

# In-stream Movements And Seasonal Habitat Use of Juvenile Chinook And Coho Salmon In The Montana Creek watershed, Alaska

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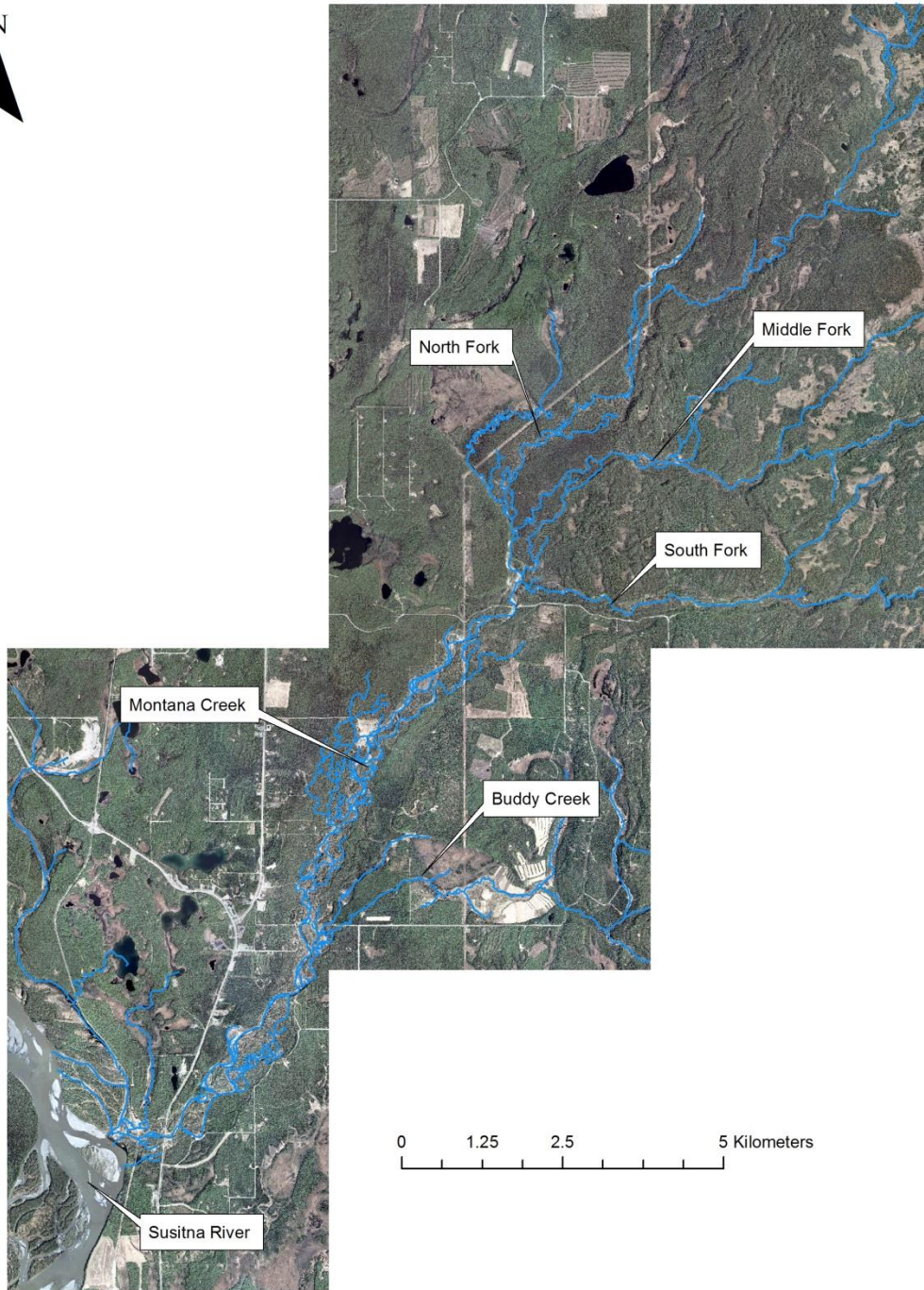
# Importance

Understanding the quality and location of freshwater habitat for critical life stages.

