GIS DATA PREPARATION AND MANAGEMENT

Practical Task 2: Editing tabular data structure to enable GIS data import

Task description

This is the second of four tasks in this "data preparation and cleaning" workflow. In the previous task, you set up your data file and folders, as well as started your metadata record. In this task, you will look at the tabular structure itself-the rows, columns, and orientation of the data-and address any problems you find.



Tabular data can only be imported to a GIS if it conforms to several strict requirements relating to data structure. This practical exercise will guide you through the most critical requirements most often encountered by GIS users-these are also listed in the next section. You will be instructed on how to identify these issues and how to adjust your data to meet the requirements.

Data rules covered in this task

- Note any problems you spot in this initial review.
- Data attributed to each feature in your table should be organised by rows, not columns.
- Merged cells cannot be imported into GIS.
- Field (i.e. column) headers should not contain more than 10 characters, nor any spaces or unusual characters.
- GIS will only import **one worksheet at a time**. If your data are distributed across multiple worksheets, you must combine them into one or import them one at a time.



Part 1: Copy the raw data file and inspect the tabular data structure

In this task, you will start making substantive changes to the data.

Step 1: Choose <u>one</u> of the following options:

1. You may continue working on your Excel file from Task 1: Kano HealthFacilities 31Mar2024 raw.xlsx

2. Alternatively, open this file (which has been prepared for this task): ...\GRID3DataMng\BackupFiles\Kano_HealthFacilities_31Mar2024_raw_TASK2.xlsx

Step 2: Remember to apply what you previously learned on good data practices and save a copy of the data with a new file name, thus retaining the initial "raw" version of the data. As this is still an early phase in the data investigation, save this duplicate file as an "intermediate" version.

Save the file in the following location (and note the new file name): ...\GRID3DataMng\3_IntermediateData\Kano_HealthFacilities_31Mar2024_int1.xlsx

Step 3: Now explore the data, moving through each of the worksheets. Each worksheet represents health facility data by local government area (LGA).

- Without making any changes, review the **table structure** on each worksheet; take note of column headers (as well as row and column consistency) across the worksheets.
- Note any problems you spot in this initial review.

Exercise 1

Consider the table setup below and what you now understand about best practices to correctly import tabular data into GIS software. What issues might you encounter when trying to create a single spatial dataset of health facility locations?

	Α	В	С	D	E	F	G	Н	l I	J
1	uniq_id	timestamp	latitude	longitude	wardname	wardcode	lganame	lgacode	statename	statecode
2	8345	18/12/2018	12.13267	8.32125	Marke	KN1009	Dawakin Tofa	20021	Kano	KN
3	8370	18/12/2018	12.03477	8.39608	Danguguwa	KN1001	Dawakin Tofa	20021	Kano	KN
4	8375	18/12/2018	12.09308	8.30719	Dawaki West	KN1003	Dawakin Tofa	20021	Kano	KN
5	13041	15/11/2019	12.05056	8.37907	Danguguwa	KN1001	Dawakin Tofa	20021	Kano	KN
6	13104	15/11/2019	12.14019	8.24805	Marke	KN1009	Dawakin Tofa	20021	Kano	
7	13107	15/11/2019	12.13114	8.43312	Tumfafi	KN1011	Dawakin Tofa	20021	Kano	KN
8	13108	15/11/2019	12.16253	8.487	Tumfafi	KN1011	Dawakin Tofa	20021	Kano	KN
9	13115	15/11/2019	12.14638	8.49576	Tumfafi	KN1011	Dawakin Tofa	20021	Kano	KN
10	13116	15/11/2019	12.13461	8.48474	Tumfafi	KN1011	Dawakin Tofa	20021	Kano	KN
11	13119	15/11/2019	12.15612	8.44435	Tumfafi	KN1011	Dawakin Tofa	20021	Kano	KN
12	13124	15/11/2019	12.1017	8.31783	Dawaki West	KN1003	Dawakin Tofa	20021	kano	KN
13	13125	15/11/2019	12.09577	8.30629	Dawaki West	KN1003	Dawakin Tofa	20021	Kano	KN
14	13126	15/11/2019	12.12022	8.3258	Dawaki East	KN1002	Dawakin Tofa	20021	kano	KN
15	13127	15/11/2019	12.11772	8.35416	Kwa	KN1010	Dawakin Tofa	20021	Kano	KN
16	13128	15/11/2019	12.10898	8.35663	Dawaki East	KN1002	Dawakin Tofa	20021	Kano	KN
17	13129	15/11/2019	12.11782	8.37578	Kwa	KN1010	Dawakin Tofa	20021	Kano	KN
18	13130	15/11/2019	12.08283	8.33082	Dawaki West	KN1003	Dawakin Tofa	20021	Kano	KN
19	13131	15/11/2019	12.14852	8.35788	Gargari	KN1006	Dawakin Tofa	20021	kano	KN
20	13132	15/11/2019	12.15363	8.32747	Gargari	KN1006	Dawakin Tofa	20021	Kano	KN
21	13133	15/11/2019	12.1375	8.40336	Dawanau	KN1004	Dawakin Tofa	20021	Kano	KN
22	13134	15/11/2019	12.09304	8.36999	Danguguwa	KN1001	Dawakin Tofa	20021	Kano	KN
-	- F	Dawakin Tofa	Dawakin Kud	du Gabasawa	Gezawa K	umbotso I	Nassarawa Tara	uni Ung	ogo Metad	ata 🕞



Part 2: Convert column-oriented data to row-oriented data

The second worksheet is organized as shown in the image in exercise 2 below. The data for Dawakin Kudu is complete. However, unlike the other LGAs, it is oriented such that information on each health facility is organized vertically into columns and not into rows as it should.

This situation is typically caused by the data export function of particular health management systems. It can be easily rectified by using the **Transpose** tool in Excel (or your equivalent table-editing software).

Exercise 2

In this exercise, you will follow a series of steps to learn how to convert the orientation of your worksheet from columns to rows.

Step1: Complete the following:

- 1. Note any problems you spot in this initial review
- 2. Rename the worksheet Dawakin Kudu_ORIGINAL
- 3. Create a new blank worksheet
- 4. Rename the new worksheet Dawakin Kudu

