Mechanical Turk and AWS Workshop

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Outline for Today

- What is MTurk? and How much should you pay?
- Installing MTurkR in RStudio
- Accessing your AWS Security Credentials
- Messaging Workers thought MTurkR
- Sending SMS and Email messages though AWS
- Assigning Qualifications in MTurk

What is Mechanical Turk?

- Mechanical Turk was launched in 2005 by Amazon.
- MTurk is a Crowdsourcing Internet marketplace where thousands of workers work on tasks that computers are not particularly good at such as image moderation, and photo tagging
- HIT means Human Intelligence Tasks
 - When you post a study to MTurk you're posting a HIT for Turkers to complete

How Much Should I Pay?

 General rule of thumb is you should pay your workers at least \$0.10/min for their work, anything less and you'll receive negative reviews on websites such as www.reddit.com/r/HITsWorthTurkingFor/ and Turkopticon (microwork-dev.ucsd.edu)









Questions on MTurk?



What is MTurkR

- Access to Amazon Mechanical Turk Requester
 API via R
- Authored by Dr. Thomas Leeper, postdoc at Aarhus University
 - http://www.thomasleeper.com
 - thosjleeper@gmail.com
 - Super nice guy, will respond to you and help with problems that come up if you email him

MTurkR vs Amazon Mechanical Turk Command Line Tool

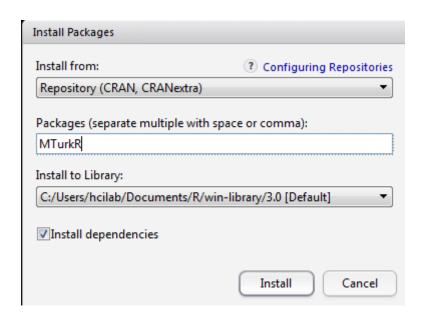
MTurkR

- Many people have used this and it works
- Requires R
- Last update was in June 2013
- Simple to use, graphical interface is coming soon

Amazon Mechanical Turk Command Line Tool

- I have never met someone who says that this works
- Requires an old version of Java
- Last update was in September 2012
- Command line only

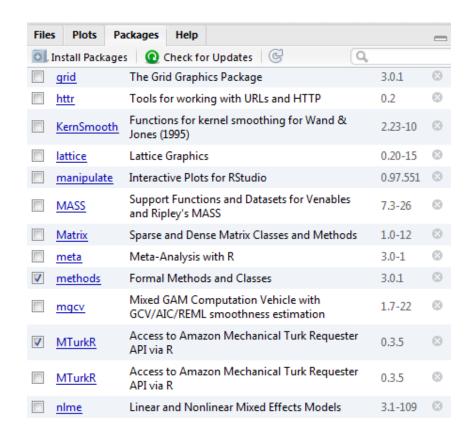
How to install MTurkR



- All of these examples were done in RStudio 0.97 because that's the version I use in my lab
- If you use something else and have problems just email me and I'll walk you though it

How to install MTurkR

- In order to turn a
 package on in RStudio
 you have to click the
 check box next to the
 package name.
- Click on the MTurkR package and the following text should appear.

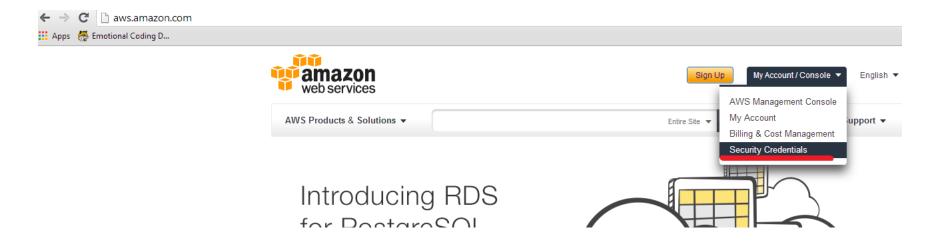


How to install MTurkR

```
Console ~/MTurk/ 🖒
R version 3.0.1 (2013-05-16) -- "Good Sport"
Copyright (C) 2013 The R Foundation for Statistical Computing
Platform: x86_64-w64-mingw32/x64 (64-bit)
R is free software and comes with ABSOLUTELY NO WARRANTY.
You are welcome to redistribute it under certain conditions.
Type 'license()' or 'licence()' for distribution details.
R is a collaborative project with many contributors.
Type 'contributors()' for more information and
 citation()' on how to cite R or R packages in publications.
Type 'demo()' for some demos, 'help()' for on-line help, or
'help.start()' for an HTML browser interface to help.
Type 'q()' to quit R.
 install.packages("MTurkR")
Installing package into 'C:/Users/hcilab/Documents/R/win-library/3.0'
 (as 'lib' is unspecified)
trying URL 'http://cran.rstudio.com/bin/windows/contrib/3.0/MTurkR_0.3.5.zip'
Content type 'application/zip' length 404758 bytes (395 Kb)
 ppened URL
 lownloaded 395 Kb
package 'MTurkR' successfully unpacked and MD5 sums checked
The downloaded binary packages are in
 C:\Users\hcilab\AppData\Local\Temp\RtmpIBw4ru\downloaded_packages
 library("MTurkR", lib.loc="C:/Users/hcilab/Documents/R/win-library/3.0")
 oading required package: bitops
 oading required package: RCurl
 oading required package: digest.
 oading required package:
```

