_of\_surgery)

--Tags (could be fine as it, or could create a separate column for each tag and do true/false for each - leave as is)

--Timeliness\_of\_admission\_to\_your\_unit (change ' ' to null)

--Unit

--Classification\_In

--Classification\_Out

--Prior\_transfer\_in

--Transfer\_in\_reason

--Transfer\_out\_reason

--Transferred\_from

--Transferred\_to

--Type\_Adult\_ICU\_In

--Type\_Adult\_ICU\_Out

--ULT\_Classification\_Out

--ULT\_Hospital\_TransTo

--ULT\_ReasonFor\_Out

--ULT\_Unit\_Identifier\_Out (change ' ' to null. No 'ULT\_Unit\_Identifier\_In'

--Unit\_identifier\_in (change ' ' to null. Remove commas - leave other duplicates as-is)

--Unit\_identifier\_out (different to 'ULT\_Unit\_Identifier\_Out'. Remove commas - leave other duplicates as-is)

--Other\_condition\_1\_code

--Other\_condition\_1\_condition

--Other\_condition\_1\_process

--Other\_condition\_1\_site

--Other\_condition\_1\_system

--Other\_condition\_1\_type

--Other\_condition\_2\_code

--Other\_condition\_2\_condition

--Other\_condition\_2\_process

--Other\_condition\_2\_site

--Other\_condition\_2\_system

--Other\_condition\_2\_type

--Primary\_reason\_code

--Primary\_reason\_condition

--Primary\_reason\_process

--Primary\_reason\_site

--Primary\_reason\_system

--Primary\_reason\_type

--Reason\_Adm1\_Notes (some say what the ICNARC code should be - leave as-is)

--Secondary\_reason\_code

--Secondary\_reason\_condition

--Secondary\_reason\_process

--Secondary\_reason\_site

--Secondary\_reason\_system

--Secondary\_reason\_type

--Ultimate\_reason\_admission\_code

--Ultimate\_reason\_admission\_condition

--Ultimate\_reason\_admission\_process

--Ultimate\_reason\_admission\_site

--Ultimate\_reason\_admission\_system

--Ultimate\_reason\_admission\_type

--Coma\_or\_deep\_stupor\_MPM0

--Coma\_or\_deep\_stupor\_MPM24

-----ACP\_main\_hosp\_speciality

--Assent\_for\_solid\_organ ('Not appropriate', 'No', 'Yes')

--Classification\_of\_surgery (Surgery\_classification will be merged here)

--Clostridium\_difficile

--Critical\_care\_post\_discharge

--Destination

--Hospital\_housing\_location1

--Level\_of\_care\_recd\_at\_discharge

--Location1

--Main\_organism\_causing\_first\_unitacquired\_infection\_in\_blood

--Length\_of\_ultimate\_unit\_stay (remove ' days', if not null - leave as-is)

--Length\_of\_unit\_stay (convert to just hours? currently e.g. '10 hours', '22 days', '5 days 4 hours'. BUT SEE Length\_stay\_days\_decimal - leave as-is)

--Length\_of\_unit\_stay\_Ready (as above - not duplicate - leave as-is)

--Infection\_confirmed

--MRSA

--Bool - keep as yes/no string

--ADM\_is\_ver2\_adm (no nulls)

-----DOB\_estimated (some nulls) [removed]

--Height\_Estimate (some nulls; No: 9600; Yes: 987 Yes; null: 5919)

--Height\_measured (no nulls; No: 6905; Yes: 9601)

--Height\_not\_known (no nulls; No: 16424; Yes: 82)

--Is\_this\_a\_readmission (no nulls)

--Patient\_discharged (no nulls)

--Patient\_ever\_admitted (no nulls)

--Patient\_in\_unit (no nulls)

--UK\_Postcode (some nulls)

--Unknown\_Post\_Code (no nulls; No: 14 but 21x 'UNKN')

--Weight\_Estimate (some nulls; No: 9439; Yes 1159; null: 5907)

--Weight\_measured (no nulls; No: 7605; Yes: 9441)

--Weight\_not\_known (no nulls; No 16435, Yes: 71)

--Assisted\_conception (some nulls, change 'Unknown' to null)

--Hysterectomy\_recent\_pregnancy (some nulls)

--Molar\_pregnancy (93x 'No', rest are null)

--Managed\_by\_unit\_team (some nulls)

--Outreach\_Scored\_on\_ward (some nulls)

--Planned\_admission (some nulls)

--Presurgical\_preparation (some nulls)

--Transfer\_on (no nulls)

--Transfer\_within\_Network\_In (some nulls)

--Transfer\_within\_Network\_Out (some nulls)

--Inhalation\_Injury (some nulls, 4x Yes, 6x No)

-----Signature\_list (no nulls) [removed]

--Continuous\_IV\_drug\_for\_1hr\_or\_plus (some nulls)

--Intracranial\_mass\_effect (some nulls)

--Mechanical\_ventilation (some nulls)

--Antimicrobials\_used\_to\_treat\_unit\_acquired\_infection (some nulls)

--Brainstem\_death\_declared (some nulls)

-- 2) Drop the empty/meaningless columns

CREATE TABLE `yhcr-prd-phm-bia-core.CY\_MYSPACE\_EmW.icnarc\_03a\_empty\_columns\_dropped`

AS

SELECT \*

EXCEPT(

-- These columns are empty (see post-script)

AdmStatus,

BED,

CCMDS\_TYPE,

FALSE\_NHS\_NO,

Patient\_cancelled,

Patient\_refused,

Religion,

ASA\_ScorE,

Outreach\_action\_taken,

Outreach\_Care\_Level,

Outreach\_total\_no\_of\_visits,

PIK\_ID,

Reason\_for\_non\_admission,

Surgery\_type,

ULT\_Transfer\_within\_Network\_Out,

ULT\_Type\_Adult\_ICU\_Out,

OthReas\_Adm1\_Notes,

OthReas\_Adm2\_Notes,

Reason\_Adm2\_Notes,

Reason\_for\_admission\_to\_unit\_1,

Reason\_for\_admission\_to\_unit\_2,

Reason\_for\_admission\_to\_unit\_3,

Reason\_for\_admission\_to\_unit\_4,

UltReason\_Adm\_Notes,

Active,

Anaesthetist,

On\_call,

Postcode,

Title1,

Speciality\_1,

Speciality\_2,

Telephone,

Total\_Intubated,

Cause\_of\_death,

CVC\_related\_CDIFF,

CVC\_related\_MRSA,

CVC\_related\_VRE,

Death\_outside\_unit,

MOUAIS,

NUAIS,

-- These columns are duplicates

No\_of\_livebirths\_recent\_preg1,

-- These columns are irrelevant

Exported\_to\_icnarc,

Missed\_fields\_icnarc\_export,

----- These columns excluded near the end of the cleaning process because it turned out no-one knew what they were or they were meaningless (see post-script for explanation for each)

DOB\_estimated,

Other\_intermediate\_care\_area,

Number\_of\_staffed\_beds,

Signature\_list,

ACP\_main\_hosp\_speciality,

Episode\_ID,

Outreach\_visited\_prior\_to\_adm,

Transfers\_information,

Unit\_admission\_number,

Diagnosis\_information,

MPM\_information

)

FROM `yhcr-prd-phm-bia-core.CY\_MYSPACE\_EmW.icnarc\_02d\_dates\_and\_times\_formatted`;

-- Delete dates and times formatted table

drop table `yhcr-prd-phm-bia-core.CY\_MYSPACE\_EmW.icnarc\_02d\_dates\_and\_times\_formatted`;

-- 3) Make changes required to the strings

-- Fine as string, only the ones needing changes:

--Health\_authority (change 'NA' to null)

--Post\_code (change 21x 'UNKN' to null, 1x '0L14' to 'OL14')

--CPR\_24h\_prior\_unit\_admission (change 'No'to 'No CPR' - already got more 'No CPR' than 'No'. Also change 'Yes' to 'Yes but unknown CPR type'?)

--ICNARC\_Comments\_v3 (different to above. change ' ', ' ' to null; merge with ICNARC\_comments?)

--Location\_prior\_to\_adm\_source (change ' ' to null)

--PriorAdm\_Ward (is '03 EMU' the same as '3', 'EMU'? - leave as is)

--Re\_adm\_Reason (change to say the actual reason?)

--Surgery\_classification (change ' ' to null, merge with Classification\_of\_surgery)

--Classification\_of\_surgery (Surgery\_classification will be merged here)

--Tags (could be fine as is, or could create a separate column for each tag and do true/false for each)

--Timeliness\_of\_admission\_to\_your\_unit (change ' ' to null)

--ULT\_Unit\_Identifier\_Out (change ' ' to null. Check St James' and others - leave as-is after changing nulls). No 'ULT\_Unit\_Identifier\_In'

--Unit\_identifier\_in (change ' ' to null. Remove commas - leave other duplicates as-is)

--Unit\_identifier\_out (check duplicates. different to 'ULT\_Unit\_Identifier\_Out'. Remove commas - leave other duplicates as-is)

--Reason\_Adm1\_Notes (some say what the ICNARC code should be - leave as-is)

--Unknown\_Post\_Code (no nulls; No: 14 but 21x 'UNKN' - leave as-is)

--Assisted\_conception (some nulls, change 'Unknown' to null - leave as-is)

-- make the changes to the strings where something needs to be changed to null

CREATE TABLE `yhcr-prd-phm-bia-core.CY\_MYSPACE\_EmW.icnarc\_03b\_nulled\_strings`

AS

SELECT \*

REPLACE(

--Health\_authority (change 'NA' to null)

NULLIF(Health\_authority, 'NA') AS Health\_authority,

--Post\_code (change 21x 'UNKN' to null, later: 1x '0L14' to 'OL14')

NULLIF(Post\_code, 'UNKN') AS Post\_code,

--Location\_prior\_to\_adm\_source (change ' ' to null)

NULLIF(Location\_prior\_to\_adm\_source, ' ') AS Location\_prior\_to\_adm\_source,

--Surgery\_classification (change ' ' to null, merge with Classification\_of\_surgery)

NULLIF(Surgery\_classification, ' ') AS Surgery\_classification,

--Timeliness\_of\_admission\_to\_your\_unit (change ' ' to null)

NULLIF(Timeliness\_of\_admission\_to\_your\_unit, ' ') AS Timeliness\_of\_admission\_to\_your\_unit,

--ULT\_Unit\_Identifier\_Out (change ' ' to null.

NULLIF(ULT\_Unit\_Identifier\_Out, ' ') AS ULT\_Unit\_Identifier\_Out,

--Unit\_identifier\_in (change ' ' to null. Also condense because there are duplicates, e.g. with and without commas)

NULLIF(Unit\_identifier\_in, ' ') AS Unit\_identifier\_in,

--Assisted\_conception (some nulls, change 'Unknown' to null)

NULLIF(Assisted\_conception, 'Unknown') AS Assisted\_conception

)

FROM `yhcr-prd-phm-bia-core.CY\_MYSPACE\_EmW.icnarc\_03a\_empty\_columns\_dropped`;

-- Delete empty columns dropped table

drop table `yhcr-prd-phm-bia-core.CY\_MYSPACE\_EmW.icnarc\_03a\_empty\_columns\_dropped`;

-- make the remaining edits to the strings

CREATE TABLE `yhcr-prd-phm-bia-core.CY\_MYSPACE\_EmW.icnarc\_03c\_strings\_formatted`

AS

SELECT

\*

-- drop ICNARC\_Comments\_v3 as it's being merged with ICNARC\_Comments (not losing any data), and Surgery\_classification

EXCEPT(ICNARC\_Comments\_v3,

Surgery\_classification)

REPLACE(

--Post\_code (change 21x 'UNKN' to null, 1x '0L14' to 'OL14')

CASE WHEN Post\_code = '0L14' THEN 'OL14' ELSE Post\_code END AS Post\_code,

--CPR\_24h\_prior\_unit\_admission (change 'No'to 'No CPR' - already got more 'No CPR' than 'No'. Also change 'Yes' to 'Yes but unknown CPR type')

CASE WHEN CPR\_24h\_prior\_unit\_admission = 'No' THEN 'No CPR'

WHEN CPR\_24h\_prior\_unit\_admission = 'Yes' THEN 'Yes but unknown CPR type'

ELSE CPR\_24h\_prior\_unit\_admission END AS CPR\_24h\_prior\_unit\_admission,

--ICNARC\_comments and ICNARC\_Comments\_v3 (different. change ' ', ' ' to null; merge with ICNARC\_comments?)

CASE

WHEN ICNARC\_Comments\_v3 = ' '

THEN null

WHEN ICNARC\_Comments\_v3 = ' '

THEN null

--when v1 is not null and v3 is null, return v1

WHEN ICNARC\_Comments IS NOT NULL and ICNARC\_Comments\_v3 IS NULL

THEN TRIM(ICNARC\_Comments)

--when v1 is not null and v3 is not null, return v1 and v3 appended

WHEN ICNARC\_Comments IS NOT NULL and ICNARC\_Comments\_v3 IS NOT NULL

THEN Concat(TRIM(ICNARC\_Comments), '.', TRIM(ICNARC\_Comments\_v3))

--when v1 is null and v3 is null, return null

WHEN ICNARC\_Comments IS NULL and ICNARC\_Comments\_v3 IS NULL

THEN null

--when v1 is null and v3 is not null, return v3

WHEN ICNARC\_Comments IS NULL and ICNARC\_Comments\_v3 IS NOT NULL

THEN TRIM(ICNARC\_Comments\_v3)

END AS ICNARC\_Comments,

-- Merge Classification\_of\_surgery and Surgery\_classification into the former

CASE

WHEN Classification\_of\_surgery = Surgery\_classification

THEN Classification\_of\_surgery

WHEN Classification\_of\_surgery IS NOT NULL and Surgery\_classification IS NULL

THEN Classification\_of\_surgery

WHEN Classification\_of\_surgery IS NULL and Surgery\_classification IS NOT NULL

THEN Surgery\_classification

WHEN Classification\_of\_surgery IS NULL and Surgery\_classification IS NULL

THEN NULL

WHEN Classification\_of\_surgery != Surgery\_classification

THEN Concat("Conflicting: ", Classification\_of\_surgery, ", ", Surgery\_classification)

END AS Classification\_of\_surgery,

--Unit\_identifier\_in (remove the commas - leave other possible duplicates as-is)

REGEXP\_REPLACE(Unit\_identifier\_in, r',', '') AS Unit\_identifier\_in,

--Unit\_identifier\_out (different to 'ULT\_Unit\_Identifier\_Out')

REGEXP\_REPLACE(Unit\_identifier\_Out, r',', '') AS Unit\_identifier\_Out

)

FROM `yhcr-prd-phm-bia-core.CY\_MYSPACE\_EmW.icnarc\_03b\_nulled\_strings`;

-- Delete nulled strings table

drop table `yhcr-prd-phm-bia-core.CY\_MYSPACE\_EmW.icnarc\_03b\_nulled\_strings`;

--=================================

-- 4) Make changes required to the integers

--Integer

--person\_id

--Age

--Month\_component\_for\_age (no nulls. change 0.0 to null)

--Gestation\_of\_current\_pregnancy (weeks? no nulls. change 0.0 to null)

--Gestation\_of\_recent\_pregnancy (weeks? no nulls. change 0.0 to null)

--No\_of\_babies\_NICU\_recent\_preg (no nulls. change 0.0 to null? or only 0.0 and if null and other pregnancy columns - leave as-is)

--No\_of\_live\_births\_or\_stillbirth (no nulls. change 0.0 to null? - leave as-is)

--No\_of\_livebirths\_recent\_preg (no nulls. change 0.0 to null? - leave as-is)

--No\_of\_previous\_Caesarean (no nulls. change 0.0 to null? - leave as-is)

--No\_of\_stillbirths\_recent\_preg (some nulls; 66x 0, 7x 1; change 0 to null or keep? - leave as-is)

--Admission\_ward

--Delay\_hrs

-----Episode\_ID (change ' ', ' ', ' ' to null. Change 0 to null or valid?)

