

Referral Program AB Testing Report



Audience assumption:
Internal meeting with PM



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- Analysis

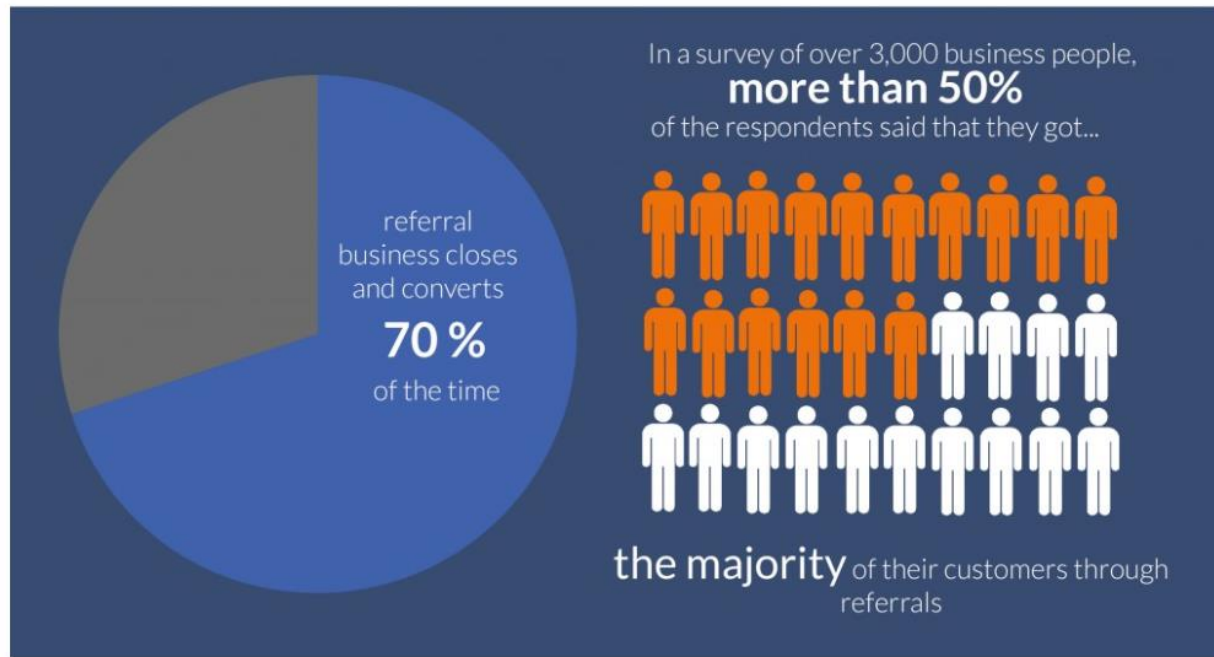
5.

- Finding & Conclusion

The background features a light gray surface with several bright yellow rectangular blocks. A large white rectangle is centered on the page, containing the word "Background".

Background

Background



Researcher said:

More than half of the respondents said that they got **70% of their customers** through **referrals**. Referral **converts** 70% of the time.