- RStudio should automatically load all the required packages.
- Make sure all your packages are up to date
- The required packages for MTurkR are
 - bitops
 - Rcurl
 - disgest
 - xml

- First you need to acquire your security credentials from Amazon
- They can be found on the Amazon Web Services site aws.amazon.com
- Once you get your credentials keep them in a safe spot, you can only download them once



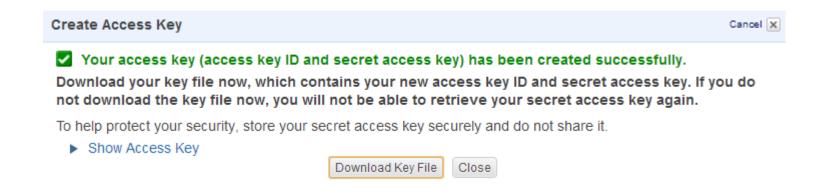
This is where you will find the security credentials on the front page

Your Security Credentials

Use this page to manage the credentials for your AWS account. To manage credential To learn more about the types of AWS credentials and how they're used, see AWS Se

- Password
- Multi-Factor Authentication (MFA)
- Access Keys (Access Key ID and Secret Access Key)
- CloudFront Key Pairs
- Account Identifiers

- Click on Access Keys
- In the bottom left hand side there will be a button that says "Create New Access Key" click this and the following window will pop up



Download and keep this file safe! **You can only download it once**, this information will give anyone who has it complete access you your Mturk account

- The Excel file that you download will have two numbers in it
- One will be the AWSAccessKeyId and the other is the AWSSecretKey



This is what it should look like, when you enter this data into MTurkR make sure to copy everything past the "=" sign

```
> mturkr.wizard("simple")
MTurkR Wizard loading...
Retrieve your AWS access keys from https://aws-portal.amazon.com/gp/aws/securityCredentials
AWS/MTurk Access Key ID: AKIAIMZT7B4RJFMSWNOA
AWS/MTurk Secret Access Key: ASSehr6kNFjA3B7jEYvCNooMPrnOBD3LdsUY/JC8
MTurkR Operations
1: Check Account Balance
                                  2: Check Sufficient Funds
                                                                    3: Create HIT
                                 5: Get Assignment(s)
4: Check HIT Status
                                                                    6: Extend HIT
                                                                  9: Reject Assignment(s)
7: Expire HIT
                                  8: Approve Assignment(s)
                                                              12: Block Worker(s)
                                 11: Contact Worker(s)
10: Grant Bonus(es)
13: Unblock Worker(s)
                                 14: Manage Qualifications
                                                                  15: Requester Statistics
                                                                   18: Load MTurkR Log File/Entries
16: Worker Statistics
                                 17: Open MTurk RUI Pages
19: Exit
```

 This is important, you must use the command <u>mturkr.wizard("simple")</u>, the GUI version is not very good

Selection:

 Copy and paste your AWS Access Key ID and the Secret Access Key, then this menu should pop up

Messaging Workers

- When you run an experiment on Mturk all of your workers are anonymous and have ID numbers.
- For this demo I used my Mturk ID number to message myself, you can message one worker or many

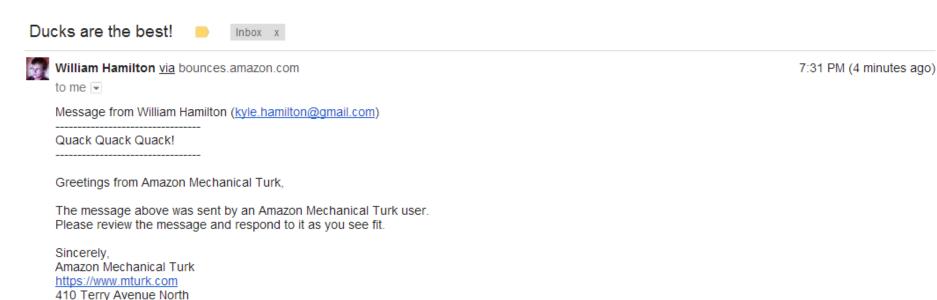
Messaging Workers

MTurkR Operations 1: Check Account Balance 2: Check Sufficient Funds 3: Create HIT 4: Check HIT Status 5: Get Assignment(s) 6: Extend HIT 7: Expire HIT 8: Approve Assignment(s) 9: Reject Assignment(s) 11: Contact Worker(s) 10: Grant Bonus(es) 12: Block Worker(s) 13: Unblock Worker(s) 14: Manage Qualifications 15: Requester Statistics 16: Worker Statistics 17: Open MTurk RUI Pages 18: Load MTurkR Log File/Entries 19: Exit Selection: 11 Contact one worker or multiple workers? 1: Single Worker 2: Multiple Workers Selection: 1 WorkerId to Notify: A2ZXZFRG6A30J0 Email Subject Line: Ducks are the best! Email body text: Quack Quack Quack! WorkerId Subject Message Valid

12/5/2013

1 A2ZXZFRG6A30J0 Ducks are the best! Quack Quack! TRUE

Messaging Workers



SEATTLE, WA 98109-5210 USA

This is what the worker will receive in their inbox

Questions on MTurkR?