-----Number\_of\_staffed\_beds (0.0 or 12.0) [removed]

--Outreach\_MEWS (0 is normal/the best, according to Tom Lawton)

-----Outreach\_visited\_prior\_to\_adm (is 0 different to null or should it be null?) [removed]

-----Transfers\_information (unique number for each person - mostly sequential, lowest '33100053'.) [removed]

-----Unit\_admission\_number (change 0.0 to null) [removed]

--Burns\_surface\_area

-----Diagnosis\_information (unique number for each person - mostly sequential, lowest '33100787') [removed]

--Consultant\_Information (lowest '33100001')

--Heart\_rate (change 0.0 to null)

-----MPM\_information (lowest 33100493) [removed]

--Systolic\_BP

--Discharge\_ward

--Length\_stay\_days\_rounded (change 0.0 to null? - leave as-is)

--Length\_stay\_days\_rounded\_Ready (as above - not duplicate - leave as-is)

--MEWS\_at\_Discharge

-- make the changes to the integers where something needs to be changed to null

CREATE TABLE `yhcr-prd-phm-bia-core.CY\_MYSPACE\_EmW.icnarc\_03d\_nulled\_integers`

AS

SELECT \*

REPLACE(

--Month\_component\_for\_age (no nulls. change 0.0 to null)

NULLIF(Month\_component\_for\_age, '0.0') AS Month\_component\_for\_age,

--Gestation\_of\_current\_pregnancy (weeks? no nulls. change 0.0 to null)

NULLIF(Gestation\_of\_current\_pregnancy, '0.0') AS Gestation\_of\_current\_pregnancy,

--Gestation\_of\_recent\_pregnancy (weeks? no nulls. change 0.0 to null)

NULLIF(Gestation\_of\_recent\_pregnancy, '0.0') AS Gestation\_of\_recent\_pregnancy,

-----Episode\_ID (change ' ', ' ', ' ' to null. Change 0 to null or valid?) [removed]

-- CASE WHEN Episode\_ID = ' ' THEN null

-- WHEN Episode\_ID = ' ' THEN null

-- WHEN Episode\_ID = ' ' THEN null

-- ELSE Episode\_ID END AS Episode\_ID,

--Number\_of\_staffed\_beds (0.0 or 12.0)

-----NULLIF(Number\_of\_staffed\_beds, '0.0') AS Number\_of\_staffed\_beds, [removed]

--Outreach\_visited\_prior\_to\_adm (is 0 different to null or should it be null? Tom unsure - leave as is) [removed]

-----Unit\_admission\_number (change 0.0 to null) [removed]

--NULLIF(Unit\_admission\_number, '0.0') AS Unit\_admission\_number,

--Heart\_rate (change 0.0 to null)

NULLIF(Heart\_rate, '0.0') AS Heart\_rate

)

FROM `yhcr-prd-phm-bia-core.CY\_MYSPACE\_EmW.icnarc\_03c\_strings\_formatted`;

-- Delete strings formatted table

drop table `yhcr-prd-phm-bia-core.CY\_MYSPACE\_EmW.icnarc\_03c\_strings\_formatted`;

-- make the remaining edits to the integers - cast them as integers

-- note that I first need to cast them as numeric because some are e.g. '68.0' so can't cast directly as an int

-- it is just the case that the number may be e.g. 68.0 so casting as an int without rounding will throw an error

CREATE TABLE `yhcr-prd-phm-bia-core.CY\_MYSPACE\_EmW.icnarc\_03e\_integers\_formatted`

AS

SELECT \*

REPLACE(

--person\_id

CAST(person\_id AS INT64) AS person\_id,

--Age

CAST(CAST(Age AS NUMERIC) AS INT64) AS Age,

--Month\_component\_for\_age (no nulls. change 0.0 to null)

CAST(CAST(Month\_component\_for\_age AS NUMERIC) AS INT64) AS Month\_component\_for\_age,

--Gestation\_of\_current\_pregnancy (weeks? no nulls. change 0.0 to null)

CAST(CAST(Gestation\_of\_current\_pregnancy AS NUMERIC) AS INT64) AS Gestation\_of\_current\_pregnancy,

--Gestation\_of\_recent\_pregnancy (weeks? no nulls. change 0.0 to null)

CAST(CAST(Gestation\_of\_recent\_pregnancy AS NUMERIC) AS INT64) AS Gestation\_of\_recent\_pregnancy,

--No\_of\_babies\_NICU\_recent\_preg (no nulls. change 0.0 to null? or only 0.0 and if null and other pregnancy columns - leave as-is)

CAST(CAST(No\_of\_babies\_NICU\_recent\_preg AS NUMERIC) AS INT64) AS No\_of\_babies\_NICU\_recent\_preg,

--No\_of\_live\_births\_or\_stillbirth (no nulls. change 0.0 to null? - leave as-is)

CAST(CAST(No\_of\_live\_births\_or\_stillbirth AS NUMERIC) AS INT64) AS No\_of\_live\_births\_or\_stillbirth,

--No\_of\_livebirths\_recent\_preg (no nulls. change 0.0 to null? - leave as-is)

CAST(CAST(No\_of\_livebirths\_recent\_preg AS NUMERIC) AS INT64) AS No\_of\_livebirths\_recent\_preg,

--No\_of\_previous\_Caesarean (no nulls. change 0.0 to null? - leave as-is)

CAST(CAST(No\_of\_previous\_Caesarean AS NUMERIC) AS INT64) AS No\_of\_previous\_Caesarean,

--No\_of\_stillbirths\_recent\_preg (some nulls; 66x 0, 7x 1; change 0 to null or keep? - leave as-is)

CAST(CAST(No\_of\_stillbirths\_recent\_preg AS NUMERIC) AS INT64) AS No\_of\_stillbirths\_recent\_preg,

--Admission\_ward

CAST(CAST(Admission\_ward AS NUMERIC) AS INT64) AS Admission\_ward,

--Delay\_hrs

CAST(CAST(Delay\_hrs AS NUMERIC) AS INT64) AS Delay\_hrs,

-----Episode\_ID (change ' ', ' ', ' ' to null. Change 0 to null or valid?)