	А	В	С	D	E	F	G	Н	I.
1	uniq_id	13028	34627	34646	34656	34657	35090	35092	35103
2	timestamp	15/11/2019	15/11/2019	06/12/2019	15/11/2019	18/12/2018	15/11/2019	15/11/2019	15/11/2019
3	latitude	11.83572	11.67038329	11.7745	11.83932857	11.89984681	11.85481215	11.84732263	11.86952098
4	longitude	8.59633	8.677507377	8.76256	8.595583049	8.663469086	8.529118942	8.530283841	8.536781725
5	wardname	Dawaki	Dabar Kwari	Dosan	Dawaki	Yargaya	Tanburawa	Tanburawa	Tanburawa
6	wardcode	KN0903	KN0901	KN0905	KN0903	KN0914	KN0909	KN0909	KN0909
7	lganame	Dawakin Kudu	Dawakin Kudu	Dawakin Kudu	Dawakin Kudu	Dawakin Kudu	Dawakin Kudu	Dawakin Kudu	Dawakin Kudu
8	lgacode	20022	20022	20022	20022	20022	20022	20022	20022
9	statename	Kano	Kano	kano	Kano	Kano	Kano	Kano	Kano
10	statecode	KN	KN	KN	KN	KN	KN	KN	KN
11	updated_on	2019/03/01	2019/03/01	2019/03/01	2019/03/01	2019/03/01	01/03/2019	01/03/2019	01/03/2019
12	func_stats	Functional	Functional	Functional	Functional	Functional	Functional	Functional	Functional
13	category	Primary Health Center	Dispensary	Dispensary	Primary Health Center	Primary Health Center	Dispensary	Dispensary	Dispensary
14	ownership	Private	National Primary Healthcare Development Agency	Others	National Primary Healthcare Development Agency	National Primary Healthcare Development Agency	National Primary Healthcare Development Agency	National Primary Healthcare Development Agency	National Primary Healthcare Development Agency
15	type	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary
16	source	Measles Campaign	eHA Polio	eHA Polio	Measles Campaign	Measles Campaign	eHA Polio	eHA Polio	eHA Polio
17	prmry_name	Dawaki Health Center	Fanido Health Post	Kamagata Dispensary	Jido Primary Health Center	Rinji Primary Health Center	Matage Health Post	Gada Health Post	Tamburawa Health Post
-	Daw	/akin Tofa Daw	vakin Kudu 🛛 Ga	abasawa Gezaw	a Kumbotso	Nassarawa T	arauni Ungogo	Metadata	+

Step 2: To save time and to keep your workbook in alignment, it is good practice to copy and paste the column widths before copying the actual data.

- 1. Select and copy any one of the rows from a correct worksheet (such as Gabasawa)
- 2. Now return to your new blank worksheet and click:
 - a. **Paste > Paste special > Paste column widths**



Step 3: You are now ready to transpose your column-oriented data into your prepared worksheet.

- 1. Return to Dawakin Kudu_ORIGINAL worksheet
- 2. Zoom out in order to see all of the data (i.e. from cell A1 to AC 17), then click and drag across all cells to select and then copy all of the data

- A	D	C	D	5	r	G	н	1	J	K	L	M	N	0	P	0	B	\$	т	U	V	W	X	Y	Z	AA	AD	AC
uniq_id	13028	34627	34646	34656	34657	35090	35092	35103	35126	35171	35181	35203	35206	35208	35211	35218	35228	35246	35466	35472	35563	35566	35568	35574	35576	35692	35728	35840
timesta	m 15/11/2011	15/11/2019	06/12/2019	15/11/2019	1871272018	15/11/2019	15/11/2019	15/11/2019	15/11/2019	15/11/2019	15/11/2019	15/11/2019	15711/2019	15/11/2019	15/11/2019	15/11/2019	15/11/2019	15/11/2019	15/11/2019	15/11/2019	15711/2019	15/11/2019	18/12/2018	15/11/2019	15/11/2019	15/11/2019	15H1V2019	15711/2019
latitude	11.83572	11.67038329	11,7745	11.83932857	11.83384681	11.85481215	11.84732263	11.86952098	11.88159582	11.842823	11.90924779	11.89884244	11.77507256	11.87898492	11.71722127	11.817365	11.77958815	11.77229633	11.877842	11.80734616	11.83982	11.89596499	11.79794943	11.864045	11.83621484	11.91278798	11.80588337	11.81077713
longitu	le 8.59633	8.677507377	8.76256	8.595583049	8.663469086	8.529118942	8.530283841	8.536781725	8.552826668	8.598307	8.616618305	8.663032102	8.674129116	8.681853087	8.684865928	8.696325	8.721780305	8.763639536	8.628317	8.79910493	8.601726	8.620570334	8.642285753	8.70367	8.730740535	8.64879916	8.601961348	8.614745845
wardnar e	n Dawaki	Dabar Kwari	Dosan	Dawaki	Yargaya	Tanburawa	Tanburava	Tanburavia	Gurjiya	Dawaki	Yankatsari	Yargaya	Dosan	Zogarava	Dabar Kwari	Gano	Dosan	Dosan	Unguwar Duniga	Danbagina	Davaki	Yankatsari	Tsakuwa	Davakiji	Gano	Jido	Yan Barau	Tsakuva
wardoo	ie KN0903	KN00901	K/00905	KIN0903	KN0914	KN0909	KN0909	KN0909	KN0907	KN0903	KIN0913	KN0914	KN0905	KN0915	KN0901	KN0906	KN0905	KN00905	K/00911	KN0902	KN0903	KN0913	KN0910	KN0904	KN0906	KIM0908	KIM0912	KN0910
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updated	2019/03/	2019/03/01	2019/03/01	2019/03/01	2019/03/01	01/03/2019	01/03/2019	01/03/2019	01/03/2019	01/03/2019	01/03/2019	01/03/2019	01/03/2019	01/03/2019	01/03/2019	01/03/2019	01/03/2019	01/03/2019	01/03/2019	01/03/2019	01/03/2019	01/03/2019	01/03/2019	01/03/2019	01/03/2019	01/03/2019	01/03/2019	01/03/2019
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categor	Primary Health	Dispensary	Dispensary	Primary Health	Primary Health	Dispensary	Dispensary	Dispensary	Dispensary	Primary Health	Dispensary	Dispensary	Dispensary	Dispensary	Primary Health	Dispensary	Dispensary	Dispensary	Dispensary	Dispensary	General Hospital	Primary Health	Primary Health	Primary Health	Primary Health	Dispensary	Dispensary	Primary Health
owners P	N Private	National Primary Healthcare Developmen	Others	National Primary Healthcare Developmen	National Primary Healthcare Developmen	National Primary Healthcare Developmen	National Primary Healthcare Developmen	National Primary Healthcare Developmen	National Primary Healthcare Development	Private	National Primary Healthcare Developmen	National Primary Healthcare Developmen	National Primary Healthcare Developmen	National Primary Healthcare Developmen	National Primary Healthcare Developmen	National Primary Healthcare Developmen	National Primary Healthcare Development	National Primary Healthcare Developmen	National Primary Healthcare Developmen	National Primary Healthcare Developmen	Federal Ministry of Health	National Primary Healthcare Developmen	National Primary Healthcare Developmen	National Primary Healthcare Development	National Primary Healthcare Developmen	National Primary Healthcare Developmen	National Primary Healthcare Developmen	National Primary Healthcare Development
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source	Measles	eHA Polio	eHA Polio	Measles	Measles	eHA Polio	eHA Polio	eHA Polio	eHA Polio	eHA Polio	eHA Polio	eHA Polio	eHA Polio	eHA Polio	eHA Polio	eHA Polio	eHA Polio	eHA Polio	eHA Polio	eHA Polio	eHA Polio	eHA Polio	eHA Polio	eHA Polio	eHA Polio	eHA Polio	eHA Polio	NPHCDA
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4																												

- 3. Go to the new worksheet and place your cursor in the top-left cell
- 4. Use the following command to convert column-oriented data to row-oriented:

Paste > Transpose



Step 3: The data for this LGA should now be correctly oriented. You should finish by tidying the workbook.

- 1. Delete the worksheet Dawakin Kudu_ORIGINAL
- 2. Move your new worksheet, Dawakin Kudu, into the original position for that LGA
- 3. Remember to Save your Excel file

	Α	В	С	D	E	F	G	н	- I	J	K	L	M	N
1	uniq_id	timestamp	latitude	longitude	wardname	wardcode	Iganame	lgacode	statename	statecode	updated_on	func_stats	category	ownership
2	13028	15/11/2019	11.83572	8.59633	Dawaki	KN0903	Dawakin Kudu	20022	Kano	KN	2019/03/01	Functional	Primary Health Center	Private
з	34627	15/11/2019	11.67038329	8.677507377	Dabar Kwari	KN0901	Dawakin Kudu	20022	Kano	KN	2019/03/01	Functional	Dispensary	National Primary Healthcare Development Agency
4	34646	06/12/2019	11.7745	8.76256	Dosan	KN0905	Dawakin Kudu	20022	kano	KN	2019/03/01	Functional	Dispensary	Others
5	34656	15/11/2019	11.83932857	8.595583049	Dawaki	KN0903	Dawakin Kudu	20022	Kano	KN	2019/03/01	Functional	Primary Health Center	National Primary Healthcare Development Agency
6	34657	18/12/2018	11.89984681	8.663469086	Yargaya	KN0914	Dawakin Kudu	20022	Kano	KN	2019/03/01	Functional	Primary Health Center	National Primary Healthcare Development Agency
7	35090	15/11/2019	11.85481215	8.529118942	Tanburawa	KN0909	Dawakin Kudu	20022	Kano	KN	01/03/2019	Functional	Dispensary	National Primary Healthcare Development Agency
8	35092	15/11/2019	11.84732263	8.530283841	Tanburawa	KN0909	Dawakin Kudu	20022	Kano	KN	01/03/2019	Functional	Dispensary	National Primary Healthcare Development Agency
9	35103	15/11/2019	11.86952098	8.536781725	Tanburawa	KN0909	Dawakin Kudu	20022	Kano	KN	01/03/2019	Functional	Dispensary	National Primary Healthcare Development Agency
10	35126	15/11/2019	11.88159582	8.552826668	Gurjiya	KN0907	Dawakin Kudu	20022	Kano	KN	01/03/2019	Functional	Dispensary	National Primary Healthcare Development Agency
11	35171	15/11/2019	11.842823	8.598307	Dawaki	KN0903	Dawakin Kudu	20022	Kano	KN	01/03/2019	Functional	Primary Health Center	Private
12	35181	15/11/2019	11.90924779	8.616618305	Yankatsari	KN0913	Dawakin Kudu	20022	Kano	KN	01/03/2019	Functional	Dispensary	National Primary Healthcare Development Agency
13	35203	15/11/2019	11.89884244	8.663032102	Yargaya	KN0914	Dawakin Kudu	20022	Kano	KN	01/03/2019	Functional	Dispensary	National Primary Healthcare Development Agency
14	35206	15/11/2019	11.77507256	8.674129116	Dosan	KN0905	Dawakin Kudu	20022	Kano	KN	01/03/2019	Functional	Dispensary	National Primary Healthcare Development Agency
15	35208	15/11/2019	11.87898492	8.681853087	Zogarawa	KN0915	Dawakin Kudu	20022	Kano	KN	01/03/2019	Functional	Dispensary	National Primary Healthcare Development Agency
16	35211	15/11/2019	11.71722127	8.684865928	Dabar Kwari	KN0901	Dawakin Kudu	20022	Kano	KN	01/03/2019	Functional	Primary Health Center	National Primary Healthcare Development Agency
17	35218	15/11/2019	11.817365	8.696325	Gano	KN0906	Dawakin Kudu	20022	Kano	KN	01/03/2019	Functional	Dispensary	National Primary Healthcare Development Agency
18	35228	15/11/2019	11.77968815	8.721780305	Dosan	KN0905	Dawakin Kudu	20022	Kano	KN	01/03/2019	Functional	Dispensary	National Primary Healthcare Development Agency
19	35246	15/11/2019	11.77229633	8.763639536	Dosan	KN0905	Dawakin Kudu	20022	Kano	KN	01/03/2019	Functional	Dispensary	National Primary Healthcare Development Agency
20	35466	15/11/2019	11.877842	8.628317	Unguwar Duniya	KN0911	Dawakin Kudu	20022	Kano	KN	01/03/2019	Functional	Dispensary	National Primary Healthcare Development Agency
21	35472	15/11/2019	11.80734616	8.79910493	Danbagina	KN0902	Dawakin Kudu	20022	Kano	KN	01/03/2019	Functional	Dispensary	National Primary Healthcare Development Agency
22	35563	15/11/2019	11.83982	8.601726	Dawaki	KN0903	Dawakin Kudu	20022	Kano	KN	01/03/2019	Functional	General Hospital	Federal Ministry of Health
23	35566	15/11/2019	11.89596499	8.620570334	Yankatsari	KN0913	Dawakin Kudu	20022	Kano	KN	01/03/2019	Functional	Primary Health Center	National Primary Healthcare Development Agency
24	35568	18/12/2018	11.79794943	8.642285753	Tsakuwa	KN0910	Dawakin Kudu	20022	Kano	KN	01/03/2019	Functional	Primary Health Center	National Primary Healthcare Development Agency
25	35574	15/11/2019	11.864045	8.70367	Dawakiji	KN0904	Dawakin Kudu	20022	Kano	KN	01/03/2019	Functional	Primary Health Center	National Primary Healthcare Development Agency
26	35576	15/11/2019	11.83621484	8.730740535	Gano	KN0906	Dawakin Kudu	20022	Kano	KN	01/03/2019	Functional	Primary Health Center	National Primary Healthcare Development Agency
27	35692	15/11/2019	11.91278798	8.64879916	Jido	KN0908	Dawakin Kudu	20022	Kano	KN	01/03/2019	Functional	Dispensary	National Primary Healthcare Development Agency
28	35729	15/11/2019	11.80588337	8.601961348	Yan Barau	KN0912	Dawakin Kudu	20022	Kano	KN	01/03/2019	Functional	Dispensary	National Primary Healthcare Development Agency
29	35840	15/11/2019	11.81077713	8.614745845	Tsakuwa	KN0910	Dawakin Kudu	20022	Kano	KN	01/03/2019	Functional	Primary Health Center	National Primary Healthcare Development Agency
30														
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	()	Dawak	in Tofa D	awakin Kud	u Gabasa	awa Ge	zawa Kuml	ootso	Nassaraw	a Tarau	ini Ungog	go Meta	idata (+)	: •





Part 3: Identify and correct problems with table rows and columns

As you continue your exploration of the worksheets, we'll look at identifying and correcting common formatting errors with tables and rows.

Exercise 3

Examine the *Gezawa* worksheet (pictured below), and see if you can identify the multiple table formatting issues.

