



1

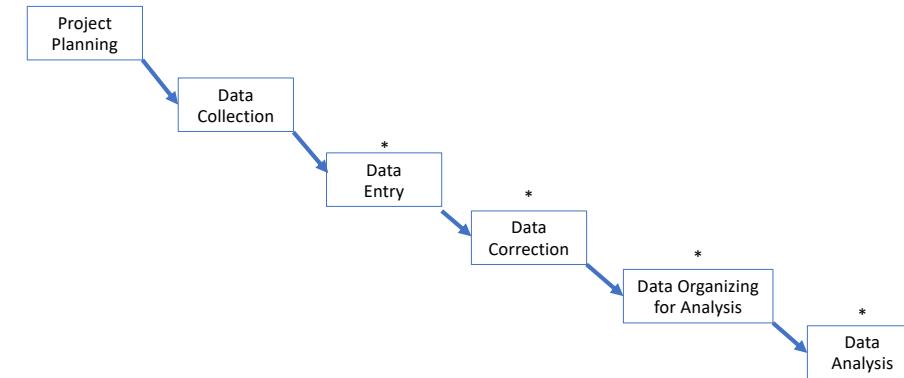
Efficient Data Collection

2



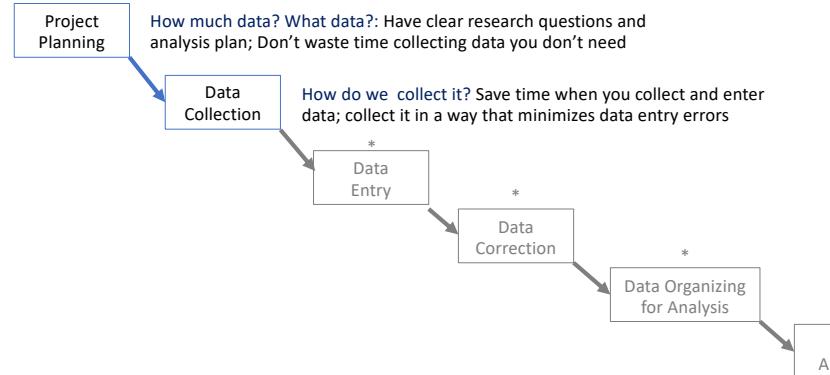
3

How can we be more efficient?



4

How can we be more efficient?



5

Why
does
this
matter?

6

1-10-100 Rule

“the cost of quality”

Data entry errors multiply costs exponentially according to the stage at which they are identified and corrected.

\$1: Price to check the data at first point of entry

\$10: Price to find and correct error when it is part of a batch

\$100: Cost of fixing the mistake when it reaches customers

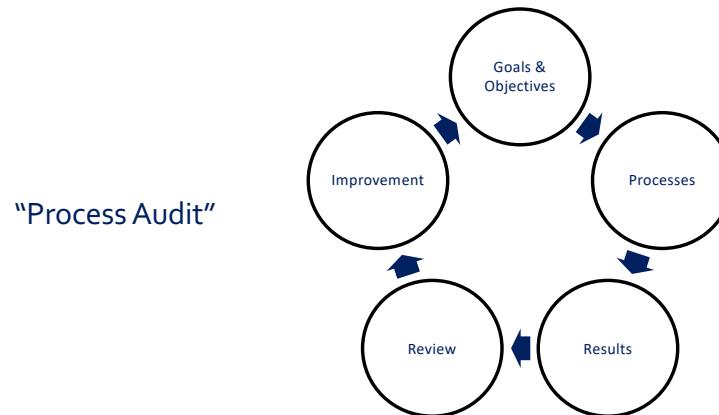
prevention is less costly than correction is less costly than failure

7

**Effort now saves
time, money, &
stress later.**

8

Where can errors be introduced?



9

1 "Population Genetics of Lizards in Florida's Longleaf Pine Savannas"

After collecting lizards in traps, animals are returned to the lab and euthanized. A piece of each animal's liver is removed, weighed using a scale, and stored in a plastic tube filled with ethanol. The data are later entered into a spreadsheet for analysis



Photo: FWC Fish & Wildlife Research Institute (CC BY-NC-ND 2.0)

10

2

"Diversity & Dynamics of Tropical Tree Communities"

Every tree in a 10-ha plot is marked with an ID number and identified to species. The diameter at breast height (DBH) of each tree is measured with a tape measure and the location is recorded with a GPS. The DBH, species, and location of each tree are recorded on datasheets; in the evening at the field station these data are entered in a spreadsheet on a laptop computer.



Photo: Life Forestry (CC BY-NC-ND 2.0)

11

3

"Economic Costs and Benefits of Diversified Crop Production in Rural Tanzania"

Villagers were interviewed to better understand their agricultural practices. In addition to answering questions asked by the researcher with the assistance of a translator, the participants were asked to make a *resource allocation map*, which is a drawing of the relative amount of their budget allocated to food, transportation, education, farming supplies, and other expenses.

The audio recordings of the interviews were translated and transcribed to MS Word documents by bilingual students from the university. The maps were brought back to university so researchers could compare each subject's responses during the interview with the budget allocations they drew on the map. Data about each interview (e.g., subject, location, translator, researcher conducting the interview) were also entered in a spreadsheet).