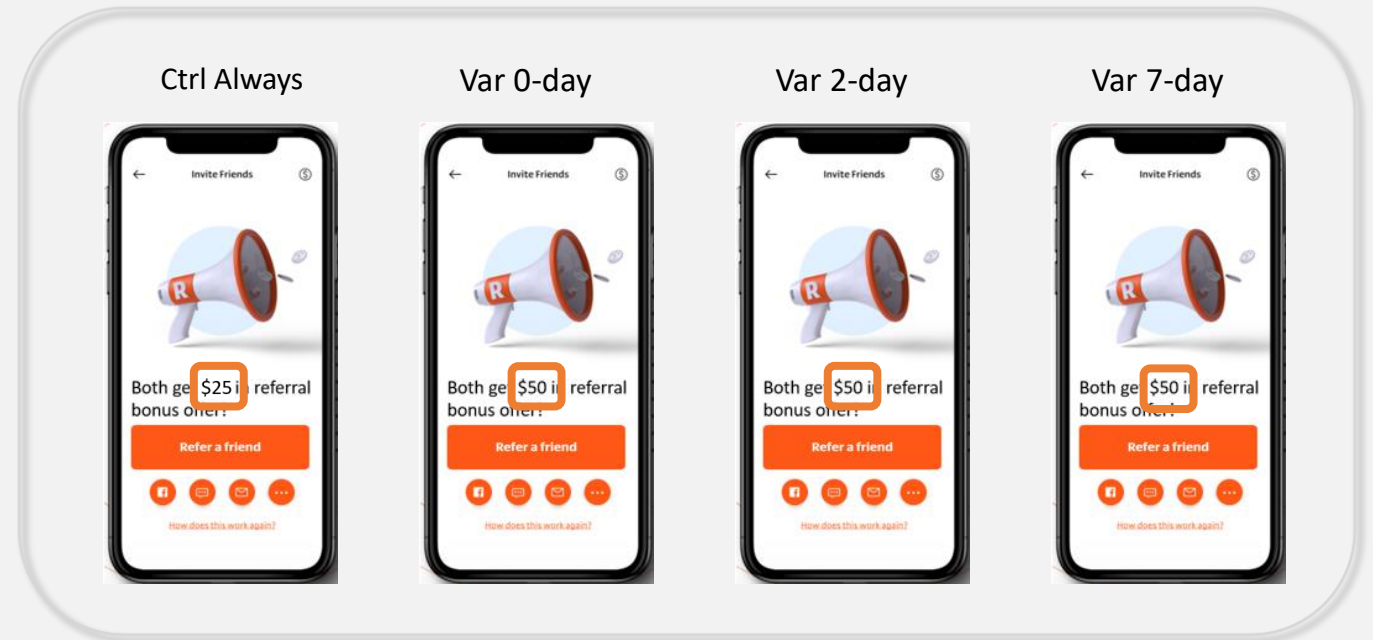
Company:

It is typically **cheaper** for us to acquire potential clients from referral than it is to advertise on website.

Background

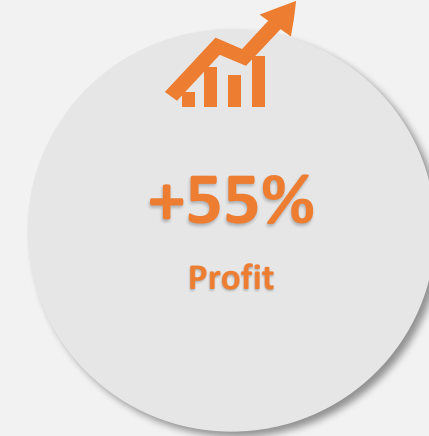
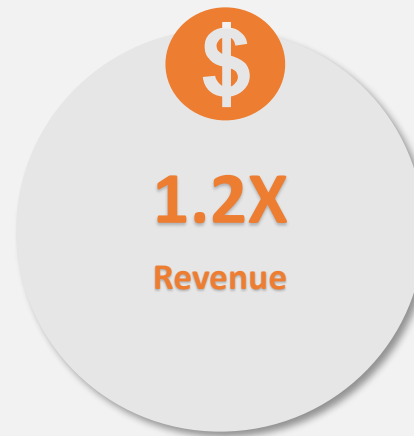
We decided to run an AB Test to find whether it will **increase referrals** if we:

- a) Increase referral incentive from \$25 to \$50
- b) Send the promo in 0/2/7 days after sender buys a policy



