

BCb Analysis- Early March

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05 April 2018

```
monkey <- "Ulysses"  
today <- "16-Apr-2018"  
look_back <- "16-Apr-2018"  
  
start_trial <- 0  
stop_trial <- "all"  
  
merge_days <- TRUE
```

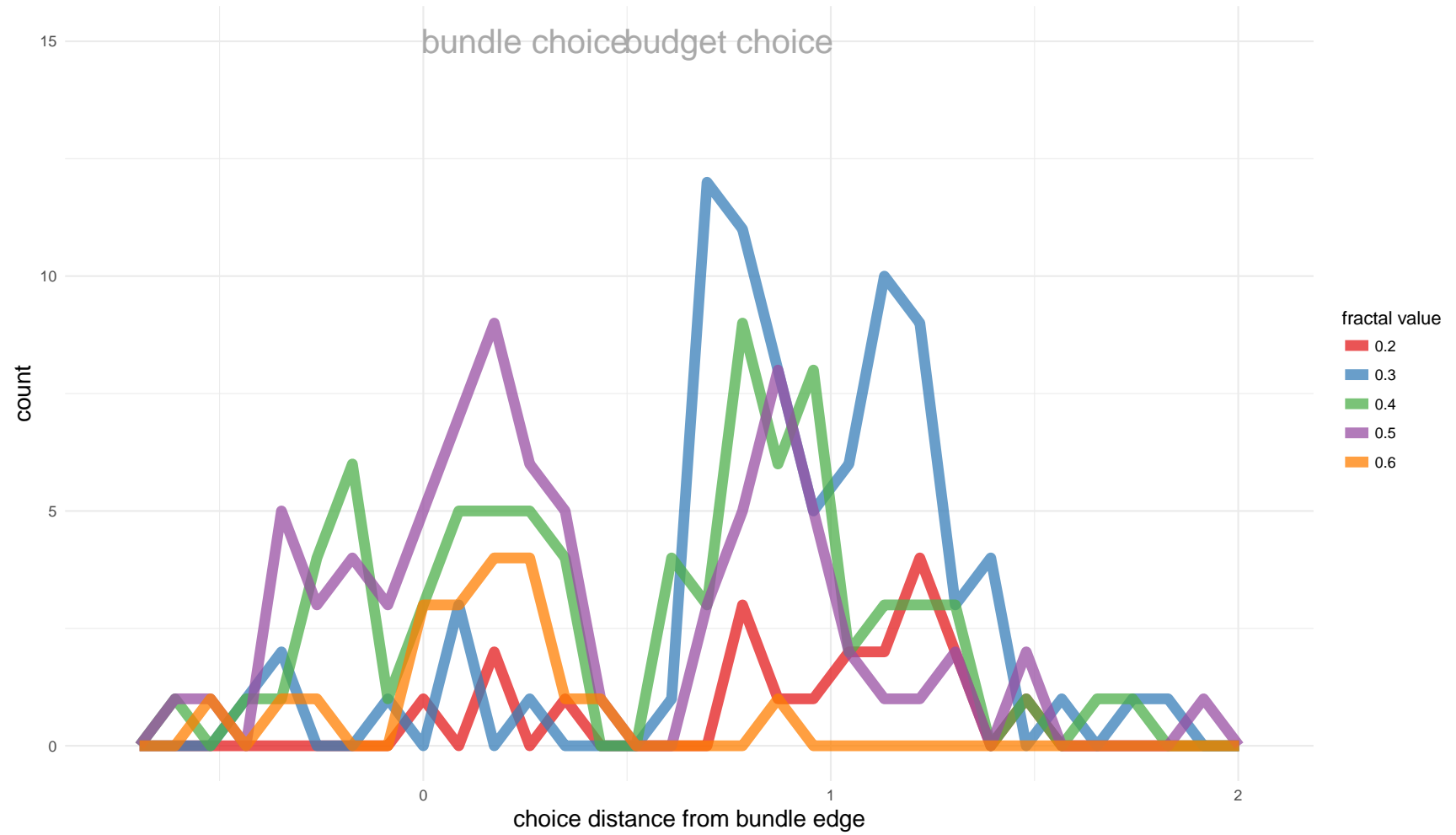
p1

Monkey Choice Distance From Bundle on Binary Choice Task

Ulysses : 16-Apr-2018 – 16-Apr-2018

2018-04-16

1

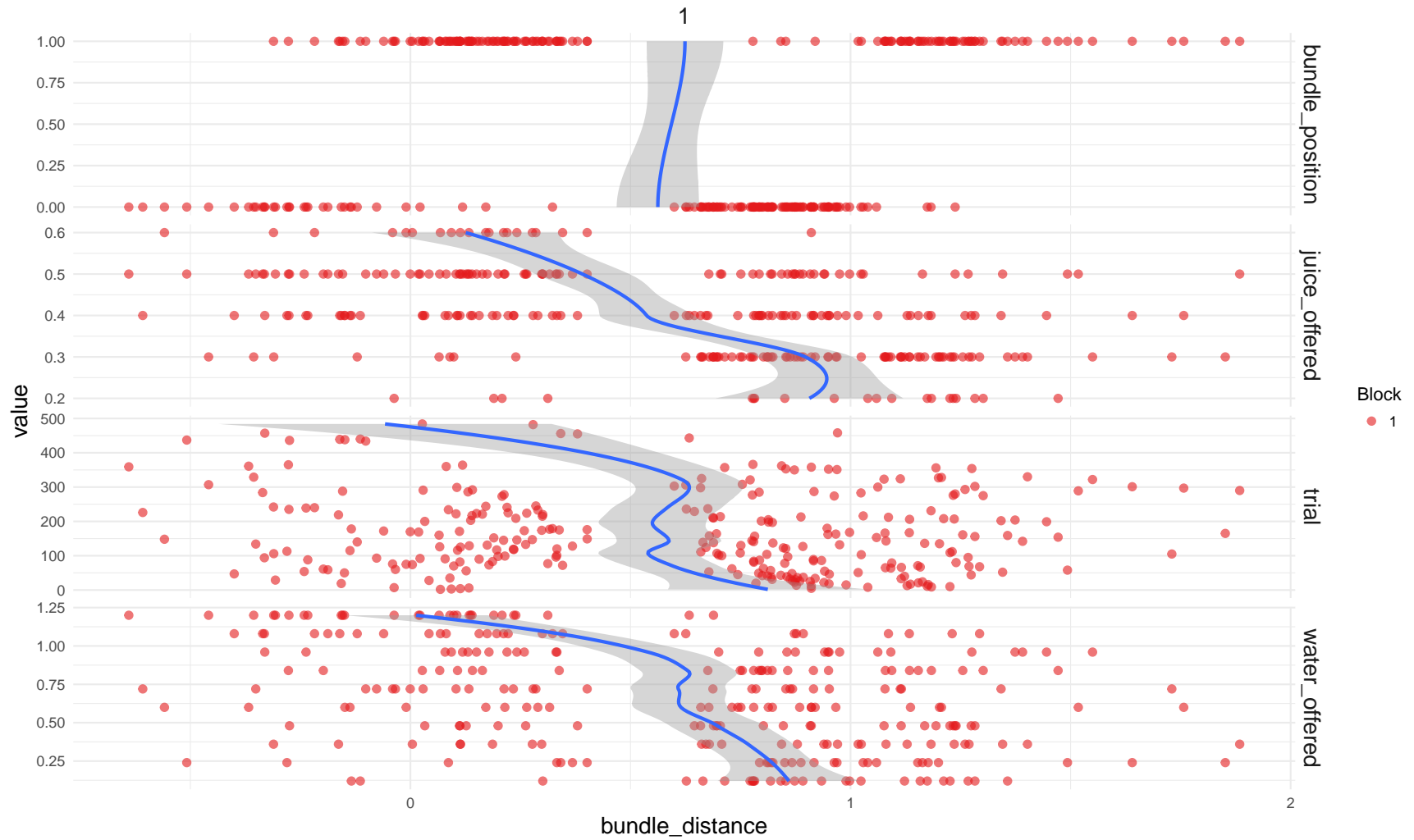


p2

Monkey Choice Distance From Bundle on Binary Choice Task

Ulysses : 16-Apr-2018 – 16-Apr-2018

2018-04-16



```

#generate a model of likelihood to choice for the fractal dependent on it's position,
#value and associated water
model <- glm(data = task_data,
             fractal_choice ~ bundle_position + water_offered + juice_offered + trial + date,
             family = "binomial")

#summarise the parameters
summary(model)

```

```

##
## Call:
## glm(formula = fractal_choice ~ bundle_position + water_offered +
##      juice_offered + trial + date, family = "binomial", data = task_data)
##
## Deviance Residuals:
##      Min       1Q   Median       3Q      Max
## -2.1518  -0.5265  -0.1509   0.5213   2.8862
##
## Coefficients: (1 not defined because of singularities)
##              Estimate Std. Error z value Pr(>|z|)
## (Intercept)  -12.324007   1.486976  -8.288  < 2e-16 ***
## bundle_position    2.045183   0.392721   5.208 1.91e-07 ***
## water_offered     4.429237   0.661145   