	А	В	С	D	E	F	G	Н	- I -	J	К	L	M	N
1					. .									
				Gazewa I	GA primar	y, secondary	, and t	ertiary	health ca	are faci	lity poin	its and n	ames.	
2		lunder tot		Latituda (800)	and landitude (8	00)		1	lassed a				Constitution of states	
3		uniq_ia	umestamp	latitude (-DD)	and longitude (0.74 Katawa	wardcode	iganame	igacode	statename	statecode	updated_on	Functional status	S category
4		8347	18/12/2018	11 00007	.05	8.74 Ketawa	KIN1705	Gezawa	20010	Kano	KIN	01/03/2019	Functional	Primary Health Center
5		13100	15/11/2019	11.989074	+/1 8./055	0293 Tumbau	KN1709	Gezawa	20010	Kano	KIN	01/03/2019	Functional	Dispensary
0		13184	15/11/2019	12.012	/50 8.74	19380 Gawo	KIN1702	Gezawa	20010	Kano	KIN	01/03/2019	Functional	Dispensary
-		13219	15/11/2019	11.992	5.6 214	2401 Langa	KN1709	Gezawa	20010	Kano	KIN	01/03/2019	Functional	Dispensary Deleteration
8		31480	15/11/2019	12.020	8.7	2401 Jogana	KN1704	Gezawa	20010	капо	KIN	01/03/2019	Functional	Primary Health Center
9		34004	15/11/2019	12.04304	8.7890	15127 Wangara	KN1/10	Gezawa	20010	Kano	KIN	01/03/2019	Functional	Primary Health Center
10		34005	15/11/2019	11.983	8.62330	1392 Tsamiya Babba	KN1708	Gezawa	20010	Kano	KIN	01/03/2019	Functional	Primary Health Center
12		34700	15/11/2019	12.07749	0.0///	SS10 Zango	KN1711	Gezawa	20010	Kano	KIN	01/03/2019	Functional	Dispensary
12		35185	15/11/2019	12.016	0.02	28572 Babawa	KN1701	Gezawa	20010	Kano	KN	01/03/2019	Functional	Dispensary
13		35195	15/11/2019	12.13275	242 8.64958	1725 Mesar Tudu	KN1706	Gezawa	20010	капо	KN	01/03/2019	Functional	Dispensary
14		35200	15/11/2019	12.089746	8.65485	18725 Zango	KN1/11	Gezawa	20010	капо	KN	01/03/2019	Functional	Dispensary
15		35201	15/11/2019	12.0330	8.66155	1478 Isamiya Babba	KN1708	Gezawa	20010	капо	KN	01/03/2019	Functional	Dispensary
10		35205	15/11/2019	12.0	120 8.07	3354 Jogana	KIN1704	Gezawa	20010	Kano	KIN	01/03/2019	Functional	Dispensary
17		35212	15/11/2019	12.0934	431 8.68	5254 Zango	KN1711	Gezawa	20010	Kano	KN	01/03/2019	Functional	Dispensary
18		35219	15/11/2019	12.020	284 8.0	18032 Jogana	KIN1704	Gezawa	20010	Kano	KIN	01/03/2019	Functional	Dispensary
19		35220	15/11/2019	12.05278	311 8.70126	13// Zango	KN1/11	Gezawa	20010	Kano	KN	01/03/2019	Functional	Dispensary
20		35222	15/11/2019	12.0800	34 8.7	4985 Zango	KN1/11	Gezawa	20010	Kano	KN	01/03/2019	Functional	Dispensary
21		35233	15/11/2019	11.985	135 8.7	34/9 Gawo	KN1/02	Gezawa	20010	Kano	KN	01/03/2019	Functional	Dispensary
22		35236	15/11/2019	12.145	325 8.74	1825 Mesar Tudu	KN1/06	Gezawa	20010	Kano	KN	01/03/2019	Functional	Dispensary
23		35239	15/11/2019	12.008	394 8.73 	10792 Ketawa	KIN1705	Gezawa	20010	Kano	KIN	01/03/2019	Functional	Dispensary
24		35240	15/11/2019	12.100	8./3	Gezawa	KN1703	Gezawa	20010	Kano	KIN	01/03/2019	Functional	Dispensary
25		35244	15/11/2019	12.096	2/1 8.75	465/ Gezawa	KN1/03	Gezawa	20010	Kano	KN	01/03/2019	Functional	Maternity Home
20		35247	15/11/2019	11.991	80 8.70	4332 Tumbau	KN1709	Gezawa	20010	Kano	KN	01/03/2019	Functional	Dispensary
27		35469	15/11/2019	12.037	219 8.76	3453 Wangara	KN1710	Gezawa	20010	капо	KN	01/03/2019	Functional	Primary Health Center
28		35571	15/11/2019	12.057998	351 8.6602	27597 Babawa	KN1701		20010	капо	KN	01/03/2019	Functional	Primary Health Center
29		35572	15/11/2019	11.993	569 8.60	2101 Isamiya Babba	KN1708		20010	капо	KN	01/03/2019	Functional	Primary Health Center
30		35598	15/11/2019	12.116	14 8.7	0628 Mesar Tudu	KN1706		20010	Kano	KN	01/03/2019	Functional	Primary Health Center
31		35624	15/11/2019	12.0198	375 8.74	7844 Gawo	KN1702		20010	Kano	KN	01/03/2019	Functional	Primary Health Center
32		35625	15/11/2019	12.088	102 8.75	1995 Ketawa	KN1705		20010	капо	KN	01/03/2019	Functional	General Hospital
33		35730	15/11/2019	11.983488	363 8.62123	8087 Isamiya Babba	KN1708		20010	капо	KN	01/03/2019	Functional	Dispensary
34		35734	15/11/2019	12.1234	133 8.72	1/03 Mesar Tudu	KN1706		20010	капо	KN	01/03/2019	Functional	Dispensary
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We've listed the formatting errors you may have found in the above table, and have provided solutions to fix these issues:

- Redundant column (A) and row 1 and 2 containing merged cells and a text title
 Apply correction: delete redundant row and column
- Column headers for columns E and F have been merged. They also include spaces between words and unusual characters, such as brackets () and the degree symbol °
 - > Apply correction: unmerge cells; remove spaces and unusual characters
- The column header *Functional status* is too long (more than 10 characters) and contains extra space between words
 - > Apply correction: rename header to func_stats

Note that the data contained a range of cells highlighted in yellow. Excel cell formatting like this will not be maintained on export to CSV; therefore, unless it serves a continuing purpose in the Excel file, good practice suggests resetting all such cell formatting.