Executive Summary

Executive Summary



Recommendation

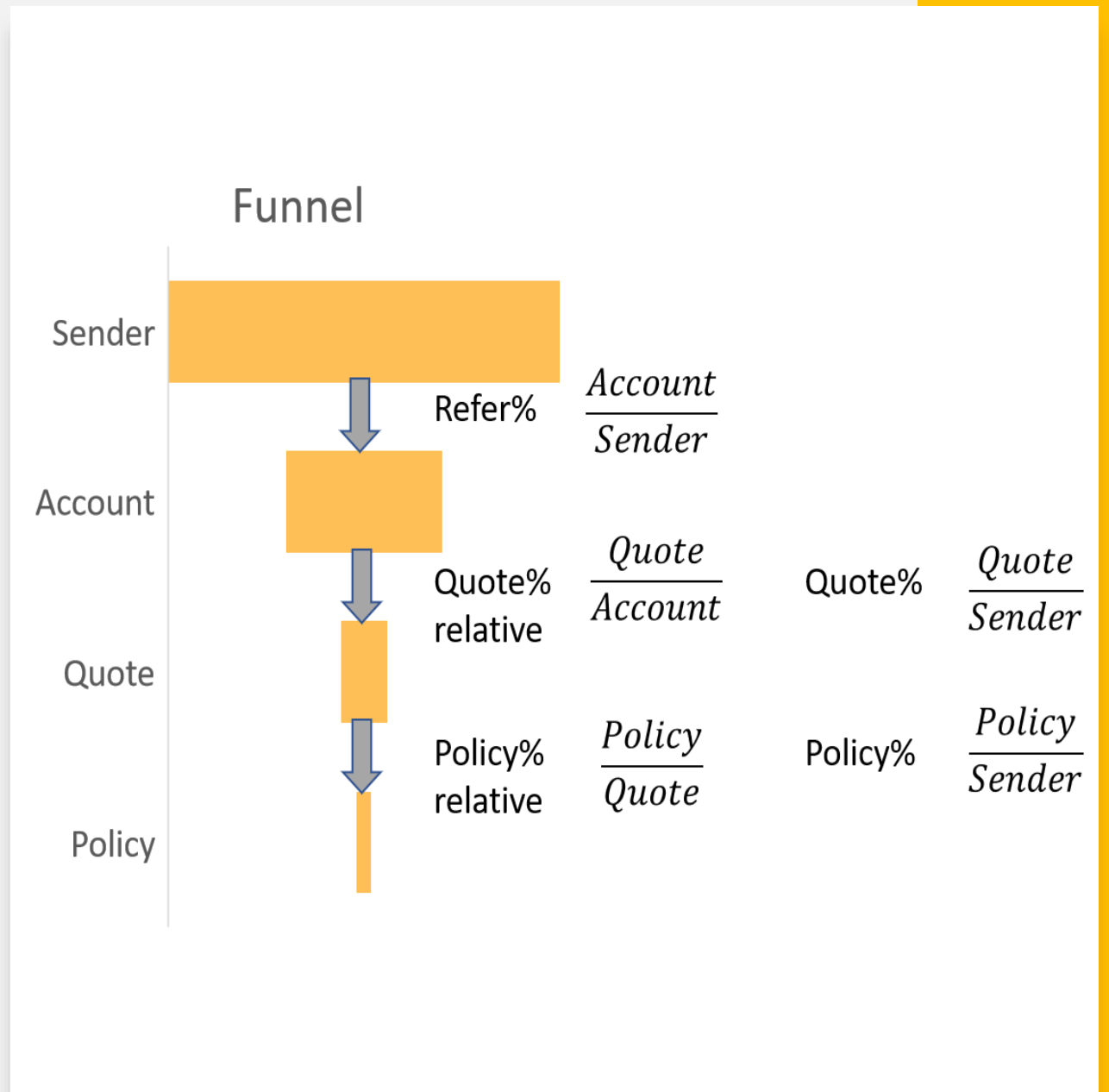
- Suggest rolling out the \$50 & 0-day referral program

Next step:

- We could increase the frequency of reminder messages (ex. sending the promo again after 5 days) to see if it will generate more referrals
- Another test: offer the cash reward after receiver buys a policy to see if it will increase policy conversions
- Get real feedback from users who got \$50 but did not buy policy eventually

Overall Analysis

Business Flow



Reward Amount Test Analysis

Reward Amount	Promotion Time		
	0-day	2-day	7-day
\$25	Ctrl		
\$50	Var		

0-day Test

	Refer%	Quote%	Policy%	Quote%_relative	Policy%_relative
\$25_Ctrl	18%	6%	2%	35%	26%
\$50_Var	30.9%***	11.6%***	3.6%**	37.6%	31.3%

*95% sig, **99% sig, ***99.9% sig

Significant

* **\$50_Var 0-day group** works well

(Refer% +12.5%, Quote% +5.3%, Policy% +2%)

* The more incentive does **not increase** the possibility for receiver to **buy a policy**

Reward Amount Test Analysis

	Promotion Time		
Reward Amount	0-day	2-day	7-day
\$25		Ctrl	
\$50		Var	

2-day Test

	Refer%	Quote%	Policy%	Quote%_relative	Policy%_relative
\$25_Ctrl	11.8%	3.9%	0.9%	33.3%	23.5%
\$50_Var	18%***	5.8%*	2%*	32.2%	34.0%