Photo: Nkumi Mtingwa/CIFOR (CC BY-NC-ND 2.0)

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What can I do?

1. Checklists
2. Automation
3. Asset Management
4. UX/UI

13

1. Checklists

Surgical Safety Checklist

World Health Organization | Patient Safety

This checklist is not intended to be comprehensive. Additions and modifications to fit local practice are encouraged.

Before induction of anaesthesia (with at least nurse and anaesthetist)	Before skin incision (with nurse, anaesthetist and surgeon)	Before patient leaves operating room (with nurse, anaesthetist and surgeon)
<p>Has the patient confirmed his/her identity, site, procedure, and consent?</p> <p><input type="checkbox"/> Yes</p> <p>Is the site marked?</p> <p><input type="checkbox"/> Yes</p> <p><input type="checkbox"/> Not applicable</p> <p>Is the anaesthesia machine and medication check complete?</p> <p><input type="checkbox"/> Yes</p> <p>Is the pulse oximeter on the patient and functioning?</p> <p><input type="checkbox"/> Yes</p> <p>Does the patient have a:</p> <p>Known allergy?</p> <p><input type="checkbox"/> No</p> <p><input type="checkbox"/> Yes</p> <p>Difficult airway or aspiration risk?</p> <p><input type="checkbox"/> No</p> <p><input type="checkbox"/> Yes, and equipment/assistance available</p> <p>Risk of >500ml blood loss (7ml/kg in children)?</p> <p><input type="checkbox"/> No</p> <p><input type="checkbox"/> Yes, and two IVs/central access and fluids planned</p>	<p>Confirm all team members have introduced themselves by name and role.</p> <p>Confirm the patient's name, procedure, and where the incision will be made.</p> <p>Has antibiotic prophylaxis been given within the last 60 minutes?</p> <p><input type="checkbox"/> Yes</p> <p><input type="checkbox"/> Not applicable</p> <p>Anticipated Critical Events</p> <p>To Surgeon:</p> <p><input type="checkbox"/> What are the critical or non-routine steps?</p> <p><input type="checkbox"/> How long will the case take?</p> <p><input type="checkbox"/> What is the anticipated blood loss?</p> <p>To Anaesthetist:</p> <p><input type="checkbox"/> Are there any patient-specific concerns?</p> <p>To Nursing Team:</p> <p><input type="checkbox"/> Has sterility (including indicator results) been confirmed?</p> <p><input type="checkbox"/> Are there equipment issues or any concerns?</p> <p>Is essential imaging displayed?</p> <p><input type="checkbox"/> Yes</p> <p><input type="checkbox"/> Not applicable</p>	<p>Nurse Verbally Confirms:</p> <p><input type="checkbox"/> The name of the procedure</p> <p><input type="checkbox"/> Completion of instrument, sponge and needle counts</p> <p><input type="checkbox"/> Specimen labelling (read specimen labels aloud, including patient name)</p> <p><input type="checkbox"/> Whether there are any equipment problems to be addressed</p> <p>To Surgeon, Anaesthetist and Nurse:</p> <p><input type="checkbox"/> What are the key concerns for recovery and management of this patient?</p>

Revised 1 / 2009 © WHO, 2009

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 AIRBUS A380		NORMAL CHECKLIST	
			
BEFORE START		APPROACH	
COCKPIT PREP	COMPLETE (BOTH)	BRIEFING	CONFIRMED
GEAR PINS AND COVERS	ON / AUTO	CABIN	NOTIFY
SIGNS	ON / AUTO	SEAT BELTS	ON
ARMED	ON	BARO REF.	SET
FUEL QUANTITY	XG. / BALANCE	MDA / DH	SET (BOTH)
TO DATA	SET	ENG MODE SEL	AD ROLL
BARO REF.	SET		
WINDOWS / DOORS	CLOSED / ARMED (BOTH)	LANDING	
BEACON	ON	CABIN	SECURED FOR LANDING
MOBILE PHONE	OFF POSITION	A/T	SPEED / OFF
THRUST LEVERS	idle	GO AROUND ALT	FT SET
PARKING BRAKE	SET	CABIN READY	
BUDDER TRIM	ZERO	L/G DOWN	
AFTER START		.SIGNS ON	
ANTICE.	AS ROLL	SPUNS ARM	
EICAS STATUS	ON	FLAPS SET	
PITCH TRIM	SET		
TRANSPONDER			
ECAM MEMO	TAKOFF NO BLUE		
CABIN	SECURED FOR TAKEOFF		
ENG MODE SEL	AS ROLL		
TCAS	TA / RA		
PACKS	AS ROLL		
BARO REF.	(Both) STANDARD SET		
BEFORE TAKEOFF		PARKING	
FLT CTL.	CHECKED (BOTH)	APU BLEED	AS ROLL
FLT INSTRUMENTS	CHECKED (BOTH)	TAXI VIDEO	AS ROLL
BRIEFING	ON / AUTO	ENGINE	OFF
FLAPS SETTING	CONF (BOTH)	SEAT BELTS	OFF
FMA & TAKEOFF DATA	READ (PF)	DOOR	ARMED
TRANSPO	CHECKED (PF)	FUEL PUMPS	OFF
ECAM MEMO	SET	PARK BRK AND CHOCKS	AS ROLL
CABIN	TAKOFF NO BLUE	MOBILE PHONE	ON
ENG MODE SEL	SECURED FOR TAKEOFF	TRANSPONDER	STBY 2000
TCAS	TA / RA	RADAR / PWS	OFF
PACKS	AS ROLL	Consider HEAVY RAIN	
BARO REF.	(Both) STANDARD SET	EXTRACT.	OVRD
AFTER TAKEOFF		SECURING THE AIRCRAFT	
LANDING GEAR	UP	PILOT	OFF
FLAPS	RETRACTED	OXYGEN	OFF
PACKS 1+2	ON	APU BLEED	OFF
BARO REF.	(Both) STANDARD SET	EMER EXIT LT	OFF
		NO SMOKING	OFF
		APU AND BAT	OFF
Consider COLD WEATHER			