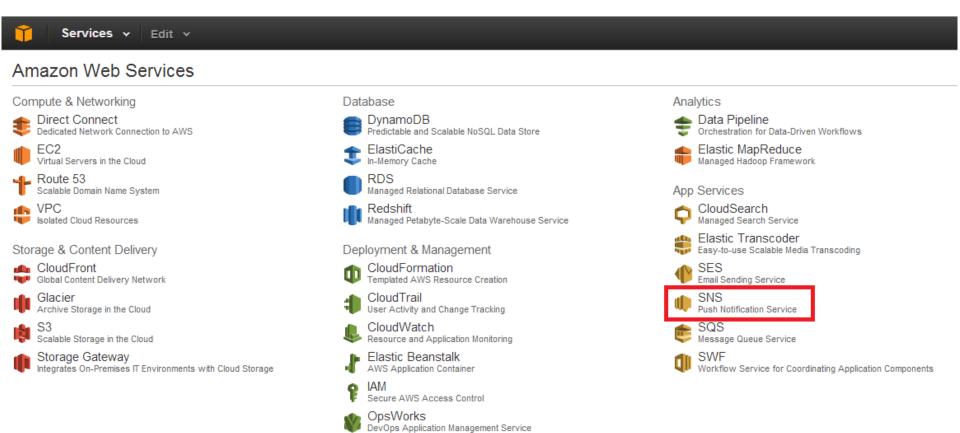
- Sending text messages though Amazon Web Services is <u>not</u> part of MTurk.
- This is a useful tool because you can text people to remind them to take follow up surveys.
- SNS also allows you to send email reminders as well

SMS Messaging

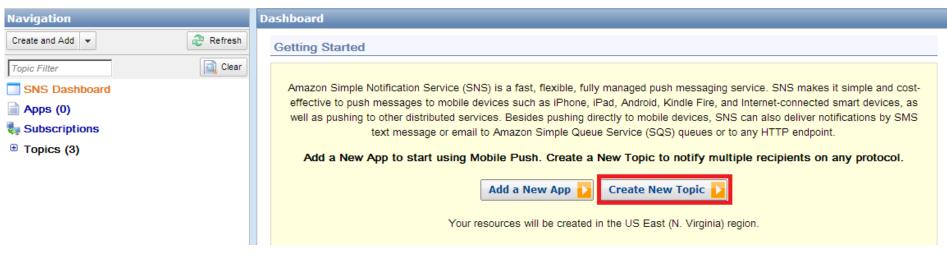
- First 100 SMS messages are free, after that it costs
 \$0.75 per 100 SMS messages
- This works only in the US

Mass Email

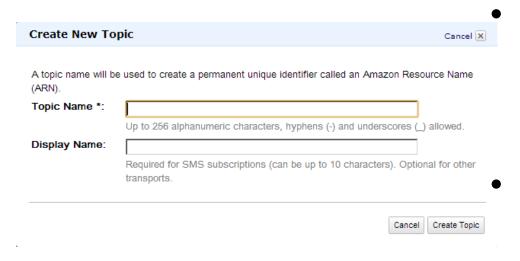
- First 1,000 emails are free, after that it costs \$2.00 per 100,000
- This works world wide



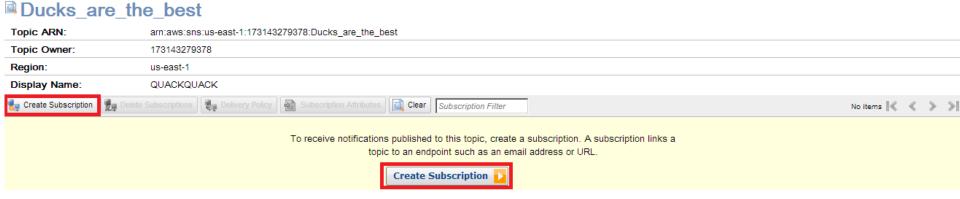
Click on SNS

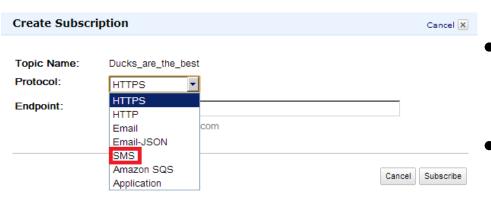


Click on "Create New Topic"

