Supplemental Materials

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0. Authorship Table

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Recommendations	Kylie Doehring Ciara Moroney	Michelle Kirtich Mason Perham		
Graphics and Charts	Mason Perham	Michelle Kirtich		
Interviewer	Ciara Moroney	Michelle Kirtich Tuvy Do		

1. Pandas dataframe

Taxon	Importer reported quantity
Macrochelys temminckii	213429.0
Chelydra serpentina	103593.0
Centrochelys sulcata	85387.0
Graptemys pseudogeographica	54824.0
Malaclemys terrapin	35076.0
Graptemys ouachitensis	30631.0
Apalone ferox	19300.0
Python regius	13278.0
Iguana iguana	11391.0
Chelonoidis carbonarius	1973.0
Mauremys annamensis	1599.0
Mauremys nigricans	1464.0
Salvator merianae	1287.0
Chamaeleo calyptratus	1132.0
Paphiopedilum hybrid	1003.0
Emydoidea blandingii	843.0
Batagur borneoensis	816.0
Clemmys guttata	638.0
Agalychnis callidryas	461.0
Glyptemys insculpta	454.0
Trioceros jacksonii	441.0
Salvator rufescens	367.0
Melanochelys trijuga	362.0
Cuora flavomarginata	349.0

2. Dr. Yik Hei Sung Interview Questions

- a. How long have you been working in this field?
- b. Do you know of any regulations on the illegal animal trade that seem to be working in Hong Kong?
- c. How would you rate the effectiveness of the current regulations in Hong Kong of mitigating the illegal animal trade?
 - i. What do you think would be the best ways to improve these regulations?
 - ii. Are there other methods that you believe would be more effective than regulations? If so, what are they?
- d. Do you think regulations should focus more on online trading or in-person trading?
- e. Based on your prior research done on the online illegal animal trade, in your opinion, what are some of the drivers for people purchasing these pets?
 - i. Are more illegal animals sold online?
 - ii. What are some of the major platforms for online trading?
 - 1. Do many of these platforms state the specific type of turtles that are being sold?
- f. Do you know what the demographic of the online purchasers is?
 - i. What is the general preference of this demographic
 - ii. Do you believe the demographic of online buyers and in person buyers is different or the same?
 - 1. If so, what is the difference between the two demographics
 - a. Do you know what the in person buyer demographic is?
 - 2. Do you know the preference for the in person demographic?
- g. Do you know what the most illegally traded animals in Hong Kong are?
 - i. Do you know of any that are kept as pets?
- h. What are some of the negative impacts of invasive species on Hong Kong's environment?
 - i. Are there impacts that may eventually affect the public if these issues are not addressed?
- i. What are some of the key invasive species in Hong Kong's environment?

- i. Have there been any actions taken to remove/reduce the population of the invasive species?
- ii. What are some of your recommendations about handling the invasive species present in Hong Kong
- iii. What are some species that you believe may become invasive in the future?
 - 1. Do you believe that these species will be harmful to Hong Kong's environment?

3. Dr. Gary Ades Interview Questions

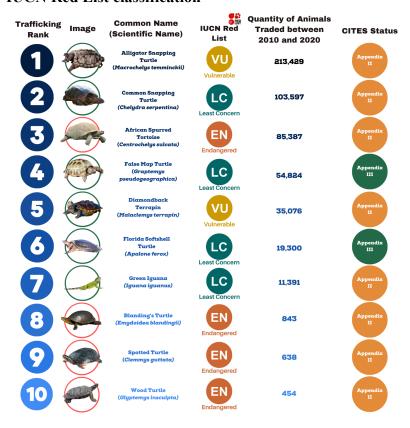
- a. How long have you been working in this field?
- b. Do you know of any regulations on the illegal animal trade that seem to be working in Hong Kong?
- c. How would you rate the effectiveness of the current regulations in Hong Kong of mitigating the illegal animal trade?
 - i. What do you think would be the best ways to improve these regulations?
 - ii. Are there other methods that you believe would be more effective than regulations? If so, what are they?
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- iii. What are some species that you believe may become invasive in the future?
 - 1. Do you believe that these species will be harmful to Hong Kong's environment?