* \$50_Var 2-day group also performs better
(Refer% +6.5%, Quote% +1.9%, Policy% +1%)

Reward Amount Test Analysis

	Promotion Time		
Reward Amount	0-day	2-day	7-day
\$25			Ctrl
\$50			Var

7-day Test

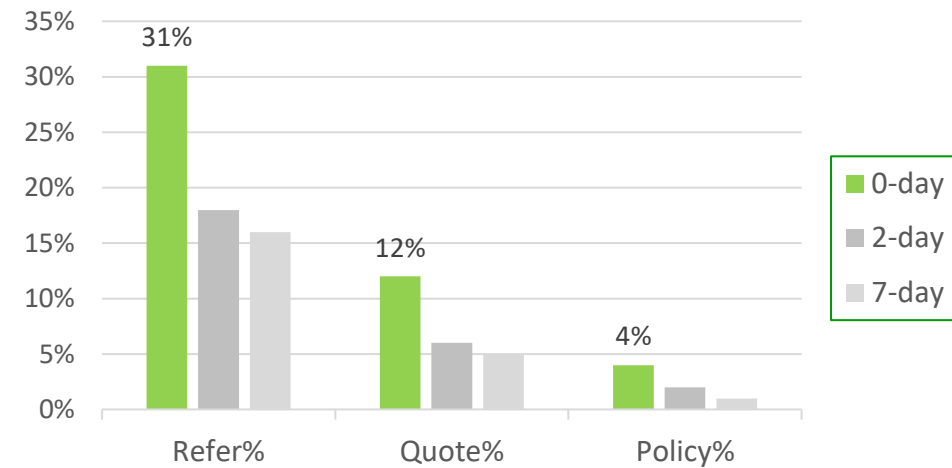
	Refer%	Quote%	Policy%	Quote%_relative	Policy%_relative
\$25_Ctrl	9.0%	3.1%	0.8%	34.2%	26.9%
\$50_Var	16.5%***	5.1%**	1.1%	31.0%	22%

Based on all the three comparisons, **\$50 incentive attracts more referrals** than \$25.

Promo Begin Time Test Analysis

Reward Amount	Promotion Time		
	0-day	2-day	7-day
\$25			
\$50	A	B	C

Promo Time Test



* **0-day Promo** significantly performs better than 2/7-day Promo

Combined Impact

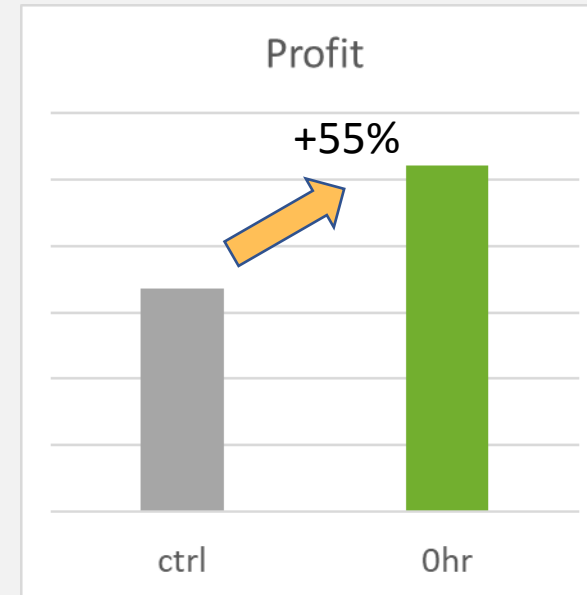
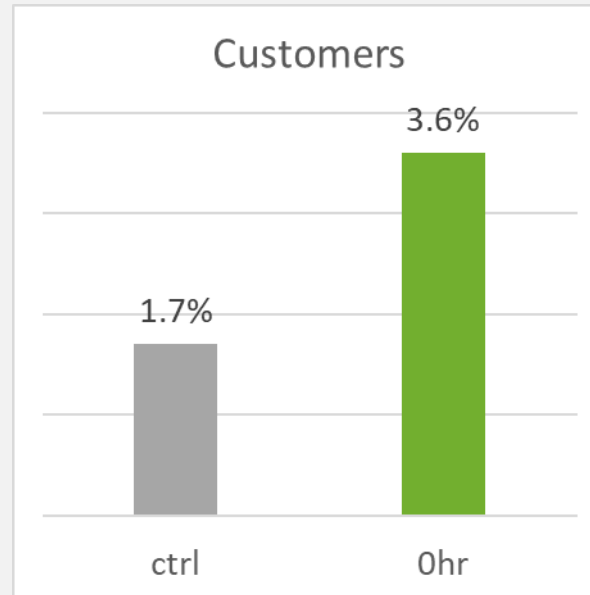
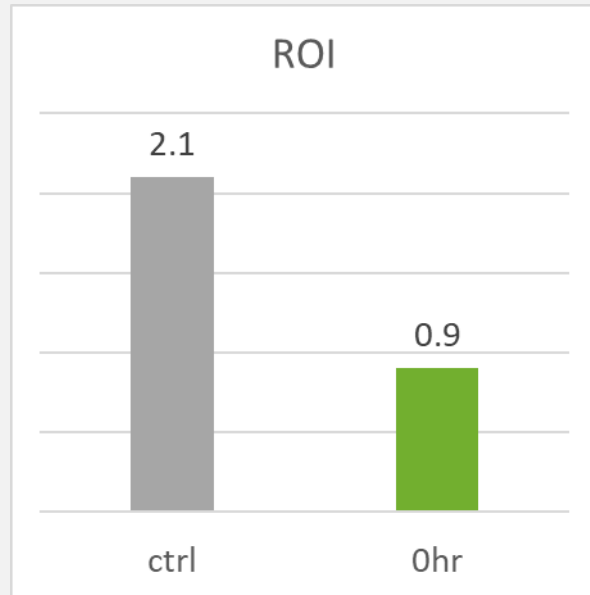
	Promotion Time		
Reward Amount	0-day	2-day	7-day
\$25	Ctrl		
\$50	A	B	C