6.699 2.09e-11 ***
## juice_offered    17.245059   2.330439   7.400 1.36e-13 ***
## trial           0.004186   0.001466   2.856 0.00429 **
## date                NA          NA      NA      NA
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for binomial family taken to be 1)
##
##      Null deviance: 380.57  on 279  degrees of freedom
## Residual deviance: 206.14  on 275  degrees of freedom
## (204 observations deleted due to missingness)
## AIC: 216.14
##
## Number of Fisher Scoring iterations: 6

```

```

#test for side bias with an exact binomial test
binom.test(c(nrow(task_data %>%
              .[c(bundle_position != fractal_choice)]),
            nrow(task_data %>%
              .[c(bundle_position == fractal_choice)])))

##
## Exact binomial test
##
## data:  c(nrow(task_data %>% .[c(bundle_position != fractal_choice)]),      nrow(task_data %>% .[c(bundle_position == fractal_choice)]))
## number of successes = 99, number of trials = 280, p-value =
## 1.094e-06
## alternative hypothesis: true probability of success is not equal to 0.5
## 95 percent confidence interval:
##  0.2976043 0.4126752
## sample estimates:
## probability of success
##          0.3535714

```

```

#generate a model of likelihood to choice for the fractal dependent on it's position,
#value and associated water
model <- glm(data = dplyr::filter(task_data, block_no == max(block_no)),
             fractal_choice ~ bundle_position + water_offered + as.factor(juice_offered) + trial + date,