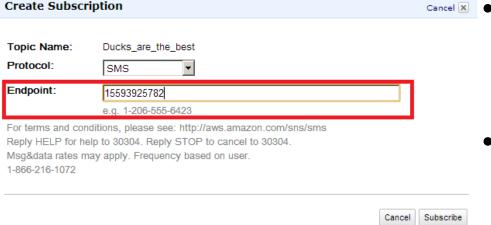


- Topic Name will be shown only to you
 - Display Name will be shown to all the people you are sending the message to
 - In this example I used the Topic Name of Ducks_are_the_best and the Display Name of QUACKQUACK

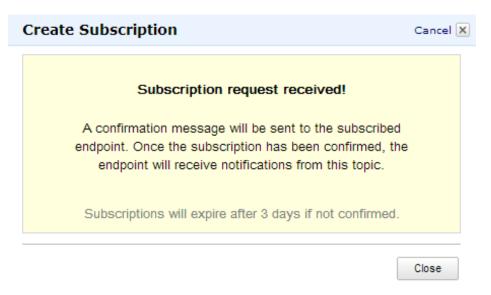




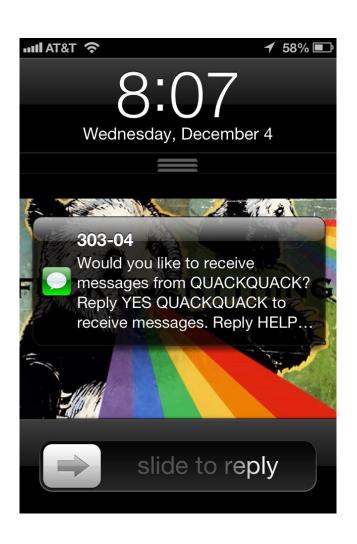
- Clicking on Create
 Subscription will bring up this menu
- For SMS text messages click SMS
- For Email message click on Email



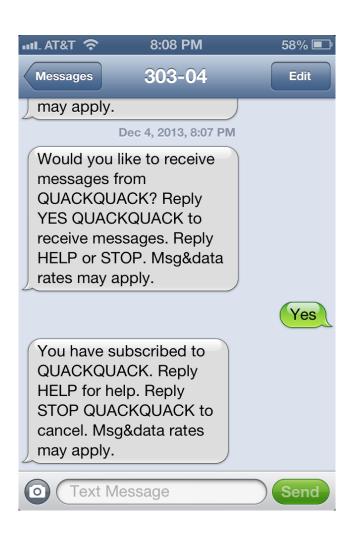
- For this workshop I'm going to use my cell phone number
 - This is important, you must include the area code with the county code
- For the United States the county code is <u>1</u>
- 1-559-392-5782 will work
- 559-392-5782 will not work



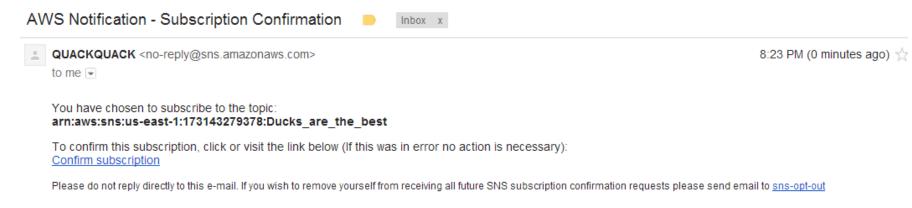
- Once you've signed someone up you will get this message
- They will have three days to confirm that they want to get text messages from you
- You have to enter the numbers one at a time



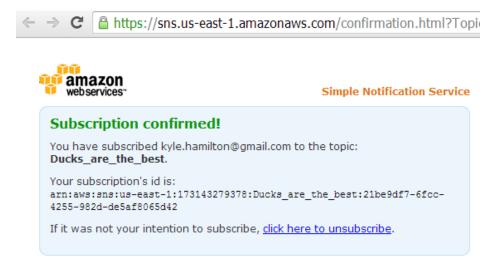
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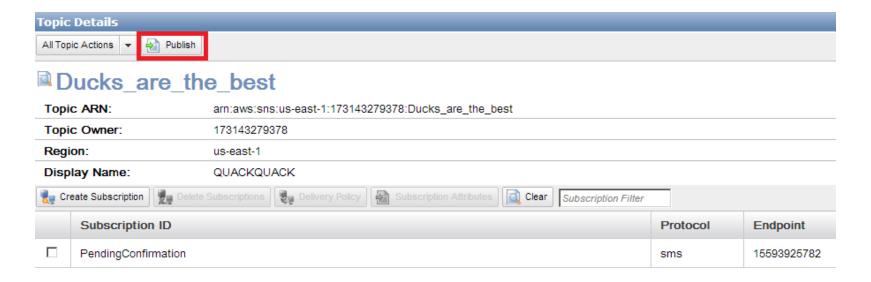
- With a little Excel wizardry you can do this quite quickly.
- Took me about 15
 minutes to end in 50
 cell phone numbers