- Aquatic Invasive Species
- Climate Change
- Development
- Water withdrawals
- Pollution

- Landscape level planning
- Cataloging
- Development of research planning
- Protection
- Prioritization







# Objectives

1. Describe the temporal and spatial distribution of juvenile Chinook and Coho Salmon in the Montana Creek watershed, Alaska.
2. Estimate the proportion of tagged juvenile Chinook and Coho Salmon, which reside within the Montana Creek watershed to overwinter and the proportion that migrate to the Susitna River to overwinter.



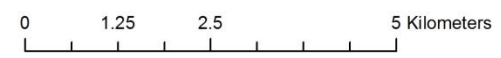
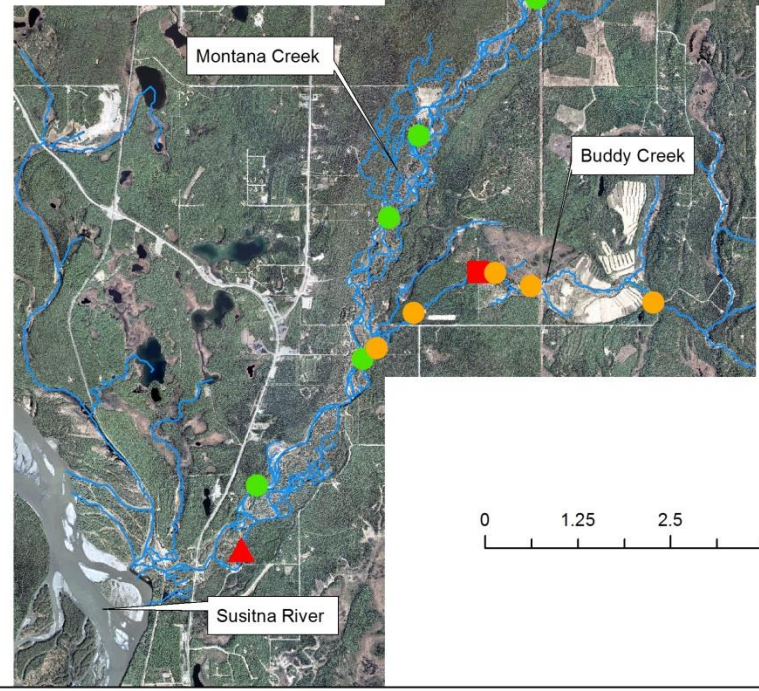
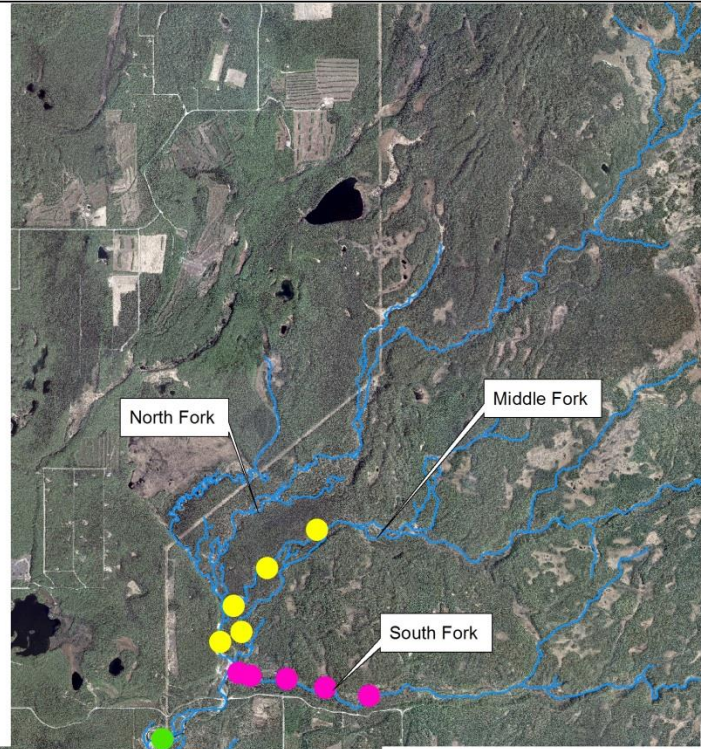
# Study Design

- Four Areas; Main-stem, South Fork, Middle Fork, Buddy Creek
- Five sampling reaches randomly selected in each area
- Each reach sampled four times during study



## Montana Creek

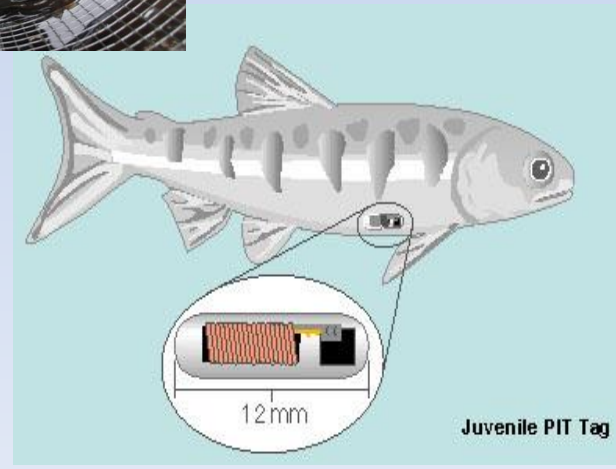
- Buddy Creek Reaches
- South Fork Reaches
- Middle Fork Reaches
- Mainstem Reaches
- Buddy Creek Antenna
- ▲ Montana Creek Antenna





# Methods- Capture

- Baited Minnow Traps
- PIT tagged ~2,400 juvenile Chinook and Coho Salmon





# Methods- Detection

- Physical Recapture
- Antenna Detection





# Results- Trapping

- Set 2,799 minnow traps
  - 2,829 soak hours
  - 19,292 juvenile Chinook and Coho Salmon Captured
    - 6.81 fish/hour average for sampling season





# Results- Tagging

- Tagged 2,384 juvenile Chinook and Coho Salmon
  - 1,185 Chinook Salmon; 1,199 Coho Salmon



Sampling Area	Chinook	Coho	Total
Main-stem	433	414	847
South Fork	391	250	641
Middle Fork	361	248	609
Buddy Creek	0	287	287
Total	1185	1199	2384



# Results- Detection (Recapture)

- 588 recaptures of 491 unique individuals
  - 21% of tagged population

Sampling Area	Chinook	Coho	Total
Main-stem	100	85	185
South Fork	78	74	152
Middle Fork	111	59	170
Buddy Creek	0	81	81
Total	289	299	588