Your corrected worksheet should look as follows:

Image Image Image 8 8347 18/12 8 13160 15/11 5 13124 15/11 6 31466 15/11 7 44664 15/11 8 44665 15/11 10 35326 15/11 11 35326 15/11 12 35320 15/11 13 35320 15/11 16 35222 15/11 16 35222 15/11 17 35220 15/11 18 35236 15/11 19 35333 15/12 20 35244 15/12 21 35324 15/12 22 35344 15/12 23 35444 15/12 24 35374 15/12 25 35669 15/12 26 35574 15/12 27 35572 15/12	stamp a '12/2018 '1 '11/2019 1	Attitude 12.05 11.98907471 12.012756 11.992912 12.020503 12.04364537 11.983936 12.07749952 12.016541 12.037496 12.03974696 12.03917 12.026 12.039431	longitude 8.74 8.7655029 8.749386 8.712401 8.7826951 8.6233014 8.6277332 8.628572 8.6495877 8.6548987 8.6548987 8.6548987	wardname Ketawa Tumbau Gawo Tumbau Jogana Wangara Tsamiya Babba Zango Babawa Mesar Tudu Zango	wardcode KN1705 KN1709 KN1702 KN1709 KN1704 KN1704 KN1700 KN1701 KN1706 KN1705	Iganame Gezawa Gezawa Gezawa Gezawa Gezawa Gezawa Gezawa Gezawa	lgacode 20010 20010 20010 20010 20010 20010 20010 20010 20010	statename Kano Kano Kano Kano Kano Kano Kano	statecode KN KN KN KN KN KN KN	updated_on 01/03/2019 01/03/2019 01/03/2019 01/03/2019 01/03/2019 01/03/2019 01/03/2019	func_stats Functional Functional Functional Functional Functional	category Primary Health Center Dispensary Dispensary Dispensary Primary Health Center Primary Health Center	ownership State Primary Healthcare Development Agency State Primary Healthcare Development Agency State Primary Healthcare Development Agency Private	type Primary Primary Primary Primary	source eHA Polio eHA Polio eHA Polio eHA Polio eHA Polio	prmry_name Danja Primary Health Care Musko Health Post Tofa Health Post Tumbau Health Post Nana Nusaiba Clinic
2 8447 18,47 3 13,60 15,11 4 31,84 15,11 5 13,21 15,11 6 3466 15,11 7 3466 15,11 8 3466 15,11 9 35,155 15,11 13 35,200 15,11 13 35,200 15,11 13 35,200 15,11 13 35,200 15,11 14 35,200 15,11 15 35,220 15,11 16 35,220 15,11 18 35,220 15,11 18 35,220 15,11 18 35,220 15,11 20 35,244 15,11 21 35,234 15,11 22 35,244 15,11 23 35,344 15,11 24 35,257 15,11 25 35,469 15,11	'12/2018 '11/2019 1 '11/2019 '1 '11/2019 1 '11/2019 1 '11/2019 1 '11/2019 1 '11/2019 1 '11/2019 1 '11/2019 1 '11/2019 1 '11/2019 1 '11/2019 1 '11/2019 1 '11/2019 1 '11/2019 1 '11/2019 1	12.05 11.98907471 12.012756 11.992912 12.020503 12.04364537 11.983936 12.07749952 12.016541 12.03275242 12.0374696 12.0330917 12.026 12.03431	8.74 8.7655029 8.749386 8.81153 8.712401 8.7896951 8.6233014 8.62777332 8.628572 8.6495877 8.6548987 8.6548987 8.665915	Ketawa Tumbau Gawo Tumbau Jogana Wangara Tsamiya Babba Zango Babawa Mesar Tudu Zango	KN1705 KN1709 KN1702 KN1709 KN1704 KN1710 KN1708 KN1711 KN1701 KN1705	Gezawa Gezawa Gezawa Gezawa Gezawa Gezawa Gezawa Gezawa Gezawa	20010 20010 20010 20010 20010 20010 20010 20010 20010	Kano kano Kano Kano Kano Kano Kano	KN KN KN KN KN KN	01/03/2019 01/03/2019 01/03/2019 01/03/2019 01/03/2019 01/03/2019 01/03/2019	Functional Functional Functional Functional Functional Functional	Primary Health Center Dispensary Dispensary Dispensary Primary Health Center Primary Health Center	State Primary Healthcare Development Agency State Primary Healthcare Development Agency State Primary Healthcare Development Agency State Primary Healthcare Development Agency Private	Primary Primary Primary Primary Primary	eHA Polio eHA Polio eHA Polio eHA Polio eHA Polio	Danja Primary Health Care Musko Health Post Tofa Health Post Tumbau Health Post Nana Nusaiba Clinic
3 31360 5/3.1360 5/3.150 5 31368 5/3.17 5 6 31464 5/3.17 5 7 8 4466 5/3.17 8 4665 5/3.17 5 9 45305 5/3.11 10 35385 5/3.11 12 35200 15/1.11 13 35201 15/1.11 14 35220 15/1.11 15 352.22 15/1.11 16 352.22 15/1.11 17 352.20 15/1.11 18 352.23 15/1.12 19 352.33 15/1.12 20 352.44 15/1.12 21 352.34 15/1.12 22 352.44 15/1.12 23 354.44 15/1.12 24 352.37 15/1.12 25 35466 15/1.12 26 35596 15/1.12 27	'11/2019 1 '11/2019 ' '11/2019 ' '11/2019 ' '11/2019 ' '11/2019 ' '11/2019 ' '11/2019 ' '11/2019 ' '11/2019 ' '11/2019 ' '11/2019 ' '11/2019 ' '11/2019 ' '11/2019 ' '11/2019 ' '11/2019 '	11.98907471 12.012756 11.992912 12.020503 12.04364537 11.983936 12.07749952 12.016541 12.13275242 12.03974696 12.0330917 12.026 12.03431	8.7655029 8.749386 8.81153 8.712401 8.7896951 8.6233014 8.628572 8.628572 8.6495877 8.6548987 8.6615915	Tumbau Gawo Tumbau Jogana Wangara Tsamiya Babba Zango Babawa Mesar Tudu Zango	KN1709 KN1702 KN1709 KN1704 KN1710 KN1708 KN1711 KN1701 KN1705	Gezawa Gezawa Gezawa Gezawa Gezawa Gezawa Gezawa Gezawa	20010 20010 20010 20010 20010 20010 20010 20010	kano Kano Kano Kano Kano Kano Kano	KN KN KN KN KN	01/03/2019 01/03/2019 01/03/2019 01/03/2019 01/03/2019 01/03/2019	Functional Functional Functional Functional Functional	Dispensary Dispensary Dispensary Primary Health Center	State Primary Healthcare Development Agency State Primary Healthcare Development Agency State Primary Healthcare Development Agency Private	Primary Primary Primary Primary	eHA Polio eHA Polio eHA Polio eHA Polio	Musko Health Post Tofa Health Post Tumbau Health Post Nana Nusaiba Clinic
4 5 31348 15/11 6 3436 15/11 7 3464 15/11 8 3465 15/11 9 35185 15/11 9 35185 15/11 10 35185 15/11 112 35200 15/11 12 35200 15/11 13 35221 15/11 15 35220 15/11 16 35212 15/11 17 35203 15/11 18 35222 15/11 19 35233 15/11 20 35244 15/11 21 35234 15/11 22 35244 15/11 23 35344 15/11 24 35375 15/11 25 35469 15/11 26 35598 15/11 27 35574 15/11 28 35695 15/11	/11/2019 /11/2019 /11/2019 /11/2019 /11/2019 /11/2019 /11/2019 /11/2019 /11/2019 /11/2019 /11/2019 /11/2019 /11/2019	12.012756 11.992912 12.020503 12.04364537 11.983936 12.07749952 12.016541 12.13275242 12.03974696 12.0330917 12.026 12.093431	8.749386 8.81153 8.712401 8.6233014 8.627332 8.628572 8.6495877 8.6548987 8.6548987 8.6515915	Gawo Tumbau Jogana Wangara Tsamiya Babba Zango Babawa Mesar Tudu Zango	KN1702 KN1709 KN1704 KN1710 KN1708 KN1701 KN1701 KN1706 KN1701	Gezawa Gezawa Gezawa Gezawa Gezawa Gezawa Gezawa	20010 20010 20010 20010 20010 20010 20010	Kano Kano Kano Kano Kano Kano	KN KN KN KN KN	01/03/2019 01/03/2019 01/03/2019 01/03/2019 01/03/2019	Functional Functional Functional Functional	Dispensary Dispensary Primary Health Center	State Primary Healthcare Development Agency State Primary Healthcare Development Agency Private	Primary Primary Primary	eHA Polio eHA Polio eHA Polio	Tofa Health Post Tumbau Health Post Nana Nusaiba Clinic