             family = "binomial")

#summarise the parameters
summary(model)

```

```

##
## Call:
## glm(formula = fractal_choice ~ bundle_position + water_offered +
##      as.factor(juice_offered) + trial + date, family = "binomial",
##      data = dplyr::filter(task_data, block_no == max(block_no)))
##
## Deviance Residuals:
##      Min       1Q   Median       3Q      Max
## -2.3353  -0.5157  -0.1044   0.4562   2.7843
##
## Coefficients: (1 not defined because of singularities)
##              Estimate Std. Error z value Pr(>|z|)
## (Intercept)    -7.555647    1.215838  -6.214 5.15e-10 ***
## bundle_position    2.083633    0.418795   4.975 6.51e-07 ***
## water_offered     4.604260    0.695763   6.618 3.65e-11 ***
## as.factor(juice_offered)0.3 -0.724700    0.844998  -0.858 0.39109
## as.factor(juice_offered)0.4  2.326351    0.840349   2.768 0.00563 **
## as.factor(juice_offered)0.5  3.498982    0.876294   3.993 6.53e-05 ***
## as.factor(juice_offered)0.6  5.958145    1.375313   4.332 1.48e-05 ***
## trial            0.004616    0.001548   2.983 0.00286 **
## date              NA           NA        NA      NA
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for binomial family taken to be 1)
##
##      Null deviance: 380.57  on 279  degrees of freedom
## Residual deviance: 194.45  on 272  degrees of freedom
##      (204 observations deleted due to missingness)
## AIC: 210.45

```

```
##
```

```
## Number of Fisher Scoring iterations: 6
```

```
#test for side bias with an exact binomial test
```

```
binom.test(c(nrow(task_data %>%  
             .[c(bundle_position != fractal_choice & block_no == max(block_no))]),  
           nrow(task_data %>%  
             .[c(bundle_position == fractal_choice & block_no == max(block_no))])))
```

```
##
```

```
## Exact binomial test
```

```
##
```

```
## data: c(nrow(task_data %>% .[c(bundle_position != fractal_choice & block_no == max(block_no))]), nrow(task_data %>% .[c(bundle_pos
```

```
## number of successes = 99, number of trials = 280, p-value =
```

```
## 1.094e-06
```

```
## alternative hypothesis: true probability of success is not equal to 0.5
```

```
## 95 percent confidence interval:
```

```
## 0.2976043 0.4126752
```

```
## sample estimates:
```

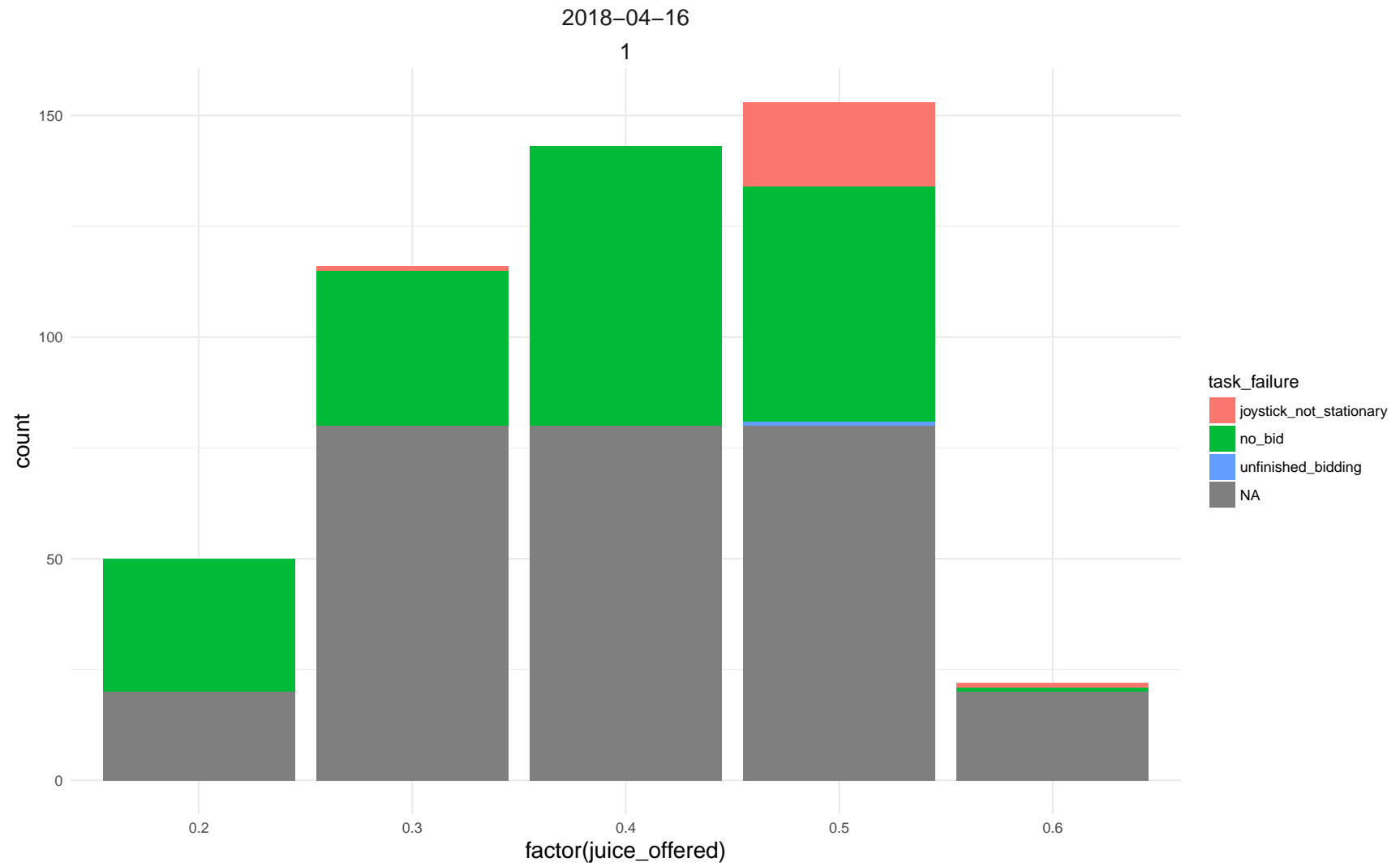
```
## probability of success
```

```
## 0.3535714
```

p3

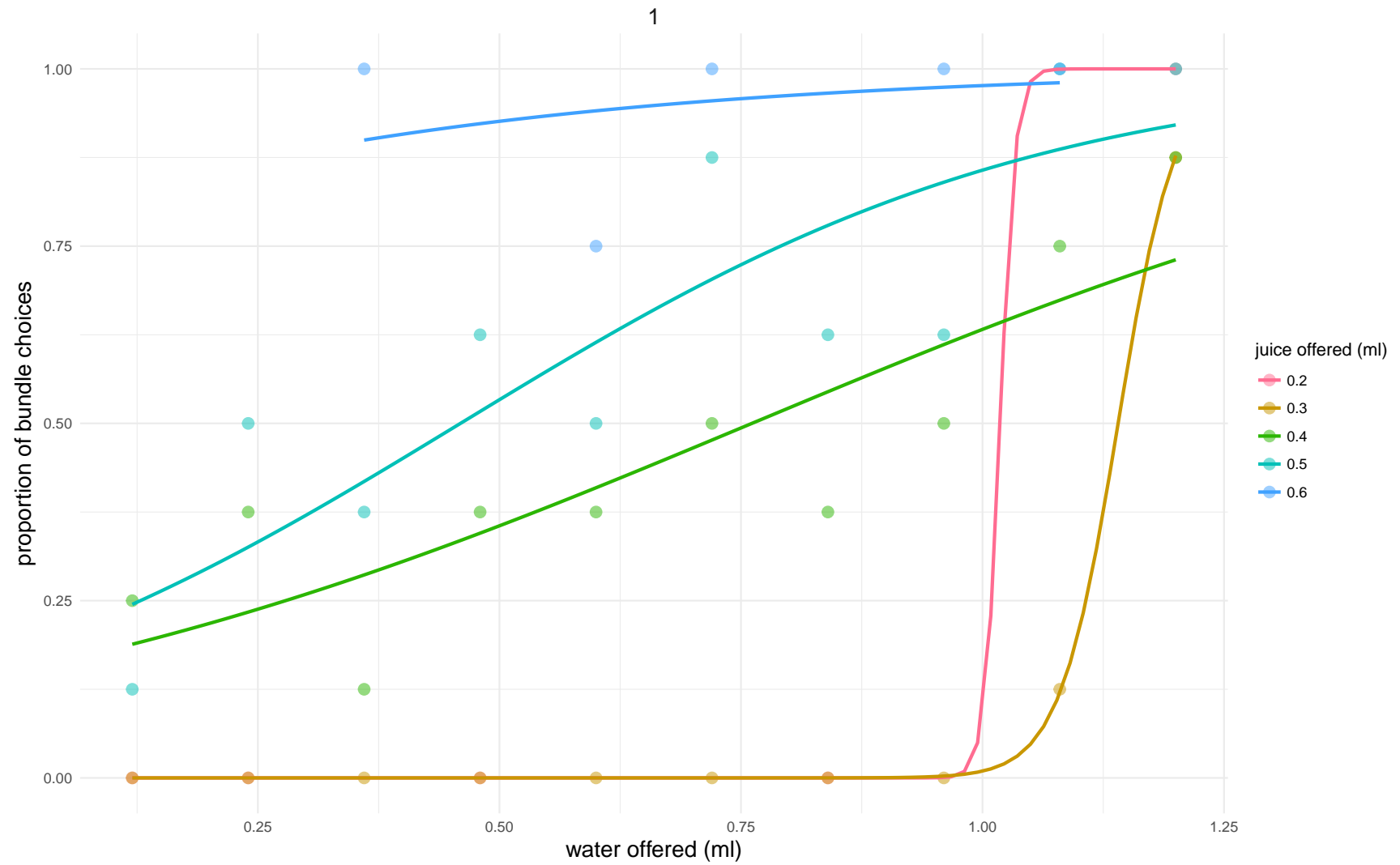
Monkey Choice Failures

Ulysses : 16-Apr-2018 – 16-Apr-2018



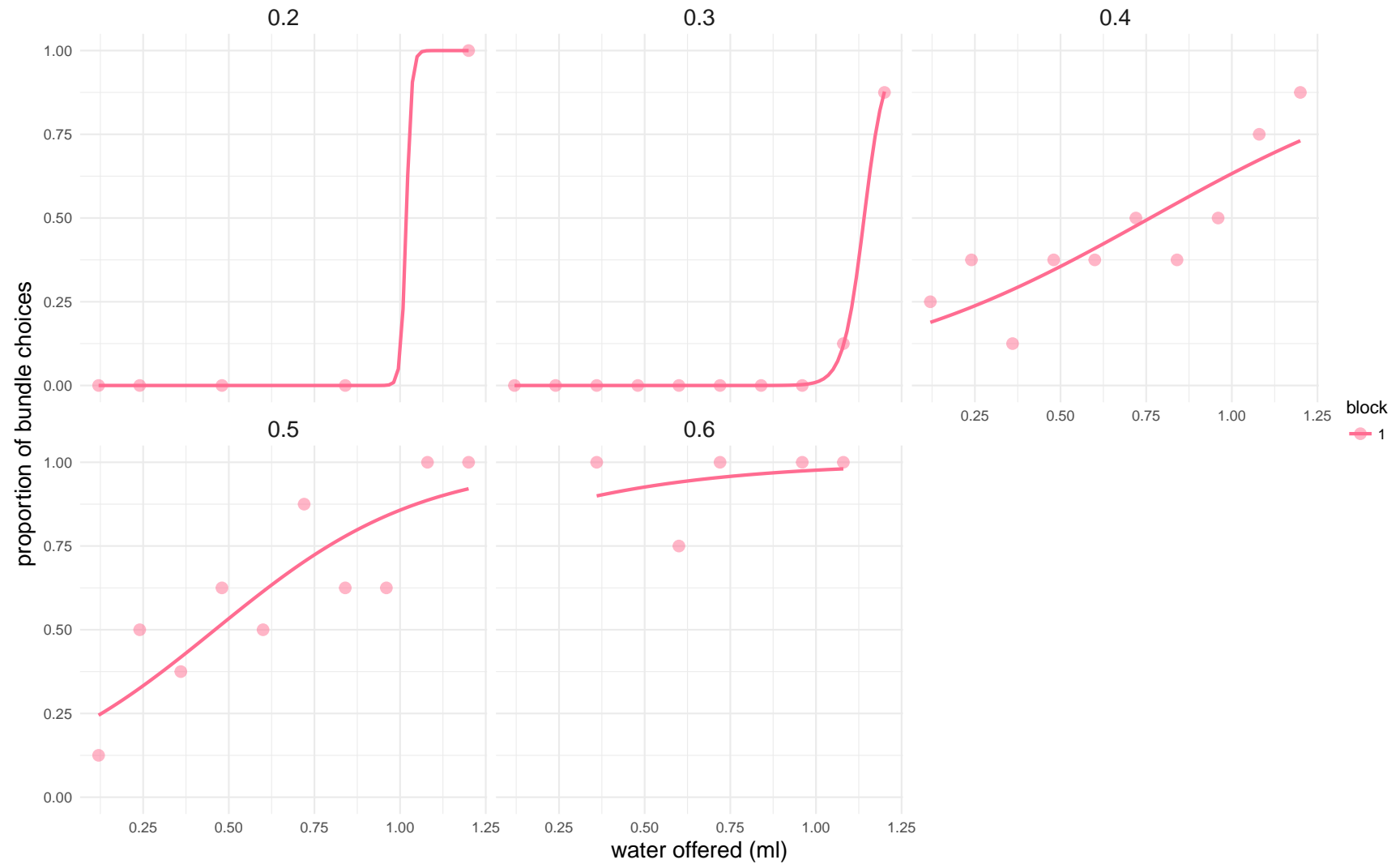