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NEW EMPLOYEE CHECKLIST			
Instructions: Complete this form for each new employee, before they begin their first day of work. Submit this form and the application for employment to the personnel manager. No new employee may actually start working until the two completed forms have been received by the personnel manager.			
Name of Employee _____	Date Hired _____	Job Description _____	Department _____
Rate of Pay \$ _____ per _____	Interviewed and Hired by _____		
THIS SECTION TO BE COMPLETED BY THE DEPARTMENT HEAD			
Requirement	Completed or Explained	Date	Initials
Explained Payday Schedule	<input type="checkbox"/>		
Explained Health Insurance Plan, Policies	<input type="checkbox"/>		
Explained Sick Leave Policy	<input type="checkbox"/>		
Explained Paid Vacation Policy	<input type="checkbox"/>		
Explained Policy Regarding Punctuality	<input type="checkbox"/>		
Explained Dress Code	<input type="checkbox"/>		
Explained Employee Purchase Policy	<input type="checkbox"/>		
Explained Payroll Advances Policy	<input type="checkbox"/>		
Explained Periodic Performance Reviews	<input type="checkbox"/>		
Explained Citizenship/Work Permit Requirements	<input type="checkbox"/>		
New Employee Read and Signed Company Policy Manual	<input type="checkbox"/>		
Employment Application/Resume Attached	<input type="checkbox"/>		
THIS SECTION TO BE COMPLETED BY THE PERSONNEL MGR			
Requirement	Completed or Explained	Date	Initials
Completed W-4 Number of Withholdings	<input type="checkbox"/>		
Completed I-9 Work Eligibility Form	<input type="checkbox"/>		
Asked if Questions on Any Policy	<input type="checkbox"/>		
Administered Pre-Employment Test	<input type="checkbox"/>		
Pre-Employment Physical Completed	<input type="checkbox"/>		
Approved by Personnel Manager		Date _____	

Page 100, Previous

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2. Automation



IFTTT

<https://ifttt.com/>

16

The image shows two side-by-side screenshots. On the left is a screenshot of the Wikipedia page for 'List of countries by Human Development Index'. It features a sidebar with various links like 'Man page', 'Contests', and 'Recent changes'. The main content includes a map of the world color-coded by HDI category (High, Medium, Low) and a detailed description of the index. On the right is a screenshot of a UNDP report titled 'Human Development Report 2020' showing the 'Human Development Index (HDI) 2020' table. The table lists 16 countries with their 2019 HDI values, growth rates, and changes over five years.

Rank	Nation	2019 data (2020 report) ^[2]	Change over 5 years (2014) ^[3]	HDI	2019 data (2020 report) ^[2]	Average annual growth (2010–2019) ^[4]
1	Norway	0.957	▲ 0.20%		0.957	▲ 0.20%
2	Ireland	0.955	▲ 0.65%		0.955	▲ 0.65%
3	Switzerland	0.955	▲ 0.16%		0.955	▲ 0.16%
4	Hong Kong	0.949	▲ 0.54%		0.949	▲ 0.62%
5	Iceland	0.949	▲ 0.62%		0.949	▲ 0.62%
6	Germany	0.947	▲ 0.24%		0.947	▲ 0.24%
7	Sweden	0.945	▲ 0.41%		0.945	▲ 0.41%
8	Australia	0.944	▲ 0.17%		0.944	▲ 0.17%
9	Netherlands	0.944	▲ 0.32%		0.944	▲ 0.32%
10	Denmark	0.940	▲ 0.28%		0.940	▲ 0.28%
11	Finland	0.938	▲ 0.26%		0.938	▲ 0.26%
12	Singapore	0.938	▲ 0.35%		0.938	▲ 0.35%
13	United Kingdom	0.932	▲ 0.24%		0.932	▲ 0.24%
14	Belgium	0.931	▲ 0.25%		0.931	▲ 0.25%
15	New Zealand	0.931	▲ 0.30%		0.931	▲ 0.30%
16	Canada	0.929	▲ 0.34%		0.929	▲ 0.34%

17

Open Google Sheets

Enter the function below:

Be sure "URL" and the word 'table' have quotes (" ") around them.