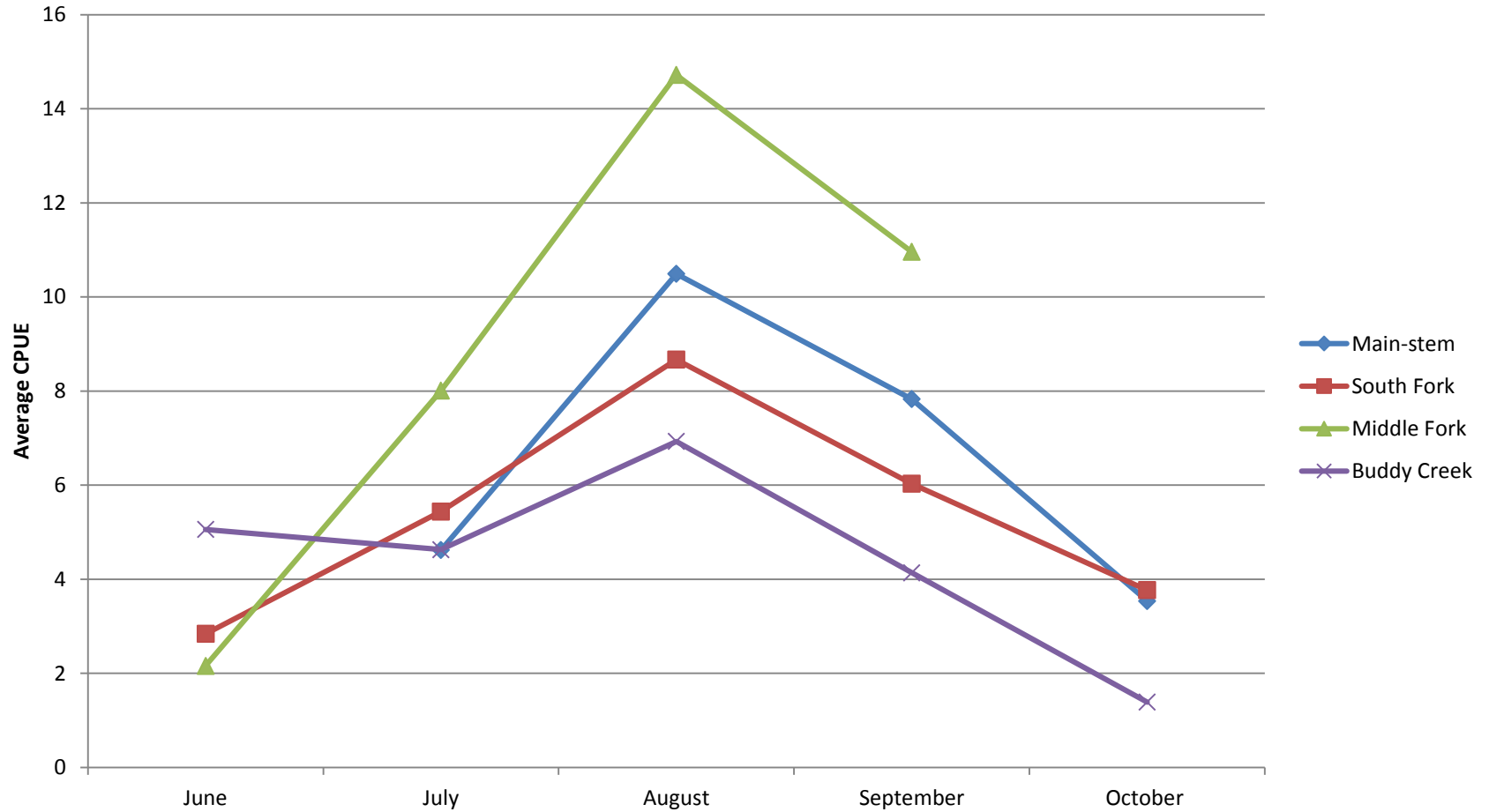
# Results- Detection (Antenna)

- 79 Detections (48 unique individuals) at the Montana Creek antenna site
- 479 Detections (120 unique individuals) at the Buddy Creek antenna site

Sampling Area	Montana Creek Site			Buddy Creek Site		
	Chinook	Coho	Total	Chinook	Coho	Total
Main-stem	24 (11)	24 (14)	48 (25)	84 (7)	106 (29)	190 (36)
South Fork	7 (6)	5 (5)	12 (11)	3 (1)	22 (9)	25 (10)
Middle Fork	6 (3)	10 (6)	16 (9)	3 (1)	21 (5)	24 (6)
Buddy Creek	0 (0)	3 (3)	3 (3)	0 (0)	240 (68)	240 (68)
Total	37 (20)	42 (28)	79 (48)	90 (9)	389 (111)	479 (120)

