Executive Summary

Problem Set 1

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I. Case Overview and Objectives

Workplace wellness programs aim to reduce healthcare costs, improve employee health, and increase productivity. Since 2011, the industry has seen rapid growth, drawing in $8 billion in annual revenue and covering over 50 million American workers. By 2019, 84% of large firms offer these programs. A widely cited study (Baicker, Cutler, and Song 2010) estimates that medical spending falls by $3.27, and absenteeism costs by $2.73, for every $1 spent. However, the accuracy of its results has been contested due to selection bias from non-random participation, measuring outcomes, and statistical power. Due to the controversy surrounding the wellness workplace programs, the objective of this Executive Summary is to determine whether or not they actually improve health and productivity.

II. Case Description

1. The following table describes the given case

Treatment	Wellness Program
Outcome	Healthcare spending
Treatment group	Firms with the wellness program
Control group	Firms without a wellness program

The causal effect of a treatment may be better illustrated if the control group is much like the treatment group in all aspects besides the circumstance of being treated, otherwise, it isn't viable to discover if the observed distinction withinside the results is because of the causal effect of treatment, or because of the other variables. As we will word that the corporations withinside the

treatment and control groups are different, to demonstrate causal effect we might want to make sure both the corporations are comparable in all of the traits consisting of kind of business, Vision, employees hired, paychecks employees receive, resources supplied, Company background, structures and operations, work culture, deliverables and so on., Such a unique case is much less in all likelihood due to the fact even as no corporations are equal in all aspects, it's far almost not possible even withinside the case of sister agencies part of the equal organization doing comparable business, as they may be anticipated to vary geographically without which it isn't almost conventional to create 2 different corporations at the same geographical location for a single business. And whilst corporations are geographically different there's a chance of other variables being affected.

2.

Treatment	Workplace wellness
Outcome	
Treatment group	Employees eligible for wellness program (less healthy)
Control group	Employees ineligible for wellness program (healthy)

In this given case, if the causal effect of workplace wellness on worker results desires to be described, the eligibility standards of employees for the wellness program needs to be randomized. It needs to be in addition shown that the employees are comparable in all of the viable traits that could have an effect on the final results by conducting systematic balance

checks. It is difficult however viable supplied there are enough resources due to the fact that the randomization of employees can be practically executed.

3. Treatment group included employees eligible to participate in iThrive and Control group included employees ineligible to participate in iThrive. Overall there were 3300 employees in the treatment group and 1,534 employees in the control group. 1,848 employees from the treatment group participated in the initial (screening) segment of the wellness program in the first year.

4. Using the "claims" dataset, as measured pre-randomization (Jul15-Jul16), the average of the control group, average of the treatment group, and the p-value on the difference were calculated through linear regression as displayed in Table 1. We may notice similarity in measures of key outcome variables

Variable Description	Control Group Mean	Treatment Group Mean	P-Value on the Difference
Total spending ($/month)	505.58	464.81	0.31
Drug Spending	103.37	101.27	0.91
Office Spending	66.71	57.98	0.38
Hospital Spending	283.36	259.33	0.39
Nonzero Medical Spending	0.90	0.89	0.26

Table 1

Using the same dataset, as measured in the first year following randomization (Aug16-Jul17), the estimated difference between Treatment and Control Groups was calculated with 95% confidence through linear regression. The result is displayed in Table 2, along with standard error in parentheses. The demographic indicator variables included in the calculation of column (3) are

Sex (M/F), Race (White/Non-White), Middle Age Group (37-49/not 37-49), and Oldest Age Group (50+/not 50+). The assignment to the treatment groups is random, therefore this estimate is causal and does not suffer from selection bias. Due to this randomization, we would not expect the estimates to differ between column (2) and (3).

Variable Description	Estimated difference (without demographics)	Estimated difference (with demographics)
Total spending ($/month)	-31.2 (54.3)	-24.3 (53.8)
Drug Spending	-10.4 (24.6)	-9.09 (24.6)
Office Spending	-7.84 (8.83)	-7.61 (8.08)
Hospital Spending	-10.3 (40.3)	-5.73 (40.0)
Nonzero Medical Spending	-0.00788 (0.0112)	-0.00599 (0.0109)

Table 2

Using the same dataset, time period, and demographic variables mentioned above, Table 3 was calculated with 95% confidence through linear regression to estimate the difference between Participants and Non-Participants. Participants already had lower health spending and healthier behavior.

Variable Description	Estