Plotting Your Coefficients

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April 6, 2015

Arguments for Plotting Regression Output

1. Looks neat
2. Is fun to do
3. Necessary for publication
4. Facilitates better communication

Regression Plots Look Neat!

Table 8
Pekkanen, Nyblade and Krauss (2006), table 1: Logit analysis of electoral incentives and LDP post allocation (1996–2003)

Variable	Model 1	Model 2
Block 1: MP Type		
Zombie	0.18 (.22)	0.27 (0.22)
SMD Only	−0.19 (0.22)	−0.19 (0.24)
PR Only	−0.39 (0.18)**	—
Costa Rican in PR	−0.09 (0.29)	—
Block 2: Electoral Strength		
Vote share margin	—	0.005 (0.004)
Margin Squared	—	—
Block 3: Misc Controls		
Urban-Rural Index	0.04 (0.08)	0.04 (0.09)
No Factional Membership	−0.86 (0.26)***	−0.98 (0.31)***
Legal Professional	0.39 (0.29)	−.36 (0.30)
Seniority		
1st Term	−3.76 (0.36)***	−3.66 (0.37)***
2nd Term	−1.61 (0.19)***	−1.59 (0.21)***
4th Term	−0.34 (0.19)**	−0.45 (0.21)***
5th Term	−1.17 (0.22)***	−1.24 (0.24)***
6th Term	−1.15 (0.22)***	−1.04 (0.24)***
7th Term	−1.52 (0.25)***	−1.83 (0.29)***
8th Term	−1.66 (0.28)***	−1.82 (0.32)***
9th Term	−1.34 (0.32)***	−1.21 (0.33)***
10th Term	−2.89 (0.48)***	−2.77 (0.49)***
11th Term	−1.88 (0.43)***	−1.34 (0.46)***
12th Term	−1.08 (0.41)***	−0.94 (0.49)**
Constant	.020 (.20)	0.13 (0.26)
Log-likelihood	−917.24	−764.77
N	1895	1574

Notes: Dependent Variables: 1 if MP holds a post of minister, vice minister, PARC, or HoR Committee Chair.

Base categories: SMD dual-listed, 3rd term. Excluded observations: senior MPs that held no post (> 12 terms, PR-Only MPs in Model 2).

*p < .10, **p < .05, ***p < .001.

Figure 7
Using parallel dot plots with error bars to present two regression models.

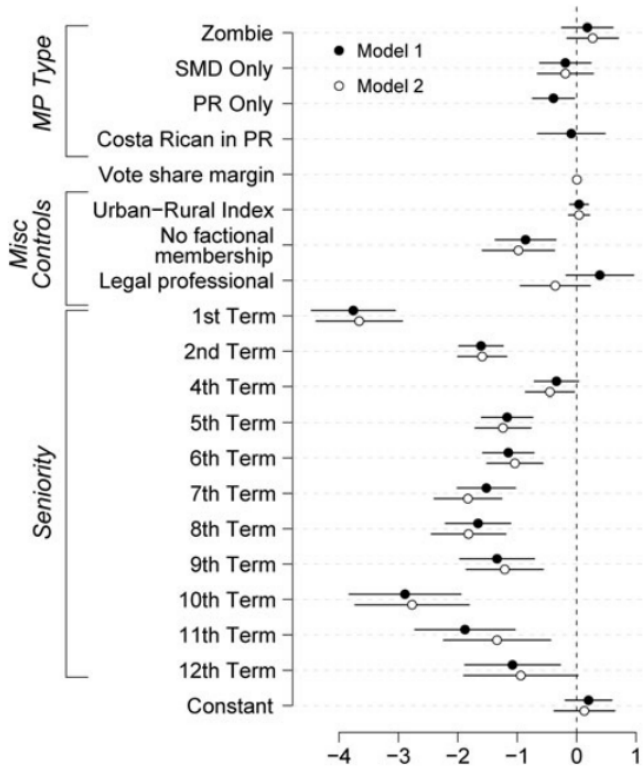
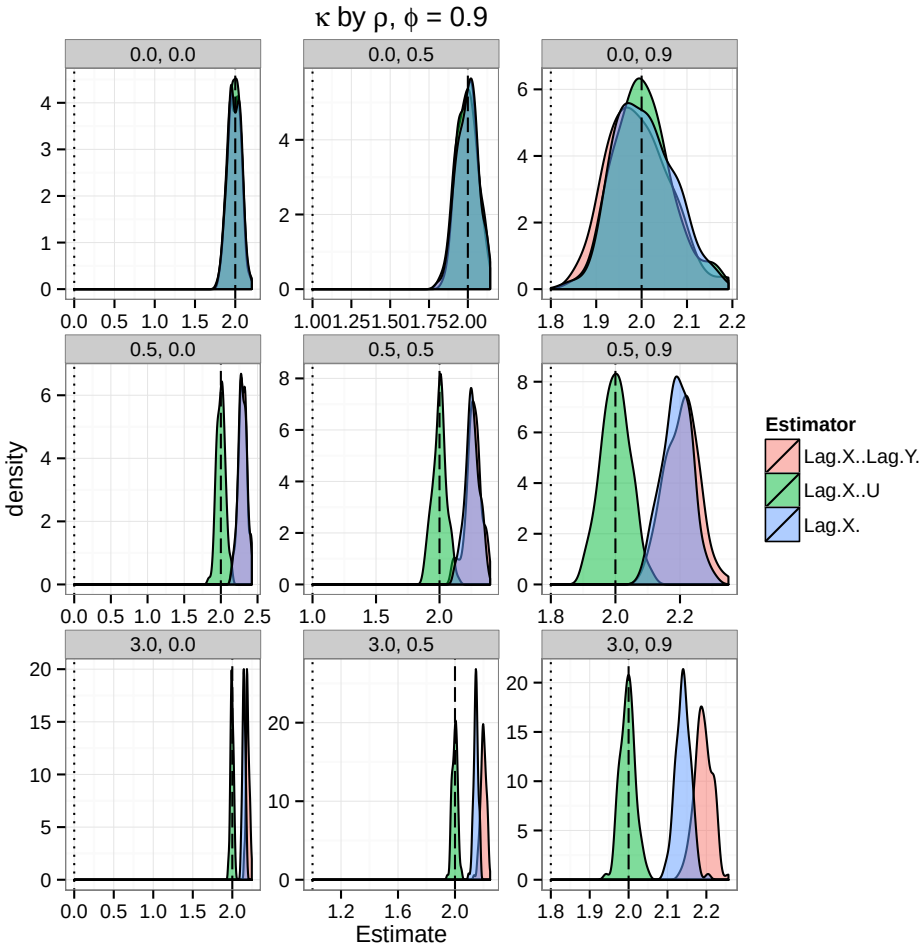


Table 1 from Pekkanen et al. 2006 displays two logistic regression models that examine the allocation of posts in the LDP party in Japan. We turn the table into a graph, and present the two models by plotting parallel lines for each of them grouped by coefficients. We differentiate the models by plotting different symbols for the point estimates: filled (black) circles for Model 1 and empty (white) circles for Model 2.

Making Figures Is Fun!

Not a regression plot, but...