--CAST(CAST(Episode\_ID AS NUMERIC) AS INT64) AS Episode\_ID,

--Number\_of\_staffed\_beds (0.0 or 12.0)

-----CAST(CAST(Number\_of\_staffed\_beds AS NUMERIC) AS INT64) AS Number\_of\_staffed\_beds,

--Outreach\_MEWS

CAST(CAST(Outreach\_MEWS AS NUMERIC) AS INT64) AS Outreach\_MEWS,

-----Outreach\_visited\_prior\_to\_adm (is 0 different to null or should it be null?)

--CAST(CAST(Outreach\_visited\_prior\_to\_adm AS NUMERIC) AS INT64) AS Outreach\_visited\_prior\_to\_adm,

-----Transfers\_information (unique number for each person - mostly sequential, lowest '33100053')

--CAST(CAST(Transfers\_information AS NUMERIC) AS INT64) AS Transfers\_information,

-----Unit\_admission\_number (change 0.0 to null)

--CAST(CAST(Unit\_admission\_number AS NUMERIC) AS INT64) AS Unit\_admission\_number,

--Burns\_surface\_area

CAST(CAST(Burns\_surface\_area AS NUMERIC) AS INT64) AS Burns\_surface\_area,

-----Diagnosis\_information (unique number for each person - mostly sequential, lowest '33100787')

--CAST(CAST(Diagnosis\_information AS NUMERIC) AS INT64) AS Diagnosis\_information,

--Consultant\_Information (lowest '33100001')

CAST(CAST(Consultant\_Information AS NUMERIC) AS INT64) AS Consultant\_Information,

--Heart\_rate

CAST(CAST(Heart\_rate AS NUMERIC) AS INT64) AS Heart\_rate,

-----MPM\_information (lowest 33100493)

--CAST(CAST(MPM\_information AS NUMERIC) AS INT64) AS MPM\_information,

--Systolic\_BP

CAST(CAST(Systolic\_BP AS NUMERIC) AS INT64) AS Systolic\_BP,

--Discharge\_ward

CAST(CAST(Discharge\_ward AS NUMERIC) AS INT64) AS Discharge\_ward,

--Length\_stay\_days\_rounded (change 0.0 to null? - leave as-is)

CAST(CAST(Length\_stay\_days\_rounded AS NUMERIC) AS INT64) AS Length\_stay\_days\_rounded,

--Length\_stay\_days\_rounded\_Ready (as above - not duplicate - leave as-is)

CAST(CAST(Length\_stay\_days\_rounded\_Ready AS NUMERIC) AS INT64) AS Length\_stay\_days\_rounded\_Ready,

--MEWS\_at\_Discharge

CAST(CAST(MEWS\_at\_Discharge AS NUMERIC) AS INT64) AS MEWS\_at\_Discharge

)

FROM `yhcr-prd-phm-bia-core.CY\_MYSPACE\_EmW.icnarc\_03d\_nulled\_integers`;

-- Delete nulled integers table

drop table `yhcr-prd-phm-bia-core.CY\_MYSPACE\_EmW.icnarc\_03d\_nulled\_integers`;

--=================================

-- 5) Make changes required to the floats

--Float

--Age\_decimal (round to 2 dp?)

--Body\_Mass\_Index (change 0.0 to null, round to 2 dp?)

--Height (in metres? change 0.0 to null, round to 2 dp?)

--Weight (in kg? change 0.0 to null, round to 2 dp?)

--Length\_stay\_days\_decimal (change 0.0 to null, round to 1 dp?)

--Length\_stay\_days\_decimal\_Ready (as above)

-- make the changes to the floats where something needs to be changed to null

CREATE TABLE `yhcr-prd-phm-bia-core.CY\_MYSPACE\_EmW.icnarc\_03f\_nulled\_floats`

AS

SELECT \*

REPLACE(

--Body\_Mass\_Index (change 0.0 to null, later: round to 2 dp?)

NULLIF(Body\_Mass\_Index, '0.0') AS Body\_Mass\_Index,

--Height (in metres? change 0.0 to null, round to 2 dp?)

NULLIF(Height, '0.0') AS Height,

--Weight (in kg? change 0.0 to null, round to 2 dp?)

NULLIF(Weight, '0.0') AS Weight,

--Length\_stay\_days\_decimal (change 0.0 to null, round to 1 dp?)

NULLIF(Length\_stay\_days\_decimal, '0.0') AS Length\_stay\_days\_decimal,

--Length\_stay\_days\_decimal\_Ready (as above)

NULLIF(Length\_stay\_days\_decimal\_Ready, '0.0') AS Length\_stay\_days\_decimal\_Ready

)

FROM `yhcr-prd-phm-bia-core.CY\_MYSPACE\_EmW.icnarc\_03e\_integers\_formatted`;

-- Delete integers formatted table

drop table `yhcr-prd-phm-bia-core.CY\_MYSPACE\_EmW.icnarc\_03e\_integers\_formatted`;

-- make remaining float changes

CREATE TABLE `yhcr-prd-phm-bia-core.CY\_MYSPACE\_EmW.icnarc\_03g\_floats\_formatted`

AS

SELECT \*

REPLACE(

--Age\_decimal (round to 2 dp?)

ROUND(CAST(Age\_decimal AS FLOAT64), 2) AS Age\_decimal,

--Body\_Mass\_Index (change 0.0 to null, round to 2 dp?)

ROUND(CAST(Body\_Mass\_Index AS FLOAT64), 2) AS Body\_Mass\_Index,

--Height (in metres? change 0.0 to null, round to 2 dp?)

ROUND(CAST(Height AS FLOAT64), 2) AS Height,

--Weight (in kg? change 0.0 to null, round to 2 dp?)

ROUND(CAST(Weight AS FLOAT64), 2) AS Weight,

--Length\_stay\_days\_decimal (change 0.0 to null, round to 1 dp?)

ROUND(CAST(Length\_stay\_days\_decimal AS FLOAT64), 1) AS Length\_stay\_days\_decimal,

--Length\_stay\_days\_decimal\_Ready (as above)

ROUND(CAST(Length\_stay\_days\_decimal\_Ready AS FLOAT64), 1) AS Length\_stay\_days\_decimal\_Ready

)

FROM `yhcr-prd-phm-bia-core.CY\_MYSPACE\_EmW.icnarc\_03f\_nulled\_floats`;

-- Delete nulled floats table

drop table `yhcr-prd-phm-bia-core.CY\_MYSPACE\_EmW.icnarc\_03f\_nulled\_floats`;

-- 6) Change column names to lowercase, with words separated by underscores

-- The commented-out lines below output

--- 'person\_id as person\_id,

-- ADM\_is\_ver2\_adm as adm\_is\_ver2\_adm...'

-- I pasted this below, then made a few edits by hand where necessary (noted by each)

SELECT

string\_agg(concat(column\_name,' as ', lower(column\_name)), ',\n') as column\_string

FROM

`yhcr-prd-phm-bia-core`.CY\_MYSPACE\_EmW.INFORMATION\_SCHEMA.COLUMNS

WHERE

table\_name="icnarc\_03g\_floats\_formatted";

CREATE TABLE `yhcr-prd-phm-bia-core.CY\_MYSPACE\_EmW.icnarc\_03h\_renamed\_columns`

AS

SELECT

person\_id as person\_id,

ADM\_is\_ver2\_adm as adm\_is\_ver\_2\_adm, --hand-edited

Age as age,

Age\_decimal as age\_decimal,

Body\_Mass\_Index as body\_mass\_index,

Currently\_or\_recently\_pregnant as currently\_or\_recently\_pregnant,

Date\_of\_birth as date\_of\_birth,

Ethnicity as ethnicity,

Health\_authority as health\_authority,

Height as height,

Height\_Estimate as height\_estimate,

Height\_measured as height\_measured,

Height\_not\_known as height\_not\_known,

Is\_this\_a\_readmission as is\_this\_a\_readmission,

Month\_component\_for\_age as month\_component\_for\_age,

Patient\_discharged as patient\_discharged,

Patient\_ever\_admitted as patient\_ever\_admitted,

Patient\_in\_unit as patient\_in\_unit,

Post\_code as postcode, --hand-edited

Sex as sex,

UK\_Postcode as uk\_postcode,

Unknown\_Post\_Code as unknown\_postcode, --hand-edited

Weight as weight,

Weight\_Estimate as weight\_estimate,

Weight\_measured as weight\_measured,

Weight\_not\_known as weight\_not\_known,

Actual\_date\_of\_delivery as actual\_date\_of\_delivery,

Assisted\_conception as assisted\_conception,

Expected\_date\_of\_delivery as expected\_date\_of\_delivery,

Gestation\_of\_current\_pregnancy as gestation\_of\_current\_pregnancy,

Gestation\_of\_recent\_pregnancy as gestation\_of\_recent\_pregnancy,

Hysterectomy\_recent\_pregnancy as hysterectomy\_recent\_pregnancy,

Molar\_pregnancy as molar\_pregnancy,

No\_of\_babies\_NICU\_recent\_preg as no\_of\_babies\_nicu\_recent\_preg,

No\_of\_live\_births\_or\_stillbirth as no\_of\_live\_births\_or\_stillbirth,

No\_of\_livebirths\_recent\_preg as no\_of\_live\_births\_recent\_preg, --hand-edited

No\_of\_previous\_Caesarean as no\_of\_previous\_caesarean,

No\_of\_stillbirths\_recent\_preg as no\_of\_stillbirths\_recent\_preg,

Outcome\_of\_recent\_pregnancy as outcome\_of\_recent\_pregnancy,

Admission\_Type as admission\_type,

Admission\_ward as admission\_ward,

CPR\_24h\_prior\_unit\_admission as cpr\_24\_h\_prior\_unit\_admission, --hand-edited

Critical\_care\_prior\_to\_adm as critical\_care\_prior\_to\_adm,

Date\_1st\_managed\_by\_unit\_team as date\_1st\_managed\_by\_unit\_team,

Date\_of\_last\_critical\_care as date\_of\_last\_critical\_care,

Delay\_hrs as delay\_hrs,

Hospital\_admission\_date as hospital\_admission\_date,

Hospital\_Housing\_Location as hospital\_housing\_location,

Housing\_Transient\_Location as housing\_transient\_location,

ICNARC\_Comments as icnarc\_comments,

Location as location,

Location\_prior\_to\_adm\_source as location\_prior\_to\_adm\_source,

Managed\_by\_unit\_team as managed\_by\_unit\_team,

Original\_hosp\_admission\_date as original\_hosp\_admission\_date,

Original\_unit\_admission\_date as original\_unit\_admission\_date,

Outreach\_last\_visit\_date as outreach\_last\_visit\_date,

Outreach\_MEWS as outreach\_mews,

Outreach\_Scored\_on\_ward as outreach\_scored\_on\_ward,

Planned\_admission as planned\_admission,

Pre\_surgical\_preparation as pre\_surgical\_preparation,

Prior\_Location as prior\_location,

PriorAdm\_Ward as prior\_adm\_ward, --hand-edited

Re\_adm\_Reason as re\_adm\_reason,

Residence\_prior\_to\_admission as residence\_prior\_to\_admission,

Sector as sector,

Source\_of\_unit\_admission as source\_of\_unit\_admission,

Tags as tags,

Time\_1st\_managed\_by\_unit\_team as time\_1st\_managed\_by\_unit\_team,

Timeliness\_of\_admission\_to\_your\_unit as timeliness\_of\_admission\_to\_your\_unit,