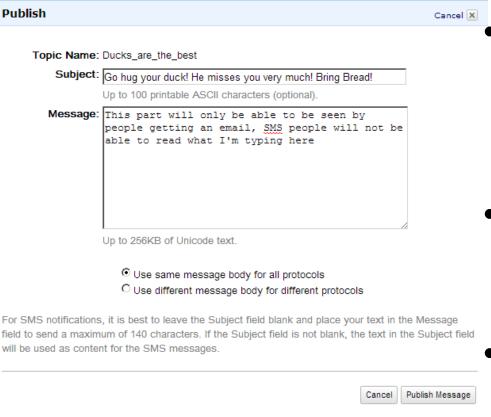
- You can also add email addresses as well
- Follow the same process as for text messages but use Email instead of SMS



- Once they click the subscribe button they will be taken to this website
- Note that the Display Name is visible



 In order to send text or email message to everyone on your list click on "Publish"



- After you click the publish button you will be taken to this screen
- For SMS messages only the Subject line will be sent
 - For Email messages the whole message will be sent

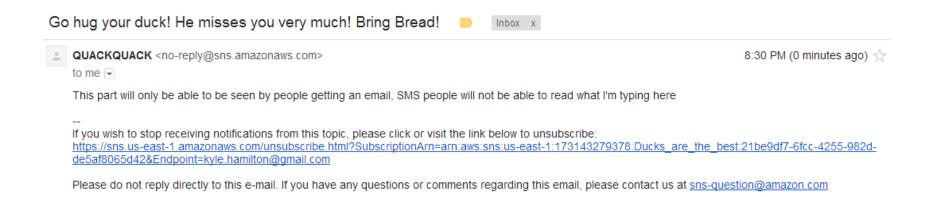
12/5/2013 35



 SMS Messages will look like this to the user

12/5/2013 36

Amazon Simple Notification Service (SNS)



 Email messages will look like this to the user

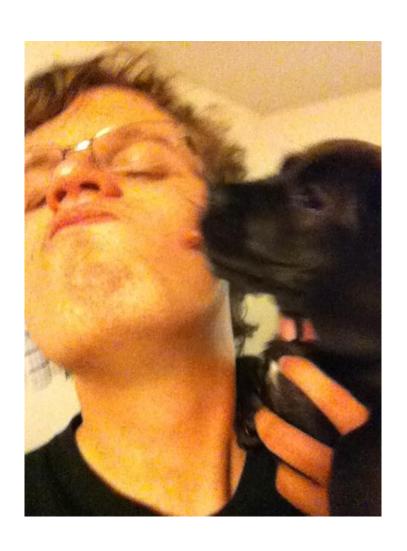
Questions about Amazon SNS?



- What are Qualifications in MTurk?
 - Qualifications allow you to prevent the general
 MTurk population from accepting your survey
 - Use screeners to find a group of people you are looking for
 - For example if you want to only sample people over the age of 35 you would make a screener in the general population and <u>assign a Qualification</u> to all workers over 35, make a new survey and <u>allow only people with that Qualification to take</u> <u>it.</u>

- Today I want to find people who think I'm amazing and sample them.
- So I'm going to create a <u>KyleIsGreat</u>
 Qualification.
- Screen out the Kyle Haters.
- Followed by inviting all the people who think
 I'm amazing to my survey about me.

Data used for this workshop



- I paid workers \$0.05 to write something about this photo of me and a friends puppy, it could be as long or as short as they liked
- I also paid an extra \$0.03 bonus for them to let me send them a text message today