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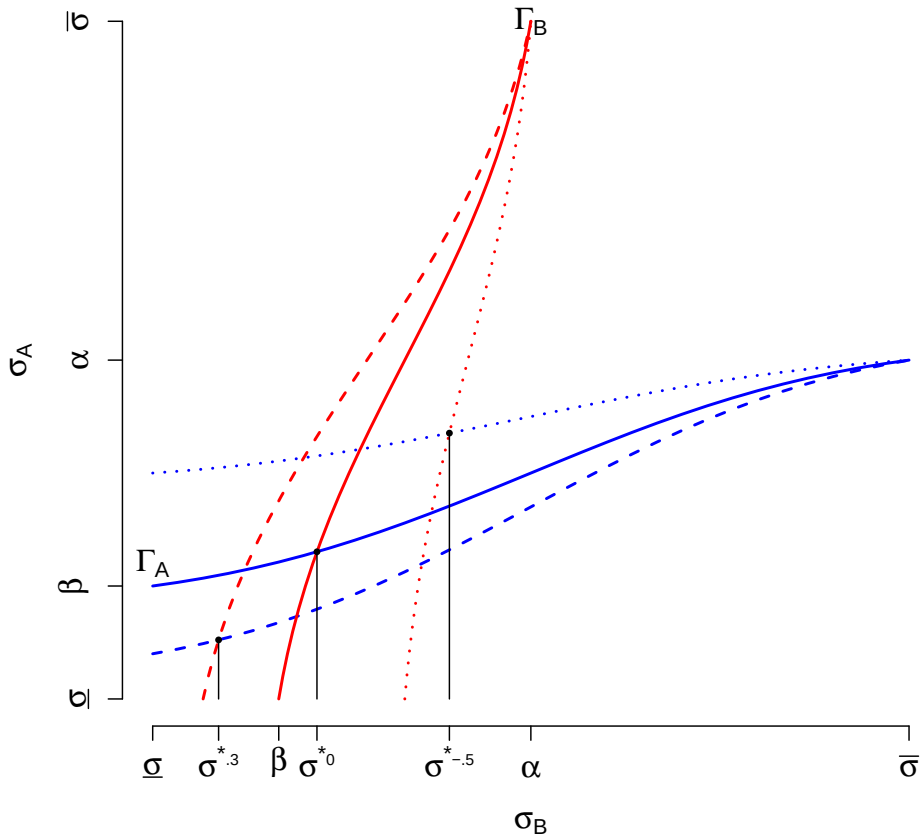

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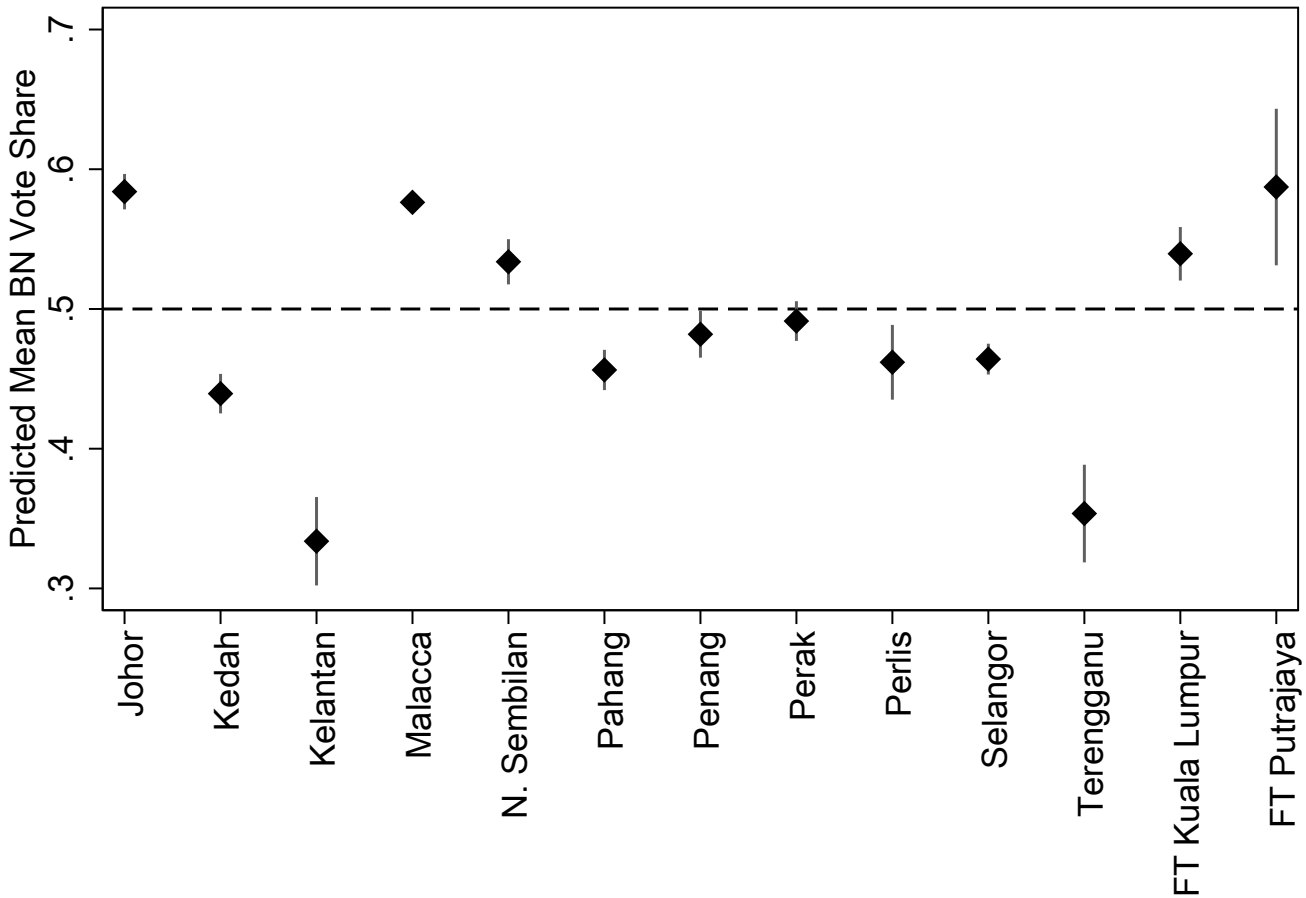
Kinda like a regression plot...