4. Dr. Gail Cochrane Interview Questions

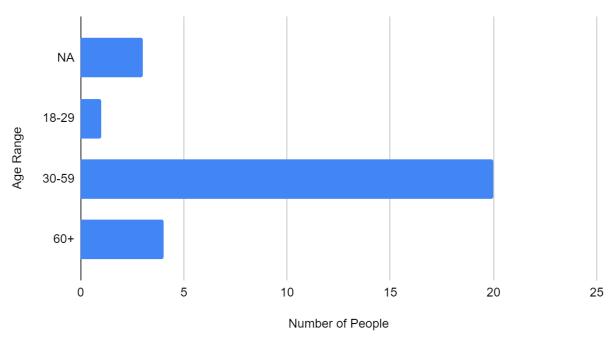
- a. How long have you been working in this field?
- b. How often do you treat exotic pets?
 - i. What kinds of exotic pets have you treated?
- c. What kinds of injuries do these animals need treated?
- d. What are some of the potential health risks when owning reptiles such as turtles, iguanas, and lizards?
 - i. What are the potential diseases that turtles, iguanas, and lizards can carry?
 - i. Can these diseases be easily transferred to humans?
 - ii. What are some of the precautions to prevent diseases affecting the owners?
 - iii. Are there treatments for those diseases/injuries?
 - 1. Can these diseases be fatal?
 - ii. What are the treatments for physical injuries caused by pets?
 - i. Can some of the injuries cause infection?
- e. Do owners seem knowledgeable enough to care for these pets? Do they usually have the correct resources to properly care for them?
 - i. Are there any misconceptions about taking care of exotic animals? (experience and housing, etc)
 - ii. How much space do some of these animals need?
- f. What are some of the effects of inadequate care for animals?
 - i. Can inadequate care affect the temperament of the animal?

5. Top ten list of the trafficked animals from the United States to Hong Kong and their IUCN Red List classification



6. Number of turtle sales by different demographics

Number of Sales

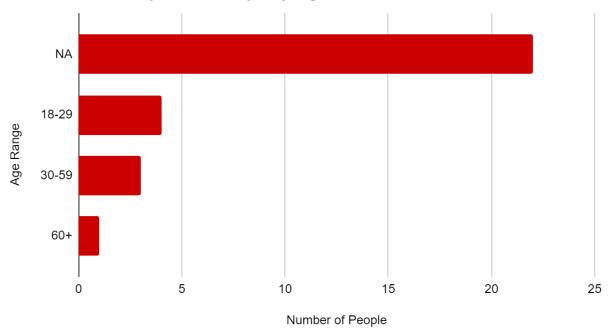


Note: The location of the observations are not stated to maintain the stores' anonymity. These observations were conducted from 4-5 PM.

7. Number of people accompanying the turtle purchaser

Note: The number of people accompanying the purchaser that exited the store with the purchase of at least one turtle is sorted by the estimated age group of the person accompanying the purchaser.

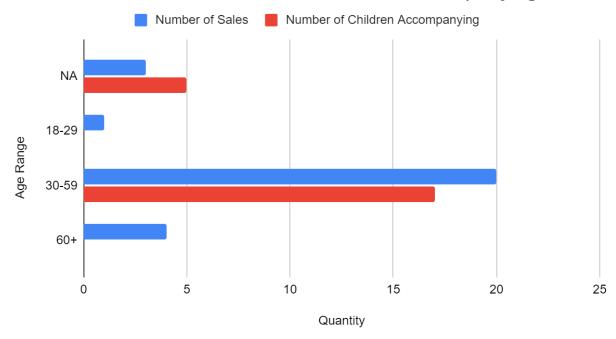
Number of People Accompanying Turtle Purchaser



Note: The location of the observations are not stated to maintain the stores' anonymity. These observations were conducted from 4-5 PM.

8. Number of sales made by different demographics with the number of children with the purchaser

Number of Sales and Number of Children Accompanying

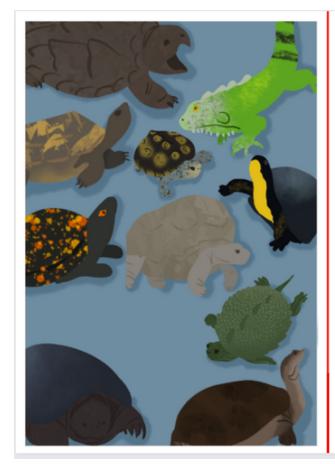


9. QR code to handbook



PDF Link:

https://www.canva.com/design/DAFZTTDeupU/GCByjpmo0rXnidLLftgVzg/view?utm_content=DAFZTTDeupU&utm_campaign=designshare&utm_medium=link2&utm_sourc_e=sharebutton



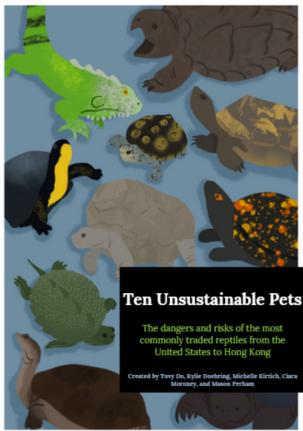


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Introduction

Risks Key

Each animal will have risks associated with them. This ranges from disease, physical and environmental. The symbol on each animal's page in the top right corner will correspond to one in the key below.