Combined Impact (abs_lift)

	Refer%	Quote%	Policy%	Quote%_relative	Policy%_relative
Ctrl	-	-	-	-	-
0-day	+12.5%***	+5.3%***	+2%**	No Sig	No Sig
2-day	No Sig	No Sig	No Sig	No Sig	No Sig
7-day	No Sig	No Sig	No Sig	No Sig	No Sig

- Suggest rolling out \$50 0-day test group
- Increase Policy%_relative: run another test that offers the cash reward after receiver buys a policy
- Collect feedback to increase policy conversions

Cost Benefit Analysis



Cost
vs.
Benefit

The cost goes up because of the **\$50 0-day referral incentive**, but the extra revenue generated covers the cost and brings in the **highest total profit (+55%)**

Finding & Conclusion

Finding

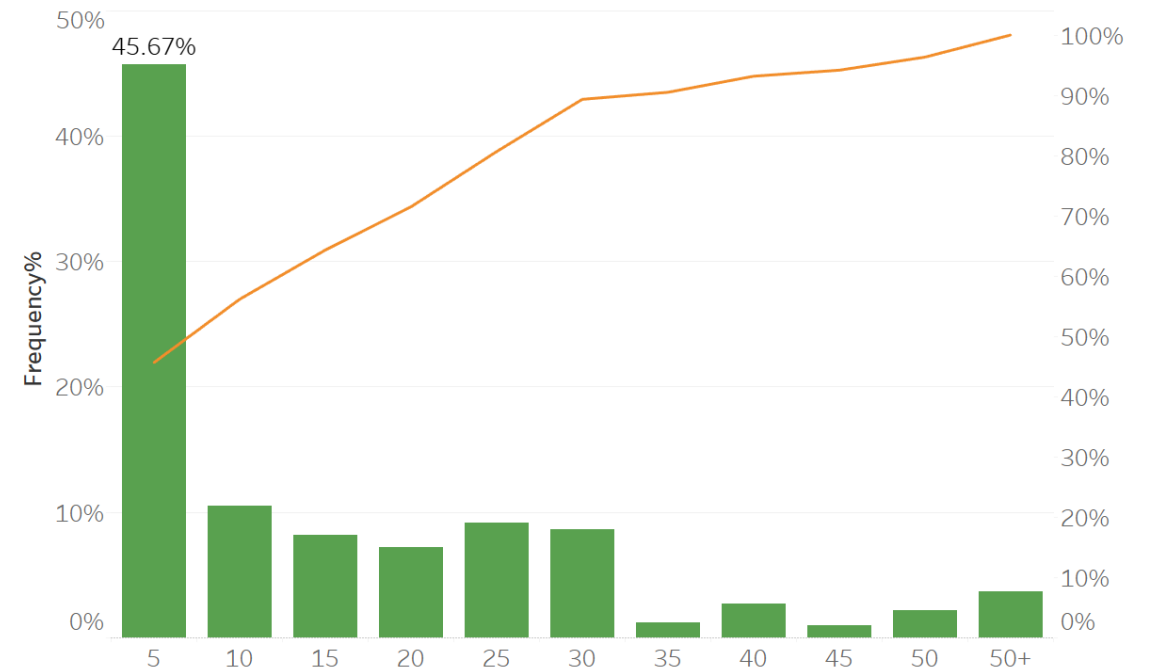
Findings:

- Over 45% referrals have been created within 5 days after Promo
- The promo effect declines significantly after 5 days

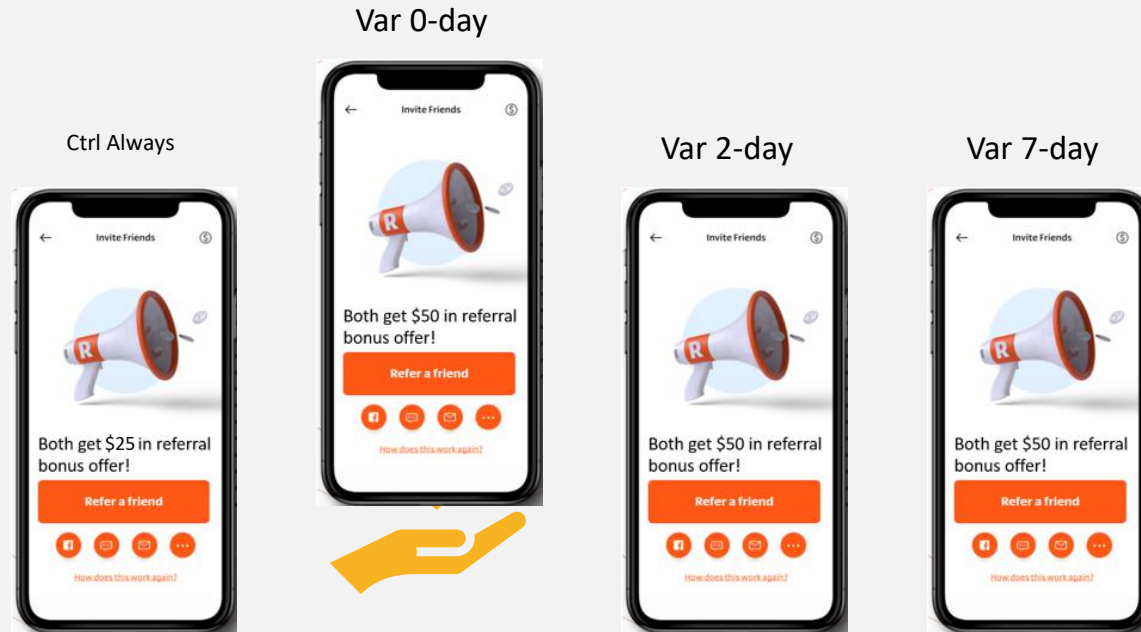
Recommendation:

- We can send the promo again after 5 days, and test if it keeps increasing referrals

Referral Distribution



Conclusion



I suggest we could turn the test off now and roll out the \$50 0-day referral group, it will help us with **customer growth** (est. 120%) and **boost profit** (est. +55%)

Next step to test:

- a) Resend the promo after 5 days
- b) Offer cash reward after receivers convert
- c) Get real feedback from receivers who did not buy a policy and collect their concerns

Thank you!



Appendix

Sample Size

	ctrl	0-day	2-day	7-day
Sender	909	851	812	705
Account	167	263	146	116
Quote	58	99	47	36
Policy	15	31	16	8

* Note

There is no bias between the control group and test groups.
All the outliers have been removed from analysis.