Coefficient Plots Help You Get Published?

Most recent issues of "top" social science journals

1. APSR: 3 of 9 (1 not a regression)
2. ASR: 0 of 7
3. AER: 0 of 4
4. PR: 1 of 2 (not a regression)

**Note: sample includes all regression and experimental analyses. Calibration/simulation exercises excluded.

Caveats

1. We don't know the denominator
2. Signaling value? (like knowing how to make LaTeX – see?)

Coefficient Plots Facilitate Better Communication?

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	Model 1	Model 2
(Intercept)	20.55^{**}	20.61^{**}
	(6.76)	(6.91)
Lwid	-0.91	-0.92
	(0.55)	(0.55)
Shld	-0.31^{**}	-0.31^{**}
	(0.09)	(0.09)
Lane	0.12	0.10
	(0.20)	(0.32)
Len	-0.10^{**}	-0.10^{*}
	(0.04)	(0.04)
Trks	-0.28^{*}	-0.28^{*}
	(0.12)	(0.12)
ADT		0.00
		(0.02)
R^2	0.54	0.54
Adj. R^2	0.47	0.45
Num. obs.	39	39
$^{***}p < 0.001$, $^{**}p < 0.01$, $^{*}p < 0.05$		

Table: These models were estimated using the `highway` dataset in the `alr3` package (Weisberg 2005).

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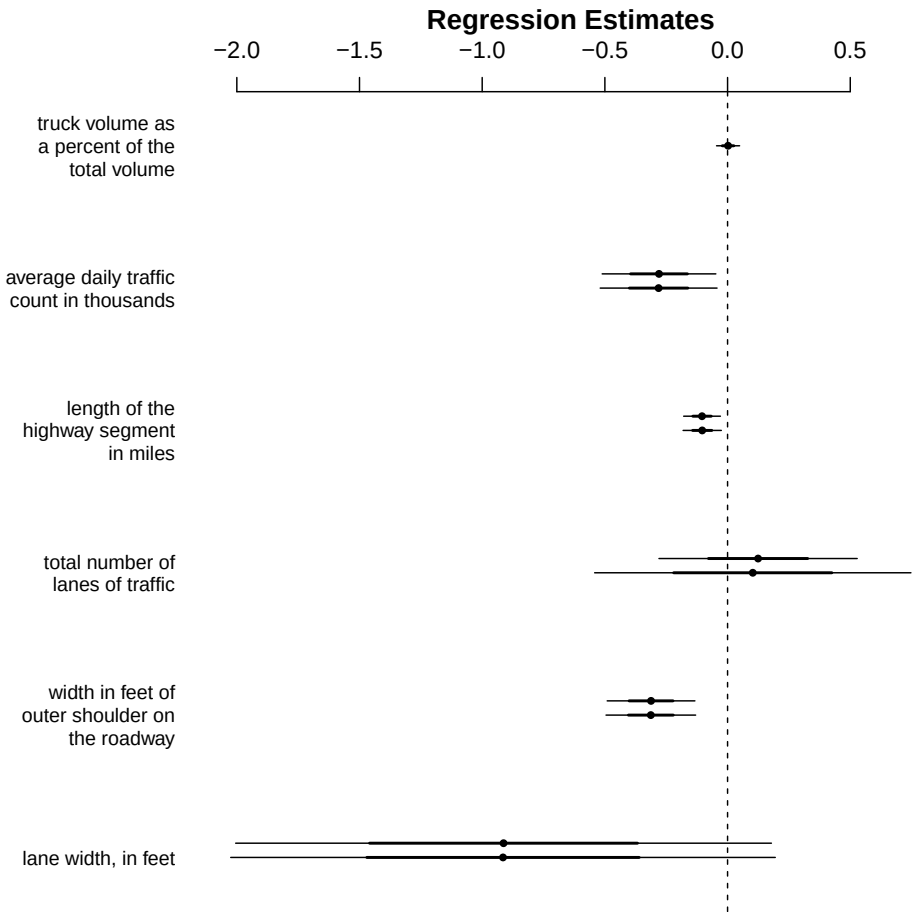