The number 1 = first table on the page.

```
=ImportHtml("https://en.wikipedia.org/wiki/List_of_countries_by_Human_Development_Index", "table", 1)
```

The image shows a screenshot of a Google Sheets spreadsheet titled 'Untitled spreadsheet'. The first sheet contains the imported data from the Wikipedia page. A red arrow points from the formula bar to the cell A1, where the formula '=ImportHtml("https://en.wikipedia.org/wiki/List_of_countries_by_Human_Development_Index", "table", 1)' is entered. The spreadsheet shows the first few rows of the HDI table, including columns for Rank, Nation, 2019 data, Change over 5 years, and HDI.

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3. Asset Management

Save time and reduce errors by labeling items (e.g., vials, sheets, forms) and “fill out” forms in advance.



19

4. UX/UI

Save time and reduce errors by formatting forms to speed up data collection, minimize errors, and streamline data entry.

[Bisits Bullen, Piroska. How to design survey forms for quick data entry.](#)

[Coyle, Andrew. "Form design best practices."](#)

KonnektConference

Online Event Registration

First Name	Last Name	
<input type="text"/>	<input type="text"/>	
Email Address		
<input type="text"/>		
Address Line 1		
<input type="text"/>		
Address Line 2		
<input type="text"/>		
City	State	Zip Code
<input type="text"/>	<input type="text"/>	<input type="text"/>

20

 <p>C W A C COORDINATED WATERBIRD COUNTS (CWAC forms part of Wetland International's African Waterbird Census Programme)</p>																																																					
SITE DATA COLLECTION FORM																																																					
<p>Please return this form to: CWAC, Animal Demography Unit, University of Cape Town, Rondebosch, 7701. Or email to genic@uct.ac.za. For assistance with filling in the form, please refer to CWAC Information Sheet Number 8.</p>																																																					
NAME OF SITE:																																																					
Degrees-minute-seconds <input type="checkbox"/> Decimal degrees <input type="checkbox"/> Deg. & decimal minutes <input type="checkbox"/> GPS setting S E S E S E S E S E E S E S E S E S E S																																																					
WGS-84 datum HGM94 Capetown Clarke 1880																																																					
PROVINCE (underline applicable option):																																																					
LP MP GP NW FS KN EC NC WC																																																					
DATE OF SURVEY:																																																					
ADU OBSERVER CODE COMPILER'S DETAILS (name, address, telephone, email etc.)																																																					
NEAREST TOWN:																																																					
CONSERVATION MEASURES SURROUNDING THE SITE / WETLAND (underline where applicable option)																																																					
Conservation status: 1 - Protected 2 - Partially protected 3 - Unprotected 4 - Unknown																																																					
Site / Management status (underline applicable option or add additional):																																																					
Part of a National Park • Part of a Provincial Reserve • Part of a Local / Municipal Reserve • Private Property • Registered Conservancy •																																																					
Name of protected area / farm / private land etc:																																																					
Current land use surrounding site (e.g. agriculture, grazing, hunting, urban – indicate dominant type):																																																					
Ownership / Management of site (name, email and telephone number):																																																					
Is it within a Ramsar Bird Area (name):																																																					
WETLAND SITE CLASSIFICATION (underline the relevant options and indicate the % make-up of each)																																																					
<table border="1"> <thead> <tr> <th>Wetland Classification</th> <th>(%)</th> <th>Wetland Classification</th> <th>(%)</th> </tr> </thead> <tbody> <tr> <td>Marine / Coastal Wetlands</td> <td></td> <td>Seasonal rivers / streams (inc. waterfalls)</td> <td></td> </tr> <tr> <td>Marine shallow marine waters (<5m at low tide)</td> <td></td> <td>Permanent freshwater lakes (cf)ha) (inc. oxbow lakes)</td> <td></td> </tr> <tr> <td>Rocky shores</td> <td></td> <td>Permanent freshwater marshes (cf)ha) (inc. swamps)</td> <td></td> </tr> <tr> <td>Sandy or pebbly shores (inc. sand banks and dunes)</td> <td></td> <td>Seasonal freshwater marshes (cf)ha) (inc. vleis)</td> <td></td> </tr> <tr> <td>Groundwater waters (permanent water of all systems)</td> <td></td> <td>Permanent freshwater swamps (cf)ha) (inc. fens)</td> <td></td> </tr> <tr> <td>Intertidal mud, sand and salt flats</td> <td></td> <td>Seasonal brackish / saline (shallow lakes (inc. flats)</td> <td></td> </tr> <tr> <td>Intertidal marshes (inc. saltmarsh and freshwater)</td> <td></td> <td>Permanent brackish / saline marshes (inc. pools and pools)</td> <td></td> </tr> <tr> <td>Intertidal waters (inc. estuaries, marineine bays)</td> <td></td> <td>Seasonal brackish / saline waters (inc. pools and pools)</td> <td></td> </tr> <tr> <td>Coastal brackish / saline lagoons</td> <td></td> <td>Freshwater shrub-dominated wetland</td> <td></td> </tr> <tr> <td>Coastal freshwater lagoons</td> <td></td> <td>Freshwater tree-dominated wetland (inc. swamp forest)</td> <td></td> </tr> <tr> <td>Intertidal freshwater</td> <td></td> <td>Freshwater scrubs and grasses</td> <td></td> </tr> <tr> <td>Permanent rivers / streams (inc. waterfalls)</td> <td></td> <td>Freshwater rivers and canals</td> <td></td> </tr> </tbody> </table>		Wetland Classification	(%)	Wetland Classification	(%)	Marine / Coastal Wetlands		Seasonal rivers / streams (inc. waterfalls)		Marine shallow marine waters (<5m at low tide)		Permanent freshwater lakes (cf)ha) (inc. oxbow lakes)		Rocky shores		Permanent freshwater marshes (cf)ha) (inc. swamps)		Sandy or pebbly shores (inc. sand banks and dunes)		Seasonal freshwater marshes (cf)ha) (inc. vleis)		Groundwater waters (permanent water of all systems)		Permanent freshwater swamps (cf)ha) (inc. fens)		Intertidal mud, sand and salt flats		Seasonal brackish / saline (shallow lakes (inc. flats)		Intertidal marshes (inc. saltmarsh and freshwater)		Permanent brackish / saline marshes (inc. pools and pools)		Intertidal waters (inc. estuaries, marineine bays)		Seasonal brackish / saline waters (inc. pools and pools)		Coastal brackish / saline lagoons		Freshwater shrub-dominated wetland		Coastal freshwater lagoons		Freshwater tree-dominated wetland (inc. swamp forest)		Intertidal freshwater		Freshwater scrubs and grasses		Permanent rivers / streams (inc. waterfalls)		Freshwater rivers and canals	
Wetland Classification	(%)	Wetland Classification	(%)																																																		
Marine / Coastal Wetlands		Seasonal rivers / streams (inc. waterfalls)																																																			
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Intertidal freshwater		Freshwater scrubs and grasses																																																			
Permanent rivers / streams (inc. waterfalls)		Freshwater rivers and canals																																																			