Transfer\_on as transfer\_on,

Unit as unit,

Unit\_admission\_date as unit\_admission\_date,

Unit\_Admission\_Time as unit\_admission\_time,

Classification\_In as classification\_in,

Classification\_Out as classification\_out,

Prior\_transfer\_in as prior\_transfer\_in,

Transfer\_in\_reason as transfer\_in\_reason,

Transfer\_out\_reason as transfer\_out\_reason,

Transfer\_within\_Network\_In as transfer\_within\_network\_in,

Transfer\_within\_Network\_Out as transfer\_within\_network\_out,

Transferred\_from as transferred\_from,

Transferred\_to as transferred\_to,

Type\_Adult\_ICU\_In as type\_adult\_icu\_in,

Type\_Adult\_ICU\_Out as type\_adult\_icu\_out,

ULT\_Classification\_Out as ult\_classification\_out,

ULT\_Hospital\_TransTo as ult\_hospital\_trans\_to, --hand-edited

ULT\_ReasonFor\_Out as ult\_reason\_for\_out, --hand\_edited

ULT\_Unit\_Identifier\_Out as ult\_unit\_identifier\_out,

Unit\_identifier\_in as unit\_identifier\_in,

Unit\_identifier\_Out as unit\_identifier\_out,

Burns\_surface\_area as burns\_surface\_area,

Inhalation\_Injury as inhalation\_injury,

Other\_condition\_1\_code as other\_condition\_1\_code,

Other\_condition\_1\_condition as other\_condition\_1\_condition,

Other\_condition\_1\_process as other\_condition\_1\_process,

Other\_condition\_1\_site as other\_condition\_1\_site,

Other\_condition\_1\_system as other\_condition\_1\_system,

Other\_condition\_1\_type as other\_condition\_1\_type,

Other\_condition\_2\_code as other\_condition\_2\_code,

Other\_condition\_2\_condition as other\_condition\_2\_condition,

Other\_condition\_2\_process as other\_condition\_2\_process,

Other\_condition\_2\_site as other\_condition\_2\_site,

Other\_condition\_2\_system as other\_condition\_2\_system,

Other\_condition\_2\_type as other\_condition\_2\_type,

Primary\_reason\_code as primary\_reason\_code,

Primary\_reason\_condition as primary\_reason\_condition,

Primary\_reason\_process as primary\_reason\_process,

Primary\_reason\_site as primary\_reason\_site,

Primary\_reason\_system as primary\_reason\_system,

Primary\_reason\_type as primary\_reason\_type,

Reason\_Adm1\_Notes as reason\_adm\_1\_notes, --hand-edited

Secondary\_reason\_code as secondary\_reason\_code,

Secondary\_reason\_condition as secondary\_reason\_condition,

Secondary\_reason\_process as secondary\_reason\_process,

Secondary\_reason\_site as secondary\_reason\_site,

Secondary\_reason\_system as secondary\_reason\_system,

Secondary\_reason\_type as secondary\_reason\_type,

Ultimate\_reason\_admission\_code as ultimate\_reason\_admission\_code,

Ultimate\_reason\_admission\_condition as ultimate\_reason\_admission\_condition,

Ultimate\_reason\_admission\_process as ultimate\_reason\_admission\_process,

Ultimate\_reason\_admission\_site as ultimate\_reason\_admission\_site,

Ultimate\_reason\_admission\_system as ultimate\_reason\_admission\_system,

Ultimate\_reason\_admission\_type as ultimate\_reason\_admission\_type,

Consultant\_Information as consultant\_information,

Coma\_or\_deep\_stupor\_MPM0 as coma\_or\_deep\_stupor\_mpm\_0, --hand-edited

Coma\_or\_deep\_stupor\_MPM24 as coma\_or\_deep\_stupor\_mpm\_24, --hand-edited

Continuous\_IV\_drug\_for\_1hr\_or\_plus as continuous\_iv\_drug\_for\_1\_hr\_or\_plus, --hand-edited

Heart\_rate as heart\_rate,

Infection\_confirmed as infection\_confirmed,

Intracranial\_mass\_effect as intracranial\_mass\_effect,

Mechanical\_ventilation as mechanical\_ventilation,

Systolic\_BP as systolic\_bp,

Antimicrobials\_used\_to\_treat\_unit\_acquired\_infection as antimicrobials\_used\_to\_treat\_unit\_acquired\_infection,

Assent\_for\_solid\_organ as assent\_for\_solid\_organ,

Brainstem\_death\_declared as brainstem\_death\_declared,

Classification\_of\_surgery as classification\_of\_surgery,

Clostridium\_difficile as clostridium\_difficile,

Critical\_care\_post\_discharge as critical\_care\_post\_discharge,

Date\_body\_removed as date\_body\_removed,

Date\_of\_first\_critical\_care as date\_of\_first\_critical\_care,

Date\_ult\_unit\_discharge as date\_ult\_unit\_discharge,

Demise as demise,

Destination as destination,

Discharge\_delay as discharge\_delay,

Discharge\_ward as discharge\_ward,

Hospital\_housing\_location1 as hospital\_housing\_location\_1, --hand-edited

Length\_of\_ultimate\_unit\_stay as length\_of\_ultimate\_unit\_stay,

Length\_of\_unit\_stay as length\_of\_unit\_stay,

Length\_of\_unit\_stay\_Ready as length\_of\_unit\_stay\_ready,

Length\_stay\_days\_decimal as length\_stay\_days\_decimal,

Length\_stay\_days\_decimal\_Ready as length\_stay\_days\_decimal\_ready,

Length\_stay\_days\_rounded as length\_stay\_days\_rounded,

Length\_stay\_days\_rounded\_Ready as length\_stay\_days\_rounded\_ready,

Level\_of\_care\_recd\_at\_discharge as level\_of\_care\_recd\_at\_discharge,

Location1 as location\_1, --hand-edited

Main\_organism\_causing\_first\_unit\_acquired\_infection\_in\_blood as main\_organism\_causing\_first\_unit\_acquired\_infection\_in\_blood,