These models were produced using `coefplot()` from the `arm` package (Gelman et al. 2014)

Coefficient Plots Facilitate Better Communication?

Plots do not *add* information.

They *highlight* things differently.

So What Else You Plot?

Different `coefplot()` (Lander 2015) with the same results...

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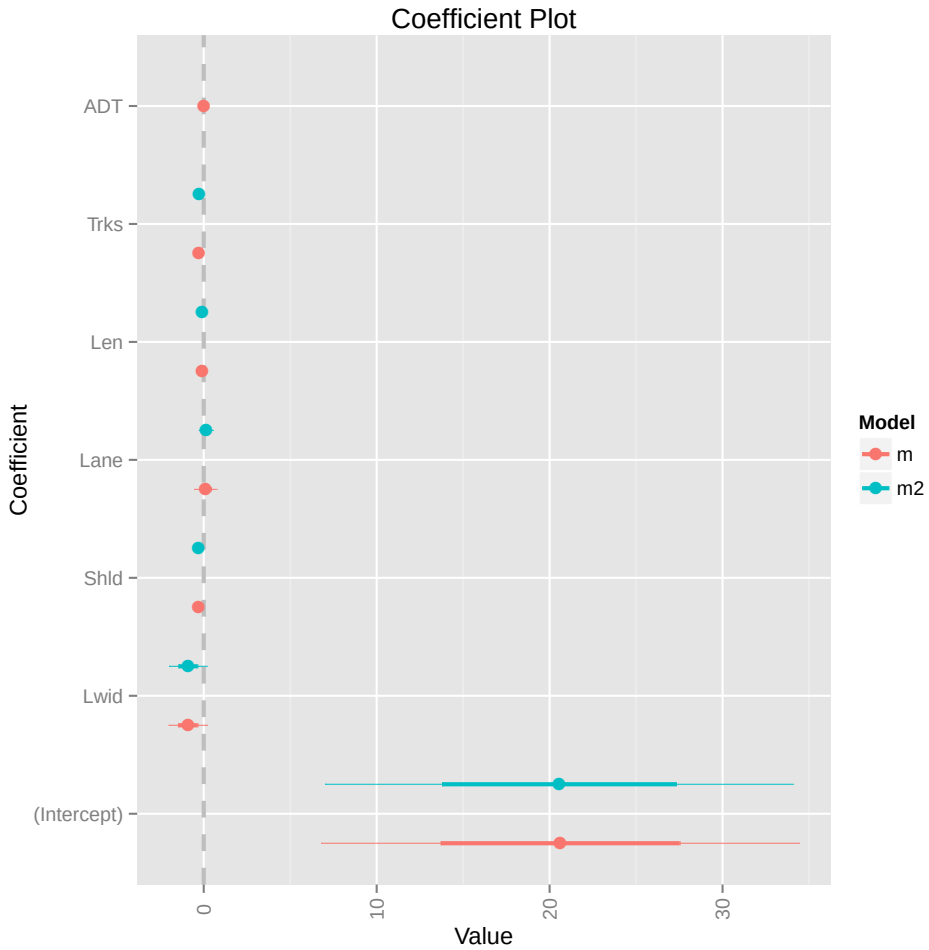

But Isn't The Intercept Meaningless?