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Line-Transect Data Sheet					
Date:	Survey Site:		Transect #:		
Weather:	Start Time:		End Time:		
Investigator(s):	Target Species:		Transect Direction:		
Observation	Number of Individuals	Age/Sex	Sighting Distance	Sighting Angle	Comments

Measuring
and
Monitoring
Biological
Diversity
Standard Methods
Mammals



Figure 5. Suggested format for a standardized line-transect

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C W A C
COORDINATED WATERBIRD COUNTS
(CWAC forms part of Wetland International's African Waterbird Census Programme)

SITE DATA COLLECTION FORM

Please return this form to: CWAC, Animal Demography Unit, University of Cape Town, Rondebosch, 7701. Or email to cwac@adu.org.za. For assistance with filling in the form, please refer to CWAC Information Sheet number 8

NAME OF SITE:	SITE CODE:
Degrees-minutes-seconds or Decimal degrees or Deg. & decimal minutes	GPS setting
[S] <input type="text"/> ° <input type="text"/> ' <input type="text"/> " [S] <input type="text"/> ° <input type="text"/> ' . <input type="text"/> " [S] <input type="text"/> ° <input type="text"/> ' . <input type="text"/> "	Cape datum Clarke 1880 <input type="checkbox"/>
[E] <input type="text"/> ° <input type="text"/> ' <input type="text"/> " [E] <input type="text"/> ° <input type="text"/> ' . <input type="text"/> " [E] <input type="text"/> ° <input type="text"/> ' . <input type="text"/> "	WGS-84 datum HBH94 <input type="checkbox"/>
PROVINCE (underline applicable option)	DATE OF SURVEY:
LP MP GP NW FS KN EC NC WC	ADU OBSERVER CODE:
NEAREST TOWN:	COMPILERS DETAILS (name, address, telephone, email etc.):
CONSERVATION MEASURES SURROUNDING THE SITE / WFTI AND (underline applicable option)	

23

1. Reduce Cognitive Overload (aka keep it simple)
2. Write as little as possible

C W A C
COORDINATED WATERBIRD COUNTS
(CWAC forms part of Wetland International's African Waterbird Census Programme)

SITE DATA COLLECTION FORM

Please return this form to: CWAC, Animal Demography Unit, University of Cape Town, Rondebosch, 7701. Or email to cwac@adu.org.za. For assistance with filling in the form, please refer to CWAC Information Sheet number 8