5 5 5 5 5 5 5 5 5 5 5 5 5 5 7 7 8 4466 15/11 7 8 3 466 15/11 9 3 55 15/11 15 3 35 15/11 15 3 35 15/11 15 3 35 15/11 15 3 35 15/11 15 3 35 15/11 15 3 35 15/11 15 3 15/11 15 3 15/11 15 3 15/11 15 3 15/11 15 3 15/11 15 3 15/11 16 3 3 15/11 16 3 3 15/11 12 3 3 15/11 12 3 3 3 15/11 2 3 3 15/11 2 3 3 3 3 3 3 3 3 3	/11/2019 /11/2019 /11/2019 /11/2019 /11/2019 /11/2019 /11/2019 /11/2019 /11/2019 /11/2019 /11/2019 /11/2019	11.992912 12.020503 12.04364537 11.983936 12.07749952 12.016541 12.13275242 12.08974696 12.0330917 12.026 12.093431	8.81153 8.712401 8.7896951 8.6233014 8.6777332 8.628572 8.6495877 8.6548987 8.6515915 8.6515915	Tumbau Jogana Wangara Tsamiya Babba Zango Babawa Mesar Tudu Zango	KN1709 KN1704 KN1710 KN1708 KN1711 KN1701 KN1706	Gezawa Gezawa Gezawa Gezawa Gezawa Gezawa	20010 20010 20010 20010 20010 20010	Kano Kano Kano Kano Kano	KN KN KN KN	01/03/2019 01/03/2019 01/03/2019 01/03/2019	Functional Functional Functional	Dispensary Primary Health Center	State Primary Healthcare Development Agency Private	Primary Primary	eHA Polio eHA Polio	Tumbau Health Post Nana Nusaiba Clinic
6 3 (ale6) 5/1 7 3 (ale6) 15/1 8 3 (ale6) 15/1 9 3 (ale6) 15/1 9 3 (ale6) 15/1 10 3 (ale6) 15/1 11 3 (ale6) 15/1 12 3 (ale6) 15/1 13 3 (ale6) 15/1 14 3 (ale6) 15/1 15 3 (ale7) 15/1 16 3 (ale7) 15/1 17 8 (ale7) 15/1 18 3 (ale7) 15/1 19 3 (ale7) 15/1 20 3 (ale7) 15/1 21 3 (ale7) 15/1 22 3 (ale7) 15/1 23 3 (ale7) 15/1 24 3 (ale7) 15/1 25 3 (ale9) 15/1 26 3 (ale7) 15/1 28 3 (ale7) 15/1 29 3 (ale7)	/11/2019 /11/2019 1 /11/2019 1 /11/2019 1 /11/2019 1 /11/2019 /11/2019 /11/2019 /11/2019 /11/2019 /11/2019	12.020503 12.04364537 11.983936 12.07749952 12.016541 12.13275242 12.08974696 12.0330917 12.026 12.093431	8.712401 8.7896951 8.6233014 8.6277332 8.628572 8.6495877 8.6548987 8.6615915 8.673254	Jogana Wangara Tsamiya Babba Zango Babawa Mesar Tudu Zango	KN1704 KN1710 KN1708 KN1711 KN1701 KN1706	Gezawa Gezawa Gezawa Gezawa Gezawa	20010 20010 20010 20010 20010	Kano Kano Kano Kano	KN KN KN	01/03/2019 01/03/2019 01/03/2019	Functional Functional	Primary Health Center	Private	Primary	eHA Polio	Nana Nusaiba Clinic
8 44664 5/21 9 34665 15/21 9 35185 15/21 9 35305 15/21 11 35300 15/21 15 35201 15/21 15 35201 15/21 16 35220 15/21 17 35220 15/21 18 35231 15/21 19 35233 15/21 20 35224 15/21 21 35238 15/21 22 35244 15/21 23 35245 15/21 24 35238 15/21 25 35469 15/21 26 35596 15/21 27 35572 15/21 28 35546 15/21 29 35624 15/21 30 35878 15/21 31 3579 15/21	/11/2019 1 /11/2019 1 /11/2019 1 /11/2019 1 /11/2019 1 /11/2019 1 /11/2019 1 /11/2019 / /11/2019 / /11/2019 /	12.04364537 11.983936 12.07749952 12.016541 12.13275242 12.08974696 12.0330917 12.026 12.093431	8.7896951 8.6233014 8.6777332 8.628572 8.6495877 8.6548987 8.6615915 8.6615915	Wangara Tsamiya Babba Zango Babawa Mesar Tudu Zango	KN1710 KN1708 KN1711 KN1701 KN1706	Gezawa Gezawa Gezawa Gezawa Gezawa	20010 20010 20010 20010	Kano Kano Kano	KN KN	01/03/2019	Functional	Drimony Health Contor				
8 9 4466 15/11 10 35185 15/11 11 35185 15/11 12 35200 15/11 13 35185 15/11 14 35200 15/11 15 35210 15/11 15 35220 15/11 16 35220 15/11 17 35230 15/11 18 35222 15/11 19 35234 15/11 20 35244 15/11 21 35244 15/11 22 35244 15/11 23 35244 15/11 24 35571 15/11 25 35469 15/11 26 35578 15/11 28 35642 15/11 29 35624 15/11 29 35624 15/11 20 35625 15/11 30 35675 15/11 <td>/11/2019 /11/2019 1 /11/2019 1 /11/2019 1 /11/2019 /11/2019 /11/2019 /11/2019 /11/2019</td> <td>11.983936 12.07749952 12.016541 12.13275242 12.08974696 12.0330917 12.026 12.093431</td> <td>8.6233014 8.6777332 8.628572 8.6495877 8.6548987 8.6615915 8.672254</td> <td>Tsamiya Babba Zango Babawa Mesar Tudu Zango</td> <td>KN1708 KN1711 KN1701 KN1706</td> <td>Gezawa Gezawa Gezawa Gezawa</td> <td>20010 20010 20010</td> <td>Kano Kano</td> <td>KN</td> <td>01/03/2019</td> <td></td> <td>ernnary nearth center</td> <td>National Primary Healthcare Development Agency</td> <td>Primary</td> <td>Measles Campaign</td> <td>Sararin Gezawa Health Center</td>	/11/2019 /11/2019 1 /11/2019 1 /11/2019 1 /11/2019 /11/2019 /11/2019 /11/2019 /11/2019	11.983936 12.07749952 12.016541 12.13275242 12.08974696 12.0330917 12.026 12.093431	8.6233014 8.6777332 8.628572 8.6495877 8.6548987 8.6615915 8.672254	Tsamiya Babba Zango Babawa Mesar Tudu Zango	KN1708 KN1711 KN1701 KN1706	Gezawa Gezawa Gezawa Gezawa	20010 20010 20010	Kano Kano	KN	01/03/2019		ernnary nearth center	National Primary Healthcare Development Agency	Primary	Measles Campaign	Sararin Gezawa Health Center
9 9 94700 5/312 10 35185 15/11 11 35300 15/11 13 35201 15/11 14 35201 15/11 15 35212 15/11 16 35220 15/11 17 35220 15/11 18 35232 15/11 18 35238 15/11 18 35238 15/11 12 35244 15/11 23 35244 15/11 24 35294 15/11 25 35464 15/11 26 35571 15/11 27 35572 15/11 28 35546 15/11 29 35624 15/11 29 35624 15/11 301 35725 15/11	/11/2019 1 /11/2019 1 /11/2019 1 /11/2019 1 /11/2019 / /11/2019 / /11/2019 / /11/2019 /	12.07749952 12.016541 12.13275242 12.08974696 12.0330917 12.026 12.093431	8.6777332 8.628572 8.6495877 8.6548987 8.6615915 8.672254	Zango Babawa Mesar Tudu Zango	KN1711 KN1701 KN1706	Gezawa Gezawa Gezawa	20010 20010	Kano			Functional	Primary Health Center	National Primary Healthcare Development Agency	Primary	Measles Campaign	Makera Basic Health Center
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Part 4: Consolidate data from multiple worksheets into one