MEWS\_at\_Discharge as mews\_at\_discharge,

MRSA as mrsa,

digest as digest,

Discharge\_delay\_as\_minutes as discharge\_delay\_as\_minutes

-----DOB\_estimated as dob\_estimated,

-----Episode\_ID as episode\_id,

-----Number\_of\_staffed\_beds as number\_of\_staffed\_beds,

-----Other\_intermediate\_care\_area as other\_intermediate\_care\_area,

-----Outreach\_visited\_prior\_to\_adm as outreach\_visited\_prior\_to\_adm,

-----Event\_date as event\_date,

-----Event\_time as event\_time,

-----Transfers\_information as transfers\_information,

-----Unit\_admission\_number as unit\_admission\_number,

-----Diagnosis\_information as diagnosis\_information,

-----Signature\_list as signature\_list,

-----MPM\_information as mpm\_information,

-----ACP\_main\_hosp\_speciality as acp\_main\_hosp\_speciality

FROM `yhcr-prd-phm-bia-core.CY\_MYSPACE\_EmW.icnarc\_03g\_floats\_formatted`;

-- Delete 'floats formatted' table

drop table `yhcr-prd-phm-bia-core.CY\_MYSPACE\_EmW.icnarc\_03g\_floats\_formatted`;

--=================================

--POST-SCIPT

--=================================

-- All the same value

--AdmStatus (all 'Admitted')

--BED (all '0.0')

--CCMDS\_TYPE (all 'MN')

--FALSE\_NHS\_NO (all 'No')

--Patient\_cancelled (all 'No')

--Patient\_refused (all 'No')

--Religion (all null)

--ASA\_Score (all null)

--Outreach\_action\_taken (all null)

--Outreach\_Care\_Level (all '0.0')

--Outreach\_total\_no\_of\_visits (all '0.0')

--PIK\_ID (all null)

--Reason\_for\_nonadmission (all null)

--Surgery\_type (all null)

--ULT\_Transfer\_within\_Network\_Out (all null)

--ULT\_Type\_Adult\_ICU\_Out (all null)

--OthReas\_Adm1\_Notes (all null)

--OthReas\_Adm2\_Notes (all null)

--Reason\_Adm2\_Notes (all null)

--Reason\_for\_admission\_to\_unit\_1 (all null except 1x 'Familial polyposis')

--Reason\_for\_admission\_to\_unit\_2 (all null)

--Reason\_for\_admission\_to\_unit\_3 (all null)

--Reason\_for\_admission\_to\_unit\_4 (all null)

--UltReason\_Adm\_Notes (all null)

--Active (all yes)

--Anaesthetist (all no)

--On\_call (all no)

--Postcode (all null)

--Speciality\_1 (16503x 'Anaesthetics', rest are null )

--Title1 (16503x 'Dr', rest are null)

--Speciality\_2 (all null)

--Telephone (all null)

--Total\_Intubated (all null)

--Cause\_of\_death (all null)

--CVC\_related\_CDIFF (all null)

--CVC\_related\_MRSA (all null)

--CVC\_related\_VRE (all null)

--Death\_outside\_unit (all null)

--MOUAIS (all null)

--NUAIS (all null)

----- Removed near the end of the cleaning process:

-- DOB\_estimated, - This is only populated when the patient’s DOB is 01/01/yyyy, but to maintain anonyminity, patient’s DOBs are changed to 15/mm/yyyy, so this would wrongly tell people the day of birth.

-- Other\_intermediate\_care\_area, - Presumably only filled in when the patient came from or was discharged to ‘other intermediate care area’. It’s unclear whether this is to or from and is only ever null or PCU.

-- Number\_of\_staffed\_beds,

-- Signature\_list, - No-one knew what this meant.

-- ACP\_main\_hosp\_speciality, - Tom Lawton said they you don’t have ACPs so this might be being used for something else.

-- Episode\_ID, - This is only present for 3 people.

-- Outreach\_visited\_prior\_to\_adm, - This is only 0 or null.

-- Transfers\_information, - This is a unique value for each admission so potentially could be identifying.

-- Unit\_admission\_number, - This looks to be a date but I don’t know what of. No-one really knew.

-- Diagnosis\_information, - This is a unique value for each admission so potentially could be identifying.

-- MPM\_information - This is a unique value for each admission so potentially could be identifying.

--=================================

--Duplicate columns

--No\_of\_livebirths\_recent\_preg1 of No\_of\_livebirths\_recent\_preg

--=================================

-- TIME?

--Demise? (no one is exactly sure what this is, but will share with researchers with this caveat)

--=================================

--Discrepancies or general notes (included also in data dictionary)

--Height/Weight measured / estimate / not known - not always as you would expect

--Unit\_identifier\_out / in - have removed the commas because there were a lot of duplicates, but haven't cleaned all of them, e.g. some say NICU, some Neuro ICU, some have the name of the city at the end.

--Reason\_Adm1\_Notes (some say what the ICNARC code should be) - I haven't altered the codes