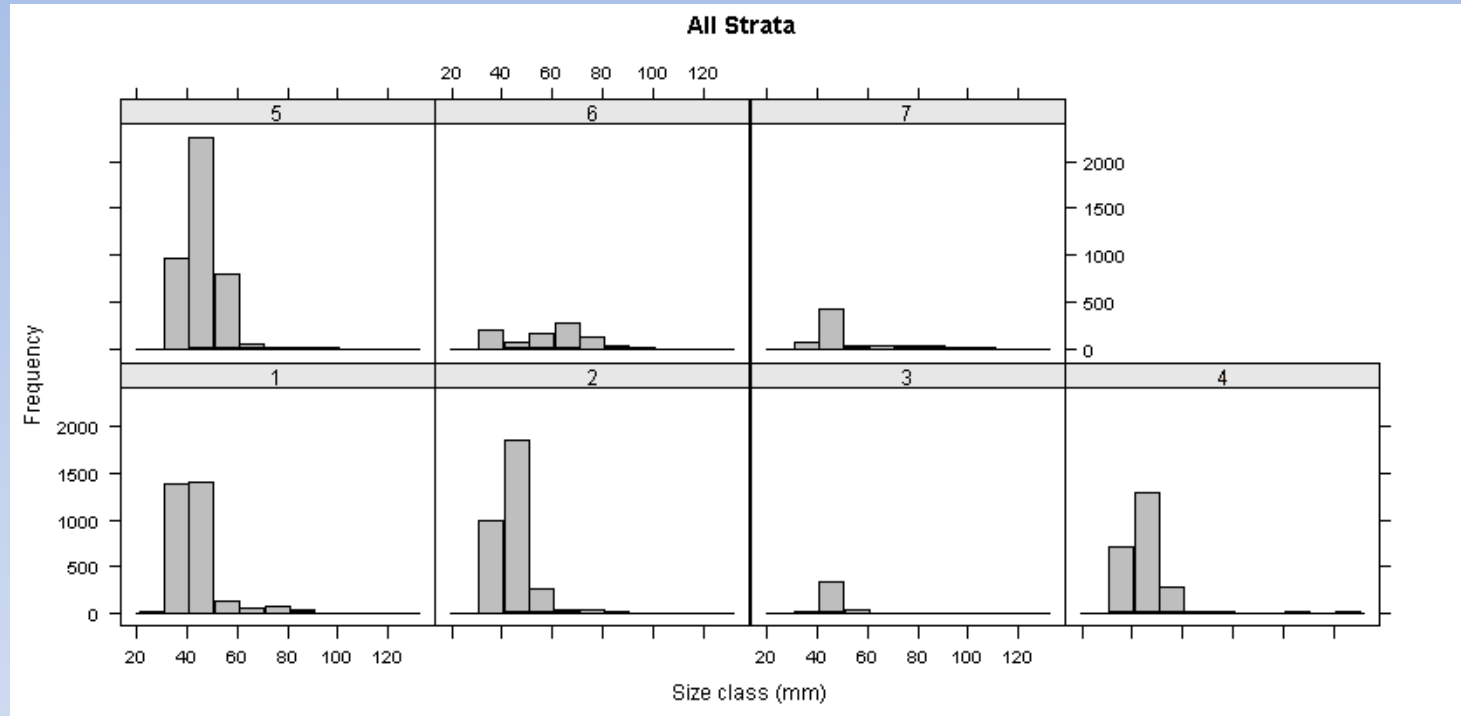


# Results- Movement





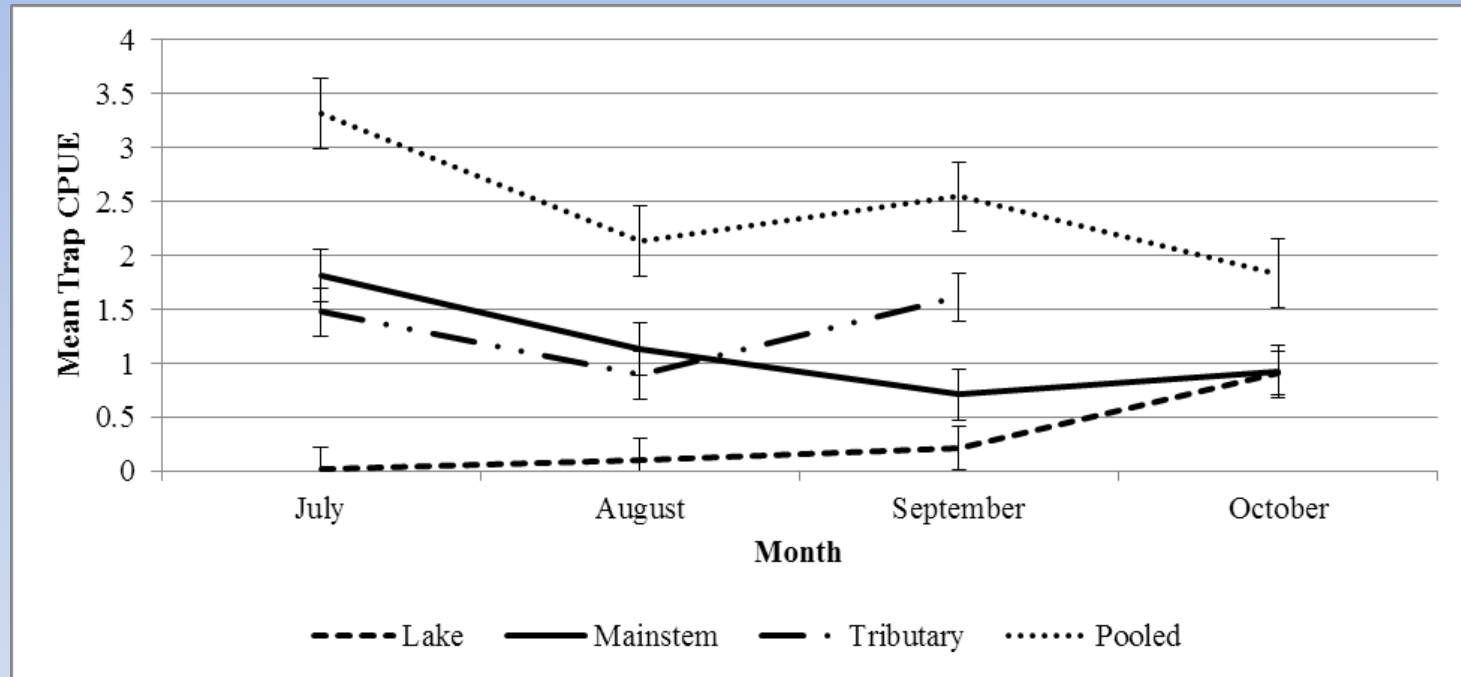
# Little Susitna 2010 - 2011



Juvenile Coho Salmon fork-length histograms by strata. Numbered strata are ordered sequentially beginning in the bottom left panel and proceeding to the upper right. Strata 1: Jul 6 – Jul 16, 2010; strata 2: Jul 7 – Jul 29, 2010; strata 3: Aug 3 – Aug 10, 2010; strata 4: Aug 20 – Aug 25, 2010; strata 5: Sept 1 – 15, 2011; strata 6: Jul 5 – Jul 8, 2011; strata 7: Jul 19 – Jul 29, 2011.



# Big Lake 2011



Mean monthly CPUE (number of fish captured/trap soak time) of juvenile Coho Salmon in each environment in 2011. Error bars represent standard error.

Gerken, J., and Sethi, S. 2013. Juvenile Coho Salmon Migration and Habitat Use in Meadow Creek, Southcentral Alaska, 2011. U.S Fish and Wildlife Service Data Series Report Number 2013-1. Anchorage, Alaska.



# Conclusions

- 93% of tagged population not detected by antenna sites
  - 2% Montana Creek antenna site
  - 5% Buddy Creek antenna site
- Juvenile Chinook and Coho Salmon appear to be overwintering within Montana Creek..... But where??
- Monitor 2017 smolt migration
- When: Movement timing to overwintering areas appears similar between landscapes
- Where: Type of overwintering area; lake, wetland, off channel habitat appears different between landscapes
- Who: Length of freshwater residency appears different between landscapes



# Acknowledgements

- Partners
  - Alaska Department of Fish and Game
  - Local Land Owners
- Local Knowledge
  - ARRI
- Field Crew
  - Jan Boyer, Bonnie Swartz, Maggie Schaffer, Jeremy Grauf, Serena Doose, Adam Grunwald, Benjamin Rich, Erin Knoll
- Volunteers
  - Cory Vroom, Kat O'Brien





# Questions