NAME OF SITE:	SITE CODE:		
Degrees-minutes-seconds or Decimal degrees or Deg. & decimal minutes	GPS setting		
[S] <input type="text"/> ° <input type="text"/> ' <input type="text"/> " [S] <input type="text"/> ° <input type="text"/> ' . <input type="text"/> " [S] <input type="text"/> ° <input type="text"/> ' . <input type="text"/> "	Cape datum Clarke 1880 <input type="checkbox"/>		
[E] <input type="text"/> ° <input type="text"/> ' <input type="text"/> " [E] <input type="text"/> ° <input type="text"/> ' . <input type="text"/> " [E] <input type="text"/> ° <input type="text"/> ' . <input type="text"/> "	WGS-84 datum HBH94 <input type="checkbox"/>		
PROVINCE (underline applicable option)	DATE OF SURVEY:		
LP MP GP NW FS KN EC NC WC	ADU OBSERVER CODE:		
NEAREST TOWN:	COMPILERS DETAILS (name, address, telephone, email etc.):		
CONSERVATION MEASURES SURROUNDING THE SITE / WFTL (underline applicable option)			
Conservation status: 1 - Protected 2 - Partially protected 3 - Unprotected 4 - Unknown			
Site / Management status (underline applicable option or add additional)			
<ul style="list-style-type: none"> • Part of a National Park • Part of a Provincial Reserve • Part of a Municipal Reserve • Part of a Private Reserve • Private Property • Private Land • State Land • Municipal Land • Mining Property 			
Name of protected area / farm / private land etc:			
Current land use surrounding site (e.g. agriculture, grazing, hunting, urban – indicate dominant type):			
Ownership / Management of site (name, email and telephone number):			
Is it a Ramsar site (name):			
Is it within an Important Bird Area (name):			
WETLAND / SITE CLASSIFICATION (underline the relevant options and indicate the % make-up of each)			
Wetland classification	(%)	Wetland classification	(%)
Marine wetlands		Terrestrial wetlands (inc. saltmarshes)	
Permanent shallow marine waters (cdm at low tide)		Permanent freshwater lakes (cdm) (inc. oobore lakes)	
Rocky marine shores (inc. cliffs and offshore islands)		Seasonal freshwater lakes (cdm) (inc. floodplain lakes)	
Sandstone dune systems		Temporary freshwater lakes (cdm)	
Estuarine waters (permanent water of est. systems)		Seasonal freshwater marshes (cdm) (inc. vleis)	
River mouth		Permanent brackish / saline / affluvial lakes	
Groundwater, land or salt flats		Groundwater, land or salt flats	
Intertidal marshes (inc. salt, brackish and freshwater)		Permanent brackish / saline marshes (inc. vleis and pools)	
Groundwater, land or salt flats		Groundwater, land or salt flats	
Coastal brackish / saline lagoons		Freshwater shrub-dominated wetland	
Coastal freshwater lagoons		Freshwater tree-dominated wetland (inc. swamp forest)	
Groundwater, land or salt flats		Freshwater swamps and vleis	
Permanent rivers / streams (inc. waterfalls)			

24

Use labels & keep them short...

My email address is:	Email
<input type="text"/>	<input type="text"/>
My email password is:	Password
<input type="text"/>	<input type="text"/>
✖ Bad practice	
✓ Alternative	

25

Be careful with the location of input labels to avoid mistakes

Poor alignment leads to filling out forms incorrectly

Label	<input type="text"/>
<input type="text"/>	Label
Label	<input type="text"/>
<input type="text"/>	Label
Label	<input type="text"/>
<input type="text"/>	Label
✖ Bad practice	
✓ Alternative	

26

...and pay attention to where you put the labels

Immigration and Naturalization Service
Form I-94W (05-29-91) - Arrival Record
VISA WAIVER

1. Family Name	2. First (Given) Name	3. Birth Date (day/month)
4. Country of Citizenship	5. Sex (male or female)	
6. Passport Number	7. Airlines and Flight Number	
8. Country where you live	9. City Where you boarded	
10. Address While in the United States (Number and Street)		
11. City and State		

Government Use Only

Figure 17 — Part of a US Immigration form: a high error rate caused by faulty grid design.

Immigration and Naturalization Service
Form I-94W (05-29-91) - Arrival Record
VISA WAIVER

1. Family Name	2. First (Given) Name	3. Birth Date (day/month)
4. Country of Citizenship	5. Sex (male or female)	
6. Passport Number	7. Airlines and Flight Number	
8. Country where you live	9. City Where you boarded	
10. Address While in the United States (Number and Street)		
11. City and State		

Government Use Only

Figure 18 — A better approach: completing the box would solve the problem

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Use the appropriate input type and tag...

Radio Button vs. Check Box

Was this article helpful?

Yes

No

Comments

This article was good and I would like to learn more.

Don't

Was this article helpful?

Yes

No

Comments

This was a good article and I would like to learn more.

Do

28

Use the appropriate input type and tag...and format them in helpful ways

Blanks vs. Fill-in Boxes (narrow, wide, height)

Circling Options vs Check Boxes (distance between)

Likert scale options (vertical vs. horizontal, direction of impact, words vs. numbers)

Options to constrain errors vs. Unknown Results

The form includes:

- A question "Are you a military Veteran?" with "Yes" and "No" radio buttons.
- A text input field for "If Yes, Dates of Active Duty:" followed by "to" and another text input field.
- A text input field for "M? D? Y?"
- A grid for "How often is the trash emptied in the following areas?" with columns: Never, Rarely, Sometimes, Always, N/A. Rows include Offices, Classrooms, Laboratories, Restrooms, Common areas/tobacco, and Cafeteria/kitchen/breakrooms.
- A Likert scale for "Blue is a great colour" with five options: Strongly disagree, Disagree, Neither agree nor disagree, Agree, Strongly agree. The "Agree" option is selected.
- A Likert scale for "Green is a great colour" with five options: Strongly disagree, Disagree, Neither agree nor disagree, Agree, Strongly agree. The "Disagree" option is selected.
- A Likert scale for "Purple is a great colour" with five options: Strongly disagree, Disagree, Neither agree nor disagree, Agree, Strongly agree. The "Neither agree nor disagree" option is selected.
- A Likert scale for "Yellow is a great colour" with five options: Strongly disagree, Disagree, Neither agree nor disagree, Agree, Strongly agree. The "Neither agree nor disagree" option is selected.
- A text input field for "Circle last year of school completed: 6 7 8 9 10 11 12 13 14 15 16 17 18".
- A text input field for "Circle the highest degree earned: High School Diploma GED Certificate AA BD MD PHD Other".

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Forms should be one column...

One-column forms are more comfortable to scan and conform better to mobile displays. Multiple columns can strain a user and cause them to skip fields accidentally.

The form illustrates two layout approaches:

- Bad practice:** A row of three separate text input fields labeled "Label" above them. This is marked with a red asterisk (*) and the text "Bad practice".
- Alternative:** A row of three text input fields labeled "Label" above them. This is marked with a green checkmark and the text "Alternative".

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...Except when multi-column makes sense

Fields that logically go together should be inline

First name	Middle initial	Last name	
Address	Address 2	First name MI Last name	
Zip code	Address	City	
City	Address 2	State	
State	Zip code	City	State

✖ Bad practice

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Group related fields

Filled out faster and reduces cognitive overload

Personal		
First name	MI	Last name
Email	Email	
Phone	Phone	
Address	Address	
Address 2	Address 2	
Zip code	City	State
Zip code	City	State

✔ Alternative

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AVOID ALL CAPS

All caps make things hard and tiring to read

FULL NAME

Full name

EMAIL

Email

PASSWORD

Password

 Bad practice

 Alternative

33

For online forms: Show all options if < 6 (unless space is limited)

Dropdown selector requires 2 clicks

Political affiliation

Select

- Democrat
- Republican
- Libertarian
- Green
- Other

Political affiliation

- Democrat
- Republican
- Libertarian
- Green
- Other

 Don't

 Do

34

Number questions and responses

How many years of school did you complete? (select only one)

- None
- Grade 1-5
- Grade 6-9
- Grade 10-12
- College

5. How many years of school did you complete? (select only one)

- 1 None
- 2 Grade 1-5
- 3 Grade 6-9
- 4 Grade 10-12
- 5 College

5. តើរួចបានទូលាករណីនៅក្នុងតិចនៅក្នុងខេត្ត? (ស្ថាមពីរឿងយកដីជីថិកនៅទេរ)

- 1 មិនមានពីរឿង
- 2 ត្រូវកែទៅ-៥
- 3 ត្រូវកែទៅ-៥
- 4 ត្រូវកែទៅ១០-១៥
- 5 មហាផីរឿងលម្អិត

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Use Formatting to guide the data collectors

Avoid 2x-sided sheets

Grey bars separate sections

All answers are aligned down the page

Give each sheet a unique ID number

A light grey table is used to separate questions

Women Living with HIV Support Project
Needs Assessment Survey
ID: _____

PERSONAL DETAILS

1. How old are you? _____
2. What is your marital status? (select only one)
 - 1 Single
 - 2 Married
 - 3 Divorced
3. Is your husband alive?
 - 1 Yes
 - 2 No
4. How many children do you have? _____
5. How many years of school did you complete? (select only one)
 - 1 None
 - 2 Grade 1-5
 - 3 Grade 6-9
 - 4 Grade 10-12
 - 5 College

SUPPORT SERVICES

6. Where are you go for your first HIV test? (select only one)
 - 1 Private clinic
 - 2 Public clinic
 - 3 Hospital
7. Did you receive any social support in the last two years? (select all that apply)
 - 1 Food
 - 2 Household materials
 - 3 Health care services
 - 4 Shelter
 - 5 Clothing or other in-kind support
 - 6 Other
8. How would you rate the following government services in your area?

1 Terrible	2 Poor	3 Average	4 Good	5 Excellent	6 Don't know
a) Health centre	b) Hospital	c) School	d) Police		

Add Collector info

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1. Reduce Cognitive Overload (aka keep it simple)
2. Write as little as possible

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Assignment

1. Redo your paper data form
2. Create a Google Form to enter the data
3. Send me:
 - a. the original form
 - b. the revised one
 - c. A link to the google form
4. If you don't have one, you can do the assignment with the Line Transect Sheet"

Line-Transect Data Sheet					
Date	Survey Site	Start Time	End Time	Transect #	
Weather					
Investigator(s)		Target Species		Transect Direction:	
Observation	Number of Individuals	Age/Sex	Sighting Distance	Sighting Angle	Comments

Figure 5. Suggested format for a standardized line-transect data sheet

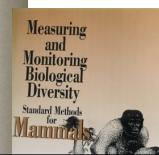
38

Line-Transect Data Sheet

Date: _____ Survey Site: _____ Transect #: _____
Weather: _____ Start Time: _____ End Time: _____
Investigator(s): _____ Target Species: _____ Transect Direction: _____

Observation	Number of Individuals	Age/Sex	Sighting Distance	Sighting Angle	Comments

Figure 5. Suggested format for a standardized line transect.