Monkey Bundle Choice Binoimial Curves

Ulysses : 16-Apr-2018 – 16-Apr-2018



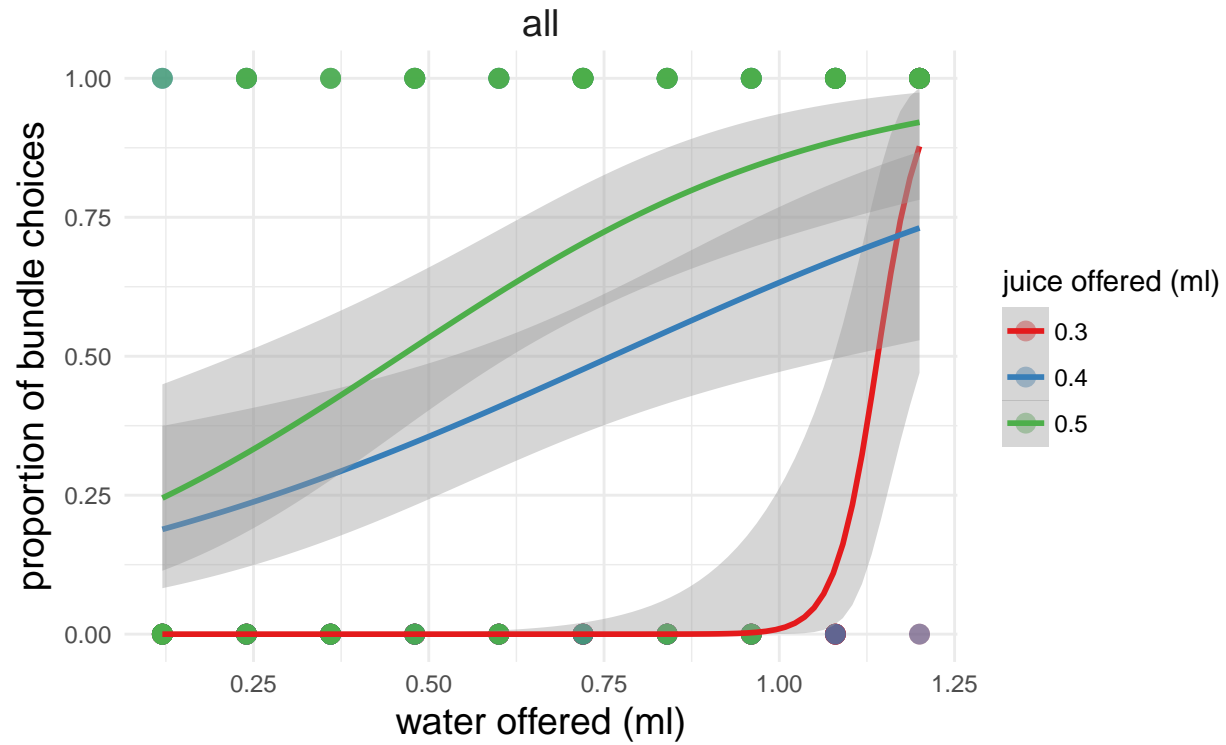
Monkey Bundle Choice Binoimial Curves

Ulysses : 16-Apr-2018 – 16-Apr-2018



Today's Monkey Bundle Choice Binoimial Curves

Ulysses : 16-Apr-2018

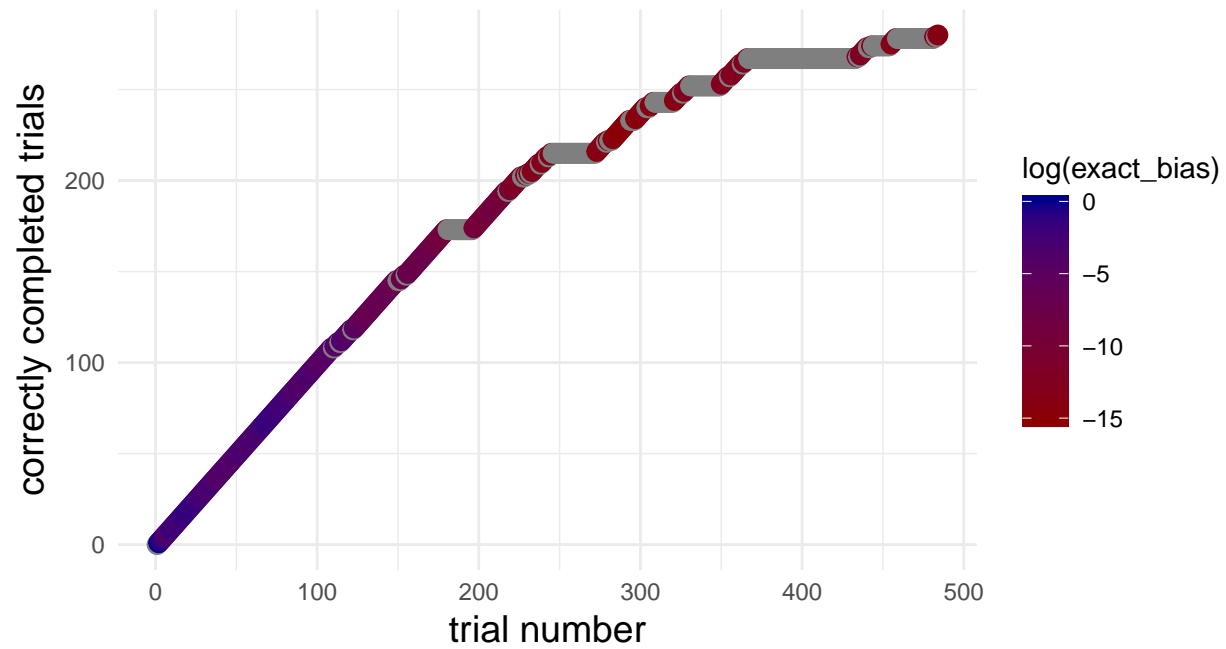


Monkey Trial Progression and Bias

Ulysses : 16-Apr-2018 – 16-Apr-2018

2018-04-16

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Monkey Trial Progression and Bias

Ulysses : 16-Apr-2018 – 16-Apr-2018