= environmental risk







= may scratch / tail whips

Why this is important



The unsustainable pet trade poses a threat to local and global biodiversity and animal welfare as it is expanding and leading thousands of species to extinction. If these traded pets are released, they can potentially become invasive species and destroy local ecosystems.

Words highlighted in red like this are defined in the Glossary on page 29.

Animal Cruelty



After exotic animals are purchased, their owners do not always know how to take care of them. The picture on the left shows an instance where a turtle's shell was burnt off from using the wrong heat lamp.

The picture on the right shows a freshwater turtle that was released into the ocean as part of a mercy release. This turtle nails were caught in oysters, which made it impossible for the turtle to swim properly.



Illegally traded pets are injured during and after trading.

During trafficking, illegally traded pets are often put in the post where they are without food and water. As seen below, traffickers sometimes tape turtles' legs to their shell so they cannot move.



3

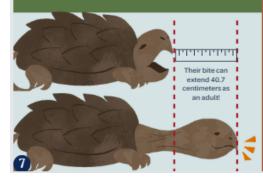


Alligator Snapping Turtle

Macroclemys temminckii 凸背鱷魚龜

Their bite is strong enough to bite off your fingers!

As an adult, the Alligator Snapping Turtle needs lots of space. The graph on the right shows that as an adult, this turtle needs a tank with a volume the equivalent of about 8 bathtubs of water. It can be not only hard to take care of this turtle, but also very expensive!



The
Alligator
Snapping
Turtle's
neck can
extend
really farabout
2/3rds of
it's shelll
Usually,
people
don't
expect
this and
get bitten
easily!





The species is the largest freshwater turtle in North America. They have a spikey shell, scaly tail, large heads and claws, and beaklike jaws.

They kind of look like dinosaurs.

In the wild, these turtles can live for a very long timeanywhere from 20 to 70 years. During this time they can grow to weigh 100 kilograms!

These turtles are opportunistic feeders, although they are mostly carnivores.

Common Snapping Turtle

Chelydra serpentina 平背鱷魚龜

In it's native habitat of North America, the common snapping turtle has natural predators such as black bears, alligators, and alligator snapping turtles.

The food pyramid is equal and has many trophic levels.

The predators keep the snapping turtle population from getting too high, which means that the snapping turtle's prey isn't hunted that much.

Hong Kong Ecosystem

In foreign ecosystems like Hong Kong, the turtle has no natural predators.

It is able to eat as much food as it wants unchecked. Less trophic levels cause an imbalance in the ecosystem. If they get released, they may be able to take over an environment they end up in.



The common snapping turtle has a large head with sharp, hooked jaws. They also have a long tail, which often tends to be longer than the carapace.

They are omnivores, eating a wide variety of vertebrate and invertebrate prey, as well as aquatic vegetation.

While these turtles tend to be docile in the water, they will strike viciously if captured or cornered on land.

These animals become agitated and dangerous only when they are taken out of their aquatic habitat.

They have an even stronger bite than the alligator snapping turtle! It can easily harm you.



That's about the size and weight of a large watermelon.

The common snapping turtle can grow to be between 20 and 36 cm and weigh between 5 to 16 kilograms.



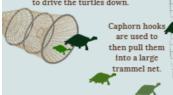
False Map Turtle

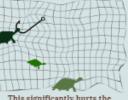
Graptemys pseudogeographica

密西西比地圖龜/偽地圖龜

The pet trade has not only depleted the false map turtle population, but has led to inhuman trapping tecniques.

An empty fyke net is used to drive the turtles down.





This significantly hurts the turtles and decreases their chances of survival.



The methods that people use to trap false map turtles are harmful and cruel. The picture shows high-yield basking traps which yield high catches but harm the turtles in the process.