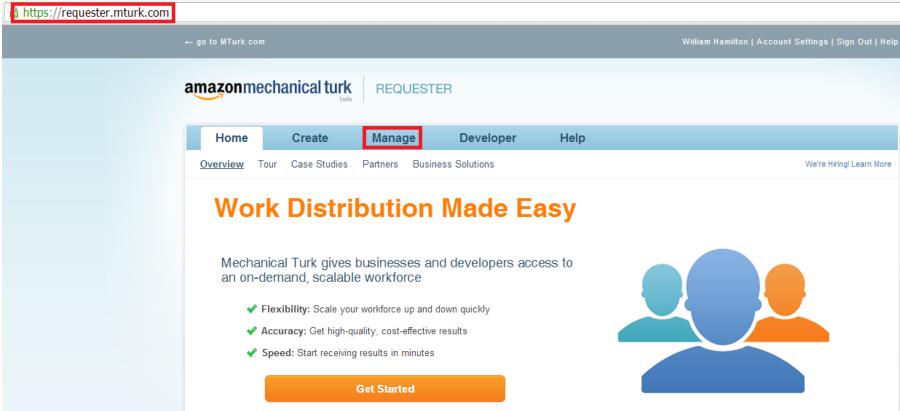
Data used for this workshop

Nice things said about me

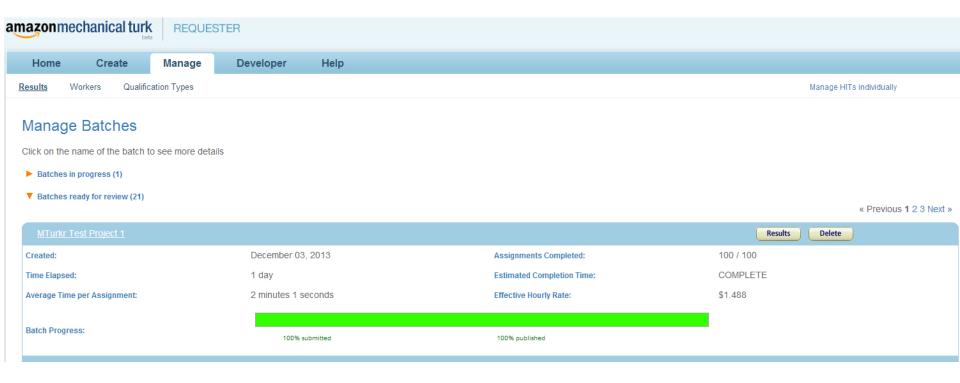
- Puppy loves your face!
- Someone's getting a doggy kiss!
- Aww so cute :)
- This photo shows the love between a puppy and its owner. You don't usually see photos like these with cats and their owners because their behavior isn't very loving.
- The photo is a bit adorable though it is very unfocused and blurry. The man seems like a likable fellow.

Mean things said about me

- It is gross how the dog is licking his face.
 Dogs are self cleaning so they love to lick their anus. I wouldn't want that on my face.
- The dog is cuter than the man. It is also licking the mans face.
- That dog is pretty cute. Not sure why that person doesn't want anything to do with that cute dog kiss.
- Huge chin and seems the dog isn't licking him.
- A boy with glasses being licked by a black puppy.
- Cute puppy licking guys "duck face".



- Goto the requester site at http://requester.mturk.com
- Click Manage



 This is the Manage tab, you'll notice I just collected data for this workshop

Review Results

Select the check boxes on the left to approve or reject results. You only pay for approved results. To evaluate results offline, select Download CSV.

For additional batch information, view batch details.

MTurkr Test Project 1

Customize View Filter Results Download CSV Approve All Download CSV

- Here you can download all of the results from your HIT
- Click Download CSV

Download Batch Results

MTurkr Test Project 1

Please click here to download your Batch results file.

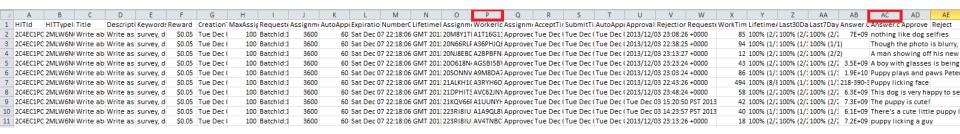
You can review your results offline and approve or reject the assignments.

- 1. APPROVE ASSIGNMENT: Indicate which assignments to approve by putting an "x" under a column titled "Approve".
- 2. REJECT ASSIGNMENT: Indicate which assignments to reject by putting your reject feedback under a column titled "Reject".

The Batch results file was last updated on 9:39 PM PST

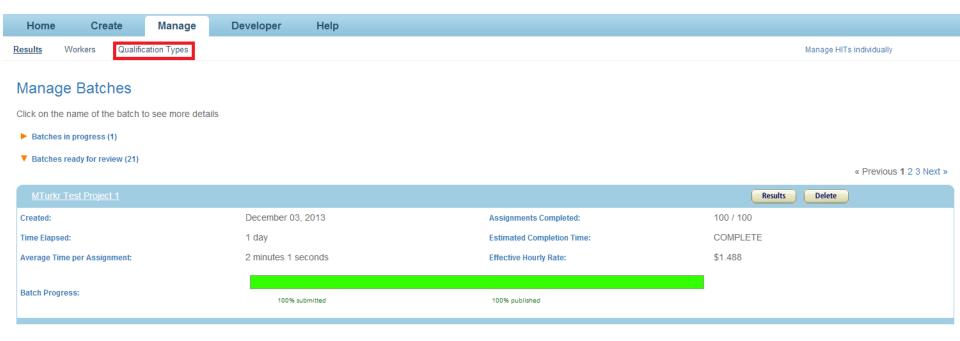
If Workers are still working on your Batch, you can view up to the minute results on the Review Results page for the Batch at anytime.
You can download an updated file on or after 10:39 PM PST by clicking the Download CSV button on the Review Results page for the batch. Clicking on Download CSV before 10:39 PM PST will return the previously generated file

- Clicking on the link in the box will allow you to download your CSV file with your data
- This is important you can only generate a file once per hour so keep that in mind.

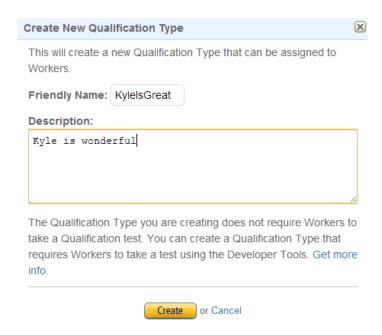


- You can ignore most of this data, the three most important parts are columns P, AB, and AC
 - P has our Worker ID Number
 - AB and AC have our Data
- U tells you when the HIT was approved
- X tells you how long it took a worker to do the study
- Y, Z, AA all have how many studies a worker has done for you

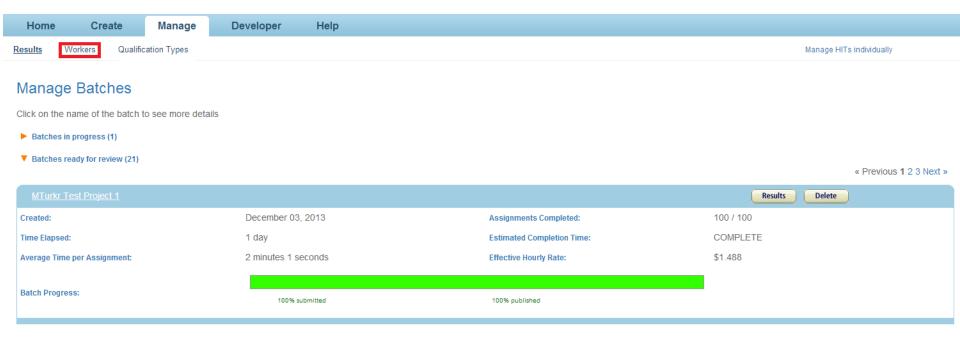
- Screened all 100 answers into three categories
 - Pro Kyle messages got a score of 100
 - Neutral messages got a score of 50
 - Anti Kyle messages got a score of 0
- You can give a Qualification score between 0 and 100
- Now I have to download my Worker file so I can update all of my wonderful workers!



 Go to the Manage Tab and click on Qualification Types



 Click Create New Qualification, enter a friendly name, note that the workers can see this name



Go back to the Manage Tab and click on Workers

Manage Workers

The Workers who have completed work for you are listed below. Select a Worker ID to bonus, block, unblock, assign a Qualification, or revoke a Qualification. To block, unblock, or change Qualification settings for multiple Workers, select Download CSV. Select Customize View to change which Qualification Types are displayed in the table below.



Show my Workers by: Lifetime Last 30 days Last 7 days « Previous 1 2 3 4 5 6 7 8 9 ... 84 85 Next »

 Once you're there on the workers tab, click Download CSV, it will generate a CSV file with every worker you've ever used

Manage Workers > Download Workers Results

Download Workers Results

Please click here to download your Workers file.

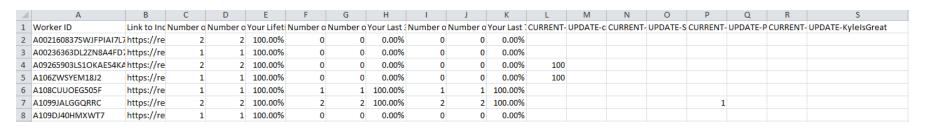
You can analyze your Workers offline and take action.

- 1. ASSIGN QUALIFICATION TYPE: Indicate which Qualification Type to assign a Worker by putting the Qualification score number under the column with UPDATE and your Qualification Type name. You can assign a Qualification score between 0 and 100.
- 2. REVOKE QUALIFICATION TYPE: To revoke the Qualification Type, put "Revoke" under the UPDATE column for your Qualification Type.

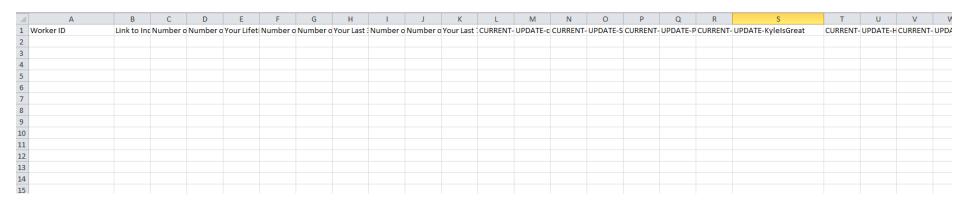
3. BLOCK OR UNBLOCK: Block or unblock a worker by putting "Block" or "Unblock" under the column titled "UPDATE BlockStatus

The Workers file was last updated at 10:47 PM PST

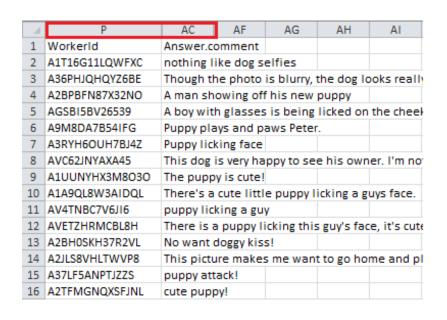
- Click on the link to download your worker file
- If you've used a lot of workers on MTurk this might take awhile, for me it took 17 minutes and I have used 2115 workers



- Here is the excel file with all my workers
- The only columns we are interested in here at columns A and S
 - A has my Worker ID numbers
 - S has the UPDATE KylelsGreat Qualification



- Next I'm going to delete all of the data <u>EXCEPT THE</u>
 <u>FIRST ROW</u>
- Then I'm going to add all the Worker ID numbers from my study



- When I go back to my data from my study I go back to Column P and AC
- Remember <u>P has our</u>
 <u>Worker ID</u> and <u>AC has our</u>

 <u>data</u>
- Now I'm going to move the Worker ID numbers over to the Worker file and assign them Qualification values based on their answers.