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Chapter 3 Participant Observation 

Figure 3.2 Village Assessment Form Date: Geographic Information Province: _____ District: _____ Village: _____ MGRS: _____ Latitude: _____ Longitude: _____ Notes/Comments: Demography Est. Population: _____ Est. Number of Houses: _____ Avg. Family Size: _____ Ethnic Groups: _____ Tribes Present: _____ Notes/Comments: Infrastructure & Services Education: _____ Health: _____ Water Sources: _____ Type of Irrigation: _____ Government: _____ Electricity: _____ Communication: _____ Transportation: _____ Other Services & Infrastructure: _____ Infrastructure & Services Shared with Other Villages (schools, wells, clinics, etc.): _____ Notes/Comments: https://www.sagepub.com/sites/default/files/upm-binaries/48454_ch_3.pdf <small>(Continued)</small>	GENERIC APPLICATION FOR EMPLOYMENT <small>(Please ready and complete all blanks)</small> Provided by Iowa Workforce Development for: _____ Date: _____ <small>IWD is an Equal Opportunity Employer/Program Auxiliary aids and services are available upon request to individuals with disabilities.</small> PERSONAL Full Name: _____ First _____ Middle Initial _____ Last _____ Current Address: _____ Number _____ Street _____ City _____ State _____ Zip _____ Telephone Number: _____ (_____) _____ Social Security Number: _____ <small>Are you 18 years of age or older? Yes <input type="checkbox"/> No <input type="checkbox"/> Are you a military Veteran? Yes <input type="checkbox"/> No <input type="checkbox"/> Are you legally able to work in the United States? Yes <input type="checkbox"/> No <input type="checkbox"/> If Yes, Dates of Active Duty: _____ to _____</small> <small>Have you ever been known by any other name(s) that this company will require to verify any of the information on this application?</small> EMPLOYMENT DESIRED Job Title: _____ Date you can start: _____ Wage Desired: _____ <small>Are you available for work: Full-Time <input type="checkbox"/> Part-Time <input type="checkbox"/> Temp <input type="checkbox"/> Seasonal <input type="checkbox"/></small> EDUCATION <small>Do you have a High School Diploma or GED? Yes <input type="checkbox"/> No <input type="checkbox"/></small> <small>Name of last school attended: _____ City: _____ State: _____</small> <small>Circle last year of school completed: 6 7 8 9 10 11 12 13 14 15 16 17 18</small> <small>Circle the highest degree earned: High School Diploma GED Certificate AA BD MD PhD Other</small> <small>Area of Concentration and/or degree(s), certificates, licenses, endorsements: _____</small> <small>Other Training or Skills (Factory or Office Machines Operated, Special Courses, Computer Skills, etc.): _____</small>
--	--

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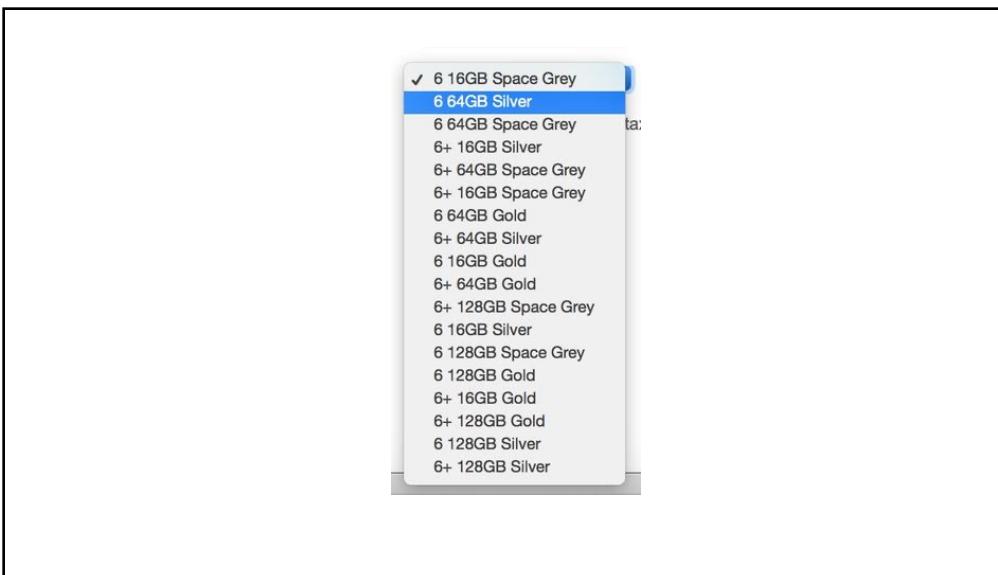
Format Data Sheets (paper or digital) to simplify data collection, minimize errors, and simplify data entry

Options
 Constraints
 Validation
 Formatting

Codes / Minimize Writing
 Large Text, White Space
 Few Columns

Bold, Boxes, &
 other visual Cues
 Pre-test

44



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