These turtles are extremely communal and rely on each other for sharing spaces and predator-watching.

The false map turtle has brown or olive shell with yellow lines that run along their neck, head, and legs. They are aquatic turtles that range from 8.9 cm to 27.3 cm.

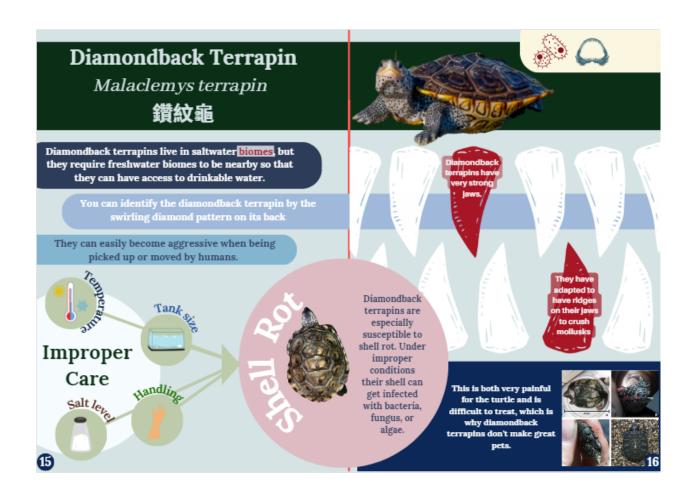
> The false map turtle is omnivorous with a diet consisting of insects, worms, snails, crayfish, aquatic vegetation, and dead fish.

The false map turtle's native habitat is in the Missouri and Mississippi Rivers in the United States. They often are basking on rocks and logs as they need sunlight to maintain their body temperature.



It's difficult and very expensive to replicate the high UV and brackish water system that these turtles are naturally accustomed to.

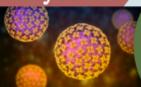




Florida Soft Shell Turtle

Apalone ferox 珍珠鱉

Bunyavirus

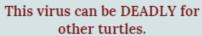


While this virus cannot be transmitted to humans, it can be transmitted to other turtles and pets. They are weakened and have discharge from their eyes and nose.

This turtle can display aggressive behavior and produce a strong-smelling musk when aggravated.









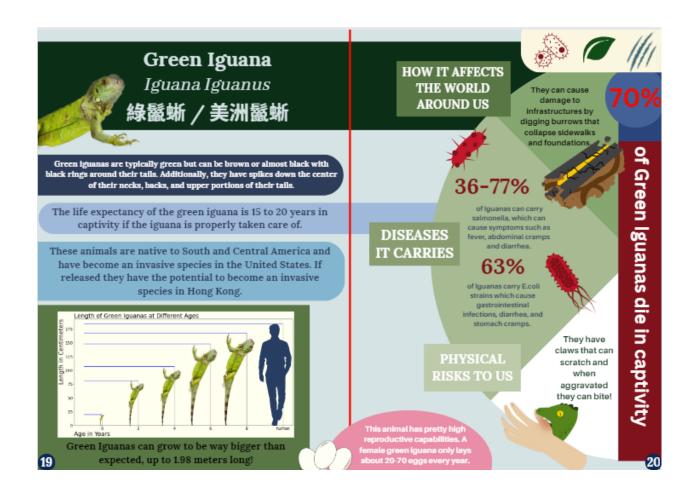
Bunyavirus becomes very dangerous when infected turtles get released into the wild and have the potential to cause an epidemic.

The Florida soft shell turtle is a large turtle with a dark brown, olive-green shell, a long neck, and webbed feet.

They can range between 30.5 cm to 61 cm and weight up to 45 kilograms.

They have rows of flattened tubercles along They have rows of nattened tubercies along anterior edge of their upper shell and lateral ridges projecting from nasal septum into the nostrils.







Spotted Turtle

Chlemmys guattata

斑點水龜 / 星點水龜

Housing two spotted turtle males together may lead to them becoming aggressive towards each other.



Man and a second

Spotted turtles are primarily carnivorous with a diet of shrimp, worms, crickets, and other insects.

Herpesvirus

Spotted turtles rarely carry a small amount of the herpesvirus 2. Herpesvirus is a viral infection which can rarely spread to humans and can lead to tissue damage, respiratory problems, swelling, and future death.





As with most aquatic turtles, they can become stressed by over-handling and are to be observed without too much interference. If handling is required, it should be kept to a minimum.



The spotted turtle is a smaller, semi-aquatic turtle with a broad, smooth, low dark-colored upper shell.