The table data across all worksheets should now be aligned and corrected and, as such, each worksheet could now easily be imported into GIS to generate individual datasets of health facilities (for each LGA), without any formatting issues. For this task, however, you are required to combine data from all eight (8) LGAs into a single dataset. A basic approach would be to manually copy the selected data from each worksheet and paste them into one worksheet. However, this can be time-consuming and prone to human error.

Exercise 4

In this exercise you'll learn how to consolidate data correctly using the **Append Query** from within the **Power Query Editor**.

Step 1:

- 1. If you have not done so already, save your .xlsx file and close the file
- 2. Restart Excel with a blank workbook
- 3. Go to Data > Get Data > From file > From Excel Workbook

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← → Sheet1 ⊕					



Step 2:

- 1. Navigate to your saved health facilities Excel file, and click **Import**
- 2. From the Power Query Navigator, tick Select multiple items
- Tick all of the LGA data worksheets, <u>except for</u> <u>Metadata</u>
- In the same Navigator window, click Load > Load To...

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💭 Tarauni	35203	15/11/2019	11.89884244	8.663032102	Yargaya
Ungogo	35206	15/11/2019	11.77507256	8.674129116	Dosan
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	35211	15/11/2019	11.71722127	8.684865928	Dabar Kwari
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- 5. Click Only Create Connection. Then click OK

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Back in your worksheet, the Queries & Connections panel displays the progress of your import.

At this stage, you only have connections to data on worksheets; you must complete a second stage in order to combine these data.



Step 3:

1. Go back to Data > Get Data and select Combine Queries > Append

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- 2. Once the Append window appears, click Three or more tables,
- 3. Select all tables, and click Add
- 4. Click OK



2 6

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Outline

The power query editor now builds your table; once it has concluded, it should report that your append table has 363 rows.

All that remains is to specify where to load the results of the query into a new worksheet.

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- 1. Click Close & Load,
- 2. Select Close & Load to...

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3. In the window that appears, click **Table** and **New** worksheet

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Power Query now compiles the table into a new worksheet and confirms that it is composed of 360 rows. The data are now compiled into a single table-ready for deeper investigation and subsequent importation into GIS.

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Note that Excel applies colored styling to the table by default. With regard to saving as CSV format, such styling is irrelevant and will not be retained in the CSV. If you wish to clear the styling, you can do so from the **Table Styles** section of the user ribbon.

It is important to validate the results of your query, so take a moment to check the data. Filtering on the *lganame* confirms that the table contains all eight (8) LGAs, correctly named with no duplicates.



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35228	15/11/2019	11.77968815	8.721780305	D	Kun	nbotso			20022	Kano	KN	01/03/2019	Functional
35246	15/11/2019	11.77229633	8.763639536	D	🗹 Nas	sarawa			20022	Kano	KN	01/03/2019	Functional
35466	15/11/2019	11.877842	8.628317	UI	🗹 Tara	uni			20022	Kano	KN	01/03/2019	Functional
35472	15/11/2019	11.80734616	8.79910493	D	- Ung	ogo			20022	Kano	KN	01/03/2019	Functional
35563	15/11/2019	11.83982	8.601726	D	i 🗹 (Bla	nks)			20022	Kano	KN	01/03/2019	Functional
35566	15/11/2019	11.89596499	8.620570334	Ya					20022	Kano	KN	01/03/2019	Functional
35568	18/12/2018	11.79794943	8.642285753	Ts		OK	(2)	a cal	20022	Kano	KN	01/03/2019	Functional
35574	15/11/2019	11.864045	8.70367	Di		UK	Car	icei	20022	Kano	KN	01/03/2019	Functional
35576	15/11/2019	11.83621484	8.730740535	Gano		KN0906	Dawakin	Kudu	20022	Kano	KN	01/03/2019	Functional
35692	15/11/2019	11.91278798	8.64879916	Jido		KN0908	Dawakin	Kudu	20022	Kano	KN	01/03/2019	Functional
(→	Dawakin T	ofa Dawak	in Kudu Ga	basawa	Geza	wa Kumbo	otso Na	ssaraw	/a Tara	uni Ungog	o Combin	edData Meta	adata 🤅

However, notice that there are blank cells (*Blanks*) listed under the *lganame* column. You may have noticed these missing values as you worked through the data in this task. These and other table cell errors/omissions will be addressed in **Task 3**.

It is important to ensure that the table data record remains complete outside of GIS. Although the objective is for the data to be imported to GIS and drive subsequent analysis, traceability is vital-one must be able to trace back to the raw data in case any issues arise.

For good practice, you should embed your "appended" worksheet back into the original Excel file, alongside its metadata and individual LGA data.