Appendix

Reward Amount Test 0-day

denominator	numerator	confident_level	ctrl_ratio	var_ratio	perc_lift	abs_lift
sender	account	1	0.183718	0.309048	0.682184	12.5%
account	quote	0.730368267	0.347305	0.376426	0.083847	2.9%
quote	policy	0.769278878	0.258621	0.313131	0.210774	5.5%
sender	quote	0.999940012	0.063806	0.116334	0.82323	5.3%
sender	policy	0.995228281	0.016502	0.036428	1.207521	2.0%

Reward Amount Test 2-day

denominator	numerator	confident_level	ctrl_ratio	var_ratio	perc_lift	abs_lift
sender	account	0.999822	0.117783	0.179803	0.526562	6.2%
account	quote	0.574695	0.333333	0.321918	-0.03425	-1.1%
quote	policy	0.852608	0.235294	0.340426	0.446809	10.5%
sender	quote	0.961611	0.039261	0.057882	0.474283	1.9%
sender	policy	0.962922	0.009238	0.019704	1.133005	1.0%

Reward Amount Test 7-day

denominator	numerator	confident_level	ctrl_ratio	var_ratio	perc_lift	abs_lift
sender	account	0.999994	0.089728	0.164539	0.833744	7.5%
account	quote	0.676564	0.342105	0.310345	-0.09284	-3.2%
quote	policy	0.66374	0.269231	0.222222	-0.1746	-4.7%
sender	quote	0.977169	0.030697	0.051064	0.663502	2.0%
sender	policy	0.728891	0.008264	0.011348	0.37305	0.3%

Appendix

Promo Begin-Time Test (0 / 2-day)

denominator	numerator	confident_level	ctrl_ratio	var_ratio	perc_lift	abs_lift
sender	account	1	0.309048	0.179803	-0.4182	-12.9%
account	quote	0.867686	0.376426	0.321918	-0.1448	-5.5%
quote	policy	0.628318	0.313131	0.340426	0.087165	2.7%
sender	quote	0.99999	0.116334	0.057882	-0.50245	-5.8%
sender	policy	0.980947	0.036428	0.019704	-0.45908	-1.7%

Promo Begin-Time Test (0 / 7-day)

denominator	numerator	confident_level	ctrl_ratio	var_ratio	perc_lift	abs_lift
sender	account	1	0.309048	0.164539	-0.46759	-14.5%
account	quote	0.896699	0.376426	0.310345	-0.17555	-6.6%
quote	policy	0.86184	0.313131	0.222222	-0.29032	-9.1%
sender	quote	0.999999	0.116334	0.051064	-0.56106	-6.5%
sender	policy	0.999546	0.036428	0.011348	-0.68849	-2.5%

Appendix

Combined Impact (\$25 0-day vs. \$50 2-day)

denominator	numerator	confident_level	ctrl_ratio	var_ratio	perc_lift	abs_lift
sender	account	0.583288	0.183718	0.179803	-0.02131	-0.4%
account	quote	0.682729	0.347305	0.321918	-0.0731	-2.5%
quote	policy	0.81856	0.258621	0.340426	0.316312	8.2%
sender	quote	0.696365	0.063806	0.057882	-0.09285	-0.6%
sender	policy	0.690165	0.016502	0.019704	0.194089	0.3%

Combined Impact (\$25 0-day vs. \$50 7-day)

denominator	numerator	confident_level	ctrl_ratio	var_ratio	perc_lift	abs_lift
sender	account	0.843965	0.183718	0.164539	-0.1044	-1.9%
account	quote	0.743162	0.347305	0.310345	-0.10642	-3.7%
quote	policy	0.656988	0.258621	0.222222	-0.14074	-3.6%
sender	quote	0.864106	0.063806	0.051064	-0.19971	-1.3%
sender	policy	0.812452	0.016502	0.011348	-0.31234	-0.5%

Appendix

Combined Impact

	Refer%	Quote%	Policy%	Quote%_relative	Policy%_relative
Ctrl	18%	6%	2%	35%	26%
0-day	30.9%***	11.6%***	3.6%**	37.6%	31.3%
2-day	18.0%	5.8%	2.0%	32.2%	34.0%
7-day	16.5%	5.1%	1.1%	31.0%	22%

Appendix

ROI

- Assume the revenue per policy is \$600/ 6 months
- $$\text{ROI} = \frac{\# \text{policy} * \$600 - \# \text{quote} * \$100}{\# \text{quote} * \$100}$$

Appendix

- Revenue, cost and profit for all test groups