These turtles have a long lifespan, as they live around 65 to 110 years.

During the spring the spotted turtle spends a lot of time basking in the sun. During the night or in hot weather, the spotted turtle burrows under vegetation. They should not be kept in an enclosure with deep waters because they are not strong swimmers.



The Wood Turtle Glyptemys insculpta 北美木紋龜 / 木雕水龜

Wood turtles have bright orange scales, yellow bellies, and bright gold rings around their pupils. In northern populations, turtles tend to be larger and darker to aid in thermoregulation.

It's defining characteristic is the pyramidal shape of the scutes on its upper shell.

The Wood Turtle is a long-lived species with slow reproductive capabilities. Males fight to get access to females, completing several hours of dancing as a courtship ritual.

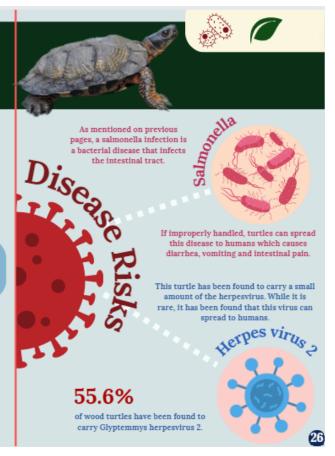


25)

Females lay one clutch per year, which will contain about 7 eggs (and can range anywhere from 3-20). Incubation then lasts 47-89 days, and hatchlings become reproductively mature at the ages of 14-18.

Due to poaching issues there is also high concern for its populations in the wild as they are declining.







Glossary



Anterior refers to the front of something.

Pa. 1



A climate that is **arid** is very dry, having

Pa. 1



Asymptomatic is when a disease has caused an infection, but the person or animal is not showing any symptoms.

Pg. 1:



Biodiversity is the variety of life in the world or in a particular habitat or ecosystem.

Pg. 2



biome is a large area characterized by its vegetation, soil, climate, and wildlife.

Pg. 15



Brackish water is water that is saltier than freshwater, but not as salty as the ocean.

Pg. 14



A Carapace is the hard, upper shell of a turtle

Pg. 10



A **clutch** is the group of eggs produced by birds, amphibians, or reptiles.

Pg. 22



Pg. 18



Invasive species are species that are introduced into a new part of the world and can negatively affect the native species and habitat. The Red Fire Ant is invasive in Hong Kong, as it is originally from South America.

Pg. 2

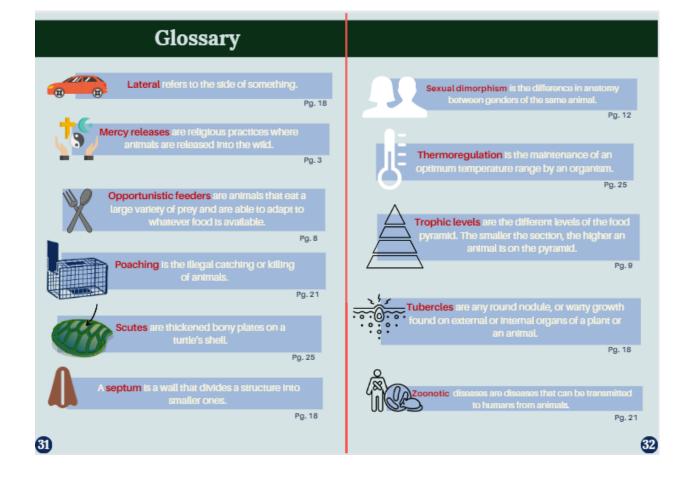


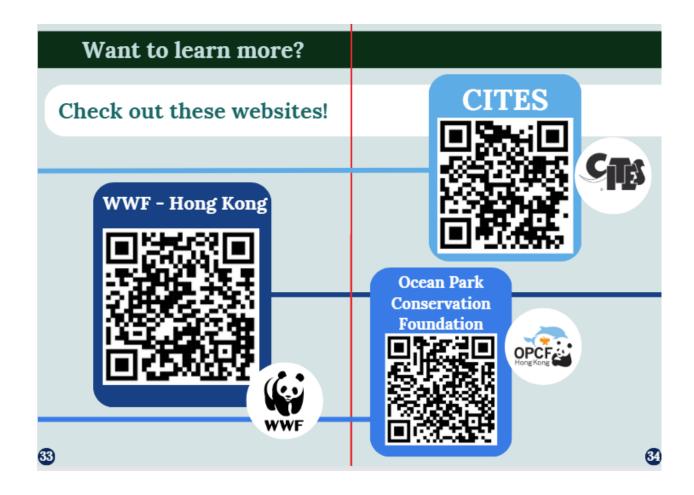
Invertebrates are animals that lack a backbone.