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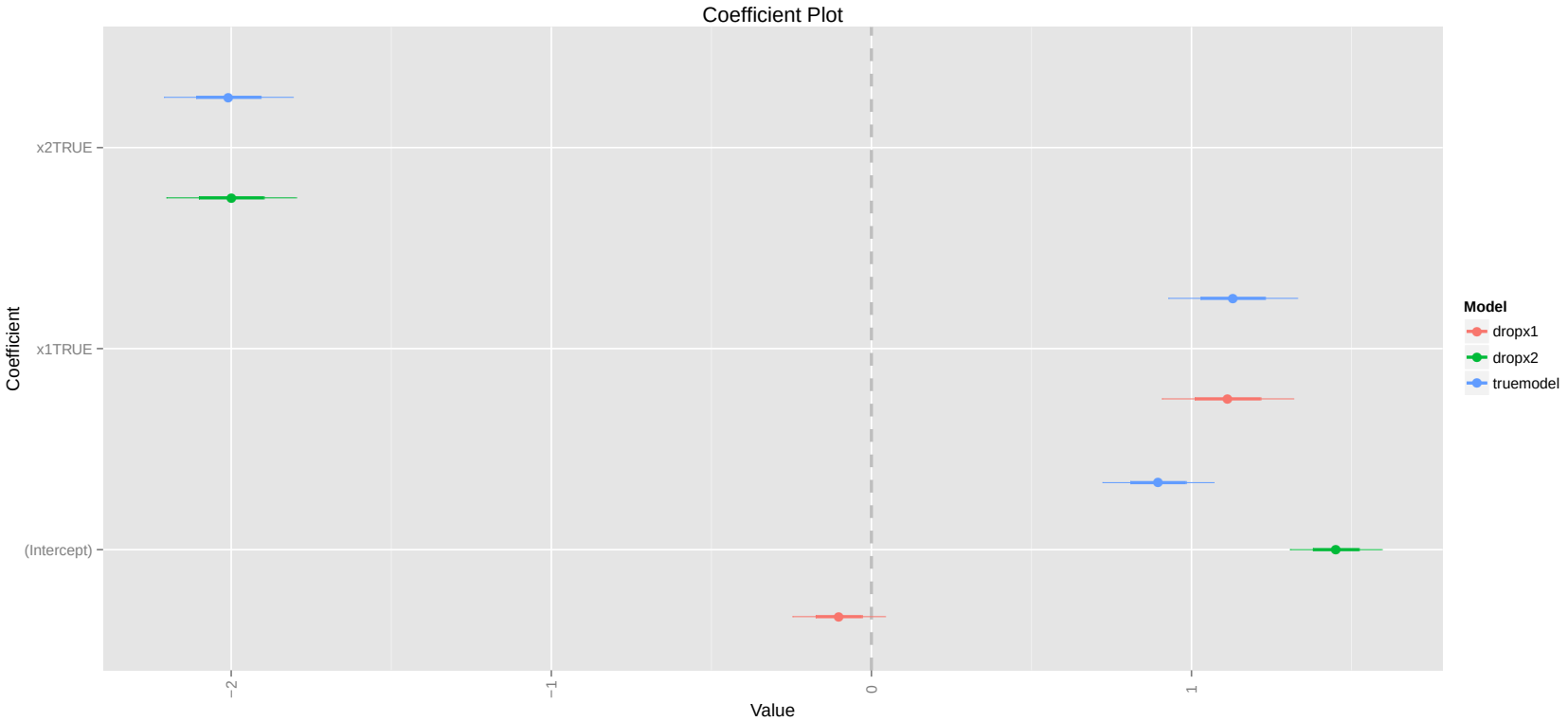
Consider the following model: $Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \epsilon$,
where $\alpha = 1$, $\beta_1 = 1$, $\beta_2 = -2$, $\epsilon \sim N(0, \sigma^2)$, $X_1, X_2 \in \{0, 1\}$



Need both data and theory of DGP to know "intercept is meaningless"

Coefficient Plots Facilitate Better Communication?