Step 5:

- 1. Reopen your original Excel data file: Kano_HealthFacilities_31Mar2024_int1.xlsx
- 2. Back in your appended data table, right-click on the worksheet named **Append1** and select **Move or Copy...** from the sub-menu

7	35090	15/11		lucent		11.85481215	8.529118942	Tanburawa	KN0909
8	35092	15/11		Insert		11.84732263	8.530283841	Tanburawa	KN0909
9	35103	15/11	民	<u>D</u> elete		11.86952098	8.536781725	Tanburawa	KN0909
10	35126	15/11	—	D		11.88159582	8.552826668	Gurjiya	KN0907
11	35171	15/11	E	<u>R</u> ename		11.842823	8.598307	Dawaki	KN0903
12	35181	15/11		Move or Copy		11.90924779	8.616618305	Yankatsari	KN0913
13	35203	15/11		NT 6 1		11.89884244	8.663032102	Yargaya	KN0914
14	35206	15/11	<u>.Q</u>	View Code		11.77507256	8.674129116	Dosan	KN0905
15	35208	15/11		Protect Sheet		11.87898492	8.681853087	Zogarawa	KN0915
16	35211	15/11		T C		11.71722127	8.684865928	Dabar Kwari	KN0901
17	35218	15/11		Lab Color	•	11.817365	8.696325	Gano	KN0906
18	35228	15/11		Hide		11.77968815	8.721780305	Dosan	KN0905
19	35246	15/11		-		11.77229633	8.763639536	Dosan	KN0905
20	35466	15/11		<u>U</u> nhide		11.877842	8.628317	Unguwar Duniya	KN0911
21	35472	15/11		Select All Sheets		11.80734616	8.79910493	Danbagina	KN0902
-	A	ppend1	She	eet1 (+)				- ·· : •	



- 3. Select your intermediate data file, as indicated, and click **OK**
- 4. Inspect the result in your file Kano_HealthFacilities_31Mar2024_int1.xlsx and confirm that the data have copied over correctly
- 5. Give the newly added worksheet a sensible name, such as *Combined Data*

Move or Copy		?	\times
Move selected sheets			
<u>I</u> o book:			
Kano_HealthFacilities_31Ma	r2024_Int1.xlsx		
Before sheet:			
Gabasawa			~
Gezawa			
Kumbotso			
Nassarawa			
Tarauni			
Ungogo			_
Metadata			
(move to end)			~
✓ <u>C</u> reate a copy			
	ОК	Ca	ncel

This is now your master spreadsheet; remember to **Save** your work. You can close the remaining workbook where you did the original append (no need to save).

	А	В	С	D	E	F	G	Н	I.	J	К
1	uniq_id 💌	timestamp 💌	latitude 🔹	longitude 💌	wardname 🔹	wardcode 💌	lganame 🔹	lgacode 💌	statename 💌	statecode 💌	updated_on 💌
2	13028	15/11/2019	11.83572	8.59633	Dawaki	KN0903	Dawakin Kudu	20022	Kano	KN	01/03/2019
3	34627	15/11/2019	11.67038329	8.677507377	Dabar Kwari	KN0901	Dawakin Kudu	20022	Kano	KN	01/03/2019
4	34646	06/12/2019	11.7745	8.76256	Dosan	KN0905	Dawakin Kudu	20022	kano	KN	01/03/2019
5	34656	15/11/2019	11.83932857	8.595583049	Dawaki	KN0903	Dawakin Kudu	20022	Kano	KN	01/03/2019
6	34657	18/12/2018	11.89984681	8.663469086	Yargaya	KN0914	Dawakin Kudu	20022	Kano	KN	01/03/2019
7	35090	15/11/2019	11.85481215	8.529118942	Tanburawa	KN0909	Dawakin Kudu	20022	Kano	KN	01/03/2019
8	35092	15/11/2019	11.84732263	8.530283841	Tanburawa	KN0909	Dawakin Kudu	20022	Kano	KN	01/03/2019
9	35103	15/11/2019	11.86952098	8.536781725	Tanburawa	KN0909	Dawakin Kudu	20022	Kano	KN	01/03/2019
10	35126	15/11/2019	11.88159582	8.552826668	Gurjiya	KN0907	Dawakin Kudu	20022	Kano	KN	01/03/2019
11	35171	15/11/2019	11.842823	8.598307	Dawaki	KN0903	Dawakin Kudu	20022	Kano	KN	01/03/2019
12	35181	15/11/2019	11.90924779	8.616618305	Yankatsari	KN0913	Dawakin Kudu	20022	Kano	KN	01/03/2019
13	35203	15/11/2019	11.89884244	8.663032102	Yargaya	KN0914	Dawakin Kudu	20022	Kano	KN	01/03/2019
14	35206	15/11/2019	11.77507256	8.674129116	Dosan	KN0905	Dawakin Kudu	20022	Kano	KN	01/03/2019
15	35208	15/11/2019	11.87898492	8.681853087	Zogarawa	KN0915	Dawakin Kudu	20022	Kano	KN	01/03/2019
16	35211	15/11/2019	11.71722127	8.684865928	Dabar Kwari	KN0901	Dawakin Kudu	20022	Kano	KN	01/03/2019
17	35218	15/11/2019	11.817365	8.696325	Gano	KN0906	Dawakin Kudu	20022	Kano	KN	01/03/2019
18	35228	15/11/2019	11.77968815	8.721780305	Dosan	KN0905	Dawakin Kudu	20022	Kano	KN	01/03/2019
19	35246	15/11/2019	11.77229633	8.763639536	Dosan	KN0905	Dawakin Kudu	20022	Kano	KN	01/03/2019
20	35466	15/11/2019	11.877842	8.628317	Unguwar Duniya	KN0911	Dawakin Kudu	20022	Kano	KN	01/03/2019
21	35472	15/11/2019	11.80734616	8.79910493	Danbagina	KN0902	Dawakin Kudu	20022	Kano	KN	01/03/2019
22	35563	15/11/2019	11.83982	8.601726	Dawaki	KN0903	Dawakin Kudu	20022	Kano	KN	01/03/2019
23	35566	15/11/2019	11.89596499	8.620570334	Yankatsari	KN0913	Dawakin Kudu	20022	Kano	KN	01/03/2019
24	35568	18/12/2018	11.79794943	8.642285753	Tsakuwa	KN0910	Dawakin Kudu	20022	Kano	KN	01/03/2019
25	35574	15/11/2019	11.864045	8.70367	Dawakiji	KN0904	Dawakin Kudu	20022	Kano	KN	01/03/2019
26	35576	15/11/2019	11.83621484	8.730740535	Gano	KN0906	Dawakin Kudu	20022	Kano	KN	01/03/2019
-	•	Dawakin Tofa	Dawakin Kudu	Gabasawa	Gezawa Kumb	ootso Nassa	rawa Tarauni	Ungogo	CombinedDa	ta Metadata	a (+)



Summary

Learning checklist

You have now completed the exercises in Task 2, demonstrating good practice in data preparation and management for GIS. You can confidently say you have:

- Created intermediate-level data reflecting changes to raw data
- Transposed health facility data from being organised by column to being organised by row
- Addressed anomalies concerning column headers (which would generate errors on import, if not corrected)
- Consolidated data spread across multiple tabs into a single worksheet via Excel power query

In the next task, you will inspect your data cell values by hunting for errors and other anomalies which could disrupt your subsequent GIS data import.