Pg. 10









10. Story draft A Pet's Journey

Once there were turtles living in a swamp Waiting for their prey, they suddenly heard thwomp! Out of nowhere came a net! They were scooped up by a man they never met

From the net, they were dumped into a little box
The man who had caught them drove faster than a fox
In the car the turtles had very little water
The man paid no mind, and his speed never faltered

To a warehouse the man went Where shipping turtles was convenient Onto a table the turtles were shaked To their shells their legs were taped

The poor turtles couldn't move
Animal lovers would not approve
The man put the turtles in the post
The turtles were sent to another coast

But the man still wasn't satisfied So he took his car for another ride He was looking for iguanas that were green And what he did to them was oh so mean

He stuffed each iguana in a water bottle He wasn't kind, he didn't coddle Other iguanas were put into black socks The stuffed iguanas were packed into a postage box

To Hong Kong the animals were sent But to this place they never before went They belonged in their habitats back home They missed where they could happily roam

The man is working in the illegal pet trade The man sold turtles and iguanas to get paid The turtles and iguanas didn't feel very well Some of the turtles had cracks in their shells

The animals were taken from their families And sent to pet stores so unhappily

These turtles and iguanas were hurt in the process of being shipped to pet stores as part of the illegal pet trade. These animals are often sent through the post where they do not have enough food or water. Some of these animals do not have big populations in the wild so it is bad to take them from their habitats. This is why it is important to research what pet you are going to get because you do not know where it came from or how they got to the pet store.

11. Raw observation data of pet store sales

Observation Number	Observer Name	Turtle Quantity	Purchaser Age Range	Purchaser Gender	Number of People with Purchaser	Age Range of People with Purchaser	Gender of People with Purchaser	Date of Observation	Time of Observation
1	Ciara	2	18-29	Female	3	18-29, 18-29, 18-29	Female, Female, Female	1/27	4:30
2	Mason	1	30-59	Male	2	30-59, NA	Female, NA	1/27	4:39
3	Tuvy	6	30-59	Female	4	NA	NA	1/27	4:37
4	Tuvy	2	30-59	Female	1	NA	NA	1/27	4:38
5	Tuvy	1	30-59	Female	1	NA	NA	1/27	4:39
6	Tuvy	2	30-59	Male	0			1/27	4:40
7	Kylie	1	30-59	Male	1	18-29	Female	1/30	4:12
8	Michelle	1	30-59	Male	2	NA, 30-59	NA, female	1/30	4.17
8	Kylie	1	30-59	Male	1	NA	NA	1/30	4:20
9	Ciara	3	NA	NA	2	NA,NA	NA	1/30	4:20
10	Ciara	2	30-59	Female	2	NA, 30-59	NA, female	1/30	4:29
11	Kylie	2	30-59	Male	0			1/30	4:30
12	Ciara	1	30-59	Male	0			1/30	4:37
13	Tuvy	1	60+	Male	0			1/30	4:37
14	Tuvy	3	NA	NA	2	NA, NA	NA, NA	1/30	4:40
15	Tuvy	1	60+	Male	0			1/30	4:43
16	Michelle	2	30-59	Male	2	NA	NA, NA	1/30	4:43
17	Tuvy	2	30-59	Male	2	NA, NA	NA, NA	1/30	4:43
18	Tuvy	4	30-59	Female	1	NA	NA	1/30	4:45
19	Tuvy	12	60+	Male	0			1/30	4:48
20	Tuvy	1	30-59	Female	0			1/30	4:50
21	Michelle	2	30-59	Female	3	30-59, NA, NA	Female, NA, NA	2/1	4:17
22	Ciara	1	60+	Male	0			2/1	4:20
23	Mason	2	30-59	Female	3	60+, NA, NA	Female, NA, NA	2/1	4:27
23	Michelle	2	NA	NA	1	NA	NA	2/1	4:31
24	Mason	2	30-59	Female	1	NA	NA	2/1	4:35
25	Tuvy	8	30-59	Male	1	NA	NA	2/1	4:46
26	Michelle	1	30-59	Female	0			2/2	4:09