4	А	S
1	Worker ID	UPDATE-KyleIsGreat
2	A1T16G11LQWFXC	100
3	A36PHJQHQYZ6BE	50
4	A2BPBFN87X32NO	100
5	AGSBI5BV26539	0
6	A9M8DA7B54IFG	0
7	A3RYH6OUH7BJ4Z	0
8	AVC62JNYAXA45	0
9	A1UUNYHX3M8O3O	100
10	A1A9QL8W3AIDQL	50

- When I go back to my worker sheet I go back to Column A and S
- Remember <u>A</u> has our
 Worker ID and <u>S</u> has our
 Qualification Score for
 KyleIsGreat

Manage Workers

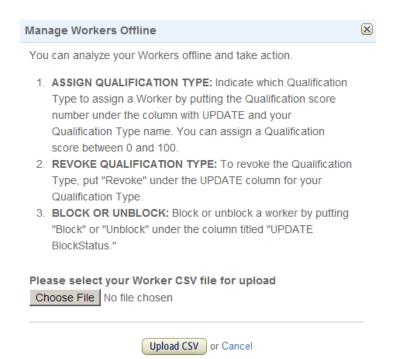
The Workers who have completed work for you are listed below. Select a Worker ID to bonus, block, unblock, assign a Qualification, or revoke a Qualification. To block, unblock, or change Qualification settings for multiple Workers, select Download CSV. Select Customize View to change which Qualification Types are displayed in the table below.



Show my Workers by: Lifetime Last 30 days Last 7 days

« Previous 1 2 3 4 5 6 7 8 9 ... 84 85 Next »

 Go back to the workers tab, click Upload CSV, and upload the file we just saved with the new qualification scores.



- Choose the File that we just saved with our new qualification scores
- Click Upload CSV

Manage Workers > Offline Processing

Offline Processing

Please review the following information and confirm your choices:

Assign 9 Qualification Scores

- Revoke 0 Qualifications
- Unblock 0 Workers

Would you like to continue?





- Review and make sure that you've assigned the right number of qualifications
- Click yes and the qualifications will be assigned

60



Final Steps

 After you have given a worker a qualification and have put your study up on MTurk you should message them though MTurkR and tell them about your study, don't forget to include a link Turkers are lazy you want to make things easy for them

```
Selection: 11
Contact one worker or multiple workers?
1: Single Worker
2: Multiple Workers
Selection: 2
Email Subject Line: Thank you for your help
Email body text: Thanks again, your work really made my class intrested in what I was talking about
How many workers to notify: 9
Enter each WorkerId on own line:
1: A1T16G11LOWFXC
2: A36PHJQHQYZ6BE
3: A2BPBFN87X32NO
4: AGSBI5BV26539
5: A9M8DA7B54IFG
6: A3RYH6OUH7BJ4Z
7: AVC62JNYAXA45
8: A1UUNYHX3M8O3O
9: A1A9QL8W3AIDQL
Read 9 items
        WorkerId
                                 Subject
1 AlT16G11LQWFXC Thank you for your help
2 A36PHJQHQYZ6BE Thank you for your help
3 A2BPBFN87X32NO Thank you for your help
  AGSBI5BV26539 Thank you for your help
  A9M8DA7B54IFG Thank you for your help
6 A3RYH6OUH7BJ4Z Thank you for your help
   AVC62JNYAXA45 Thank you for your help
8 Aluunyhx3m8030 Thank you for your help
9 A1A9QL8W3AIDQL Thank you for your help
                                                                             Message Valid
1 Thanks again, your work really made my class intrested in what I was talking about TRUE
2 Thanks again, your work really made my class intrested in what I was talking about TRUE
3 Thanks again, your work really made my class intrested in what I was talking about TRUE
  Thanks again, your work really made my class intrested in what I was talking about
                                                                                      TRUE
```

Questions, Comments, Concerns, Fears?



Need more help?

- Contact Information
- William Kyle Hamilton, my friends call me Kyle
- Email: kyle.hamilton@gmail.com
- Phone: 559-392-5782
- My CV can be found at http://bit.ly/hamiltoncv
- This PowerPoint can be found at http://bit.ly/MTurkDemo
- Available to meet one on one between 9am-1pm Monday though Friday, most weekends I'm free to meet just email me and we can set up a time, most often can be found in the Cameron Lab SSM 309