Communication requires *Author* and *Reader* share a language. Do we? Let's test! (cf. Hoestra et al. 2014)

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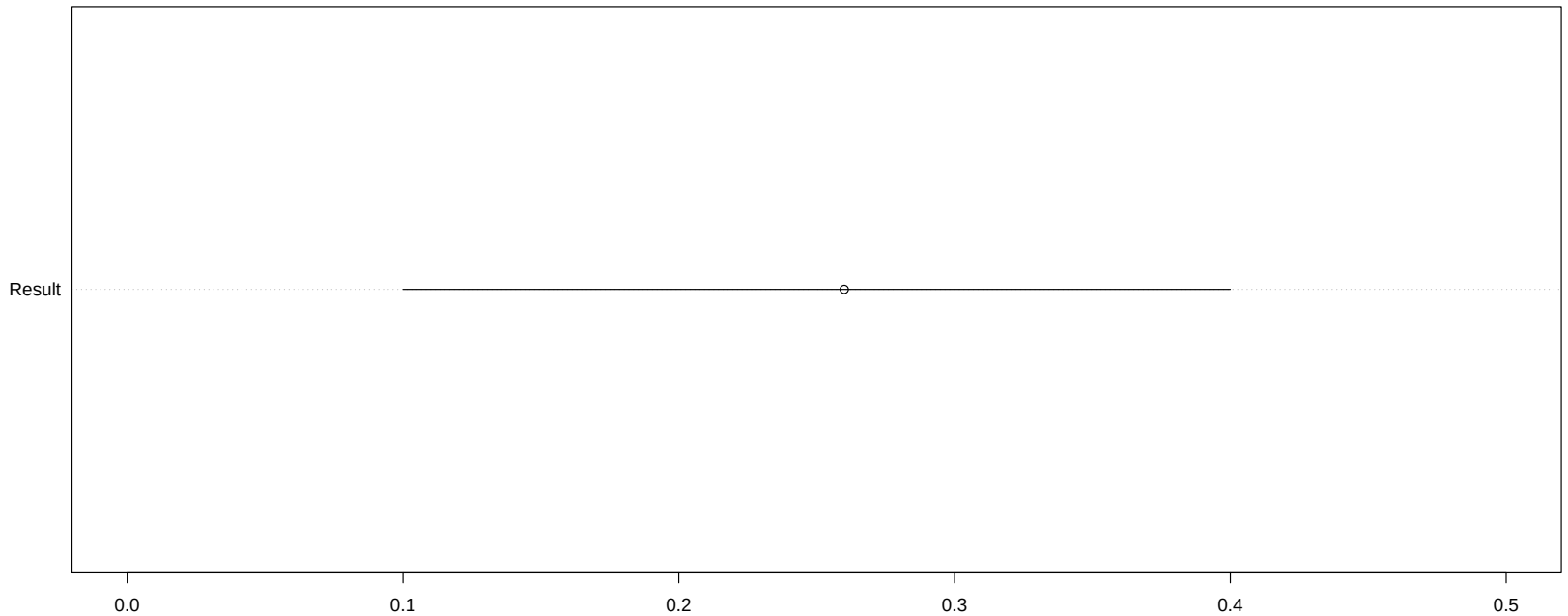

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So, how many of the following are true?

1. The probability that the true mean is greater than 0 is at least 95%.
2. The probability that the true mean equals 0 is smaller than 5%.
3. The "null hypothesis" that the true mean equals 0 is likely to be incorrect.
4. There is a 95% probability that the true mean lies between 0.1 and 0.4.
5. We can be 95% confident that the true mean lies between 0.1 and 0.4.
6. If we were to repeat the experiment over and over, then 95% of the time the confidence intervals contain the true mean.
7. If we were to repeat the experiment over and over, then 95% of the time the true mean falls between 0.1 and 0.4.

Four Edward Tufte Principles

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1. "Design cannot rescue failed content."
2. "Small, noncomparative, highly labeled data sets usually belong in tables."
3. "Analytical designs are not to be decided on their convenience to the user or necessarily their readability or what psychologists or decorators think about them; rather, design architectures should be decided on how the architecture assists analytical thinking about evidence"
4. "The minimum we should hope for with any display technology is that it should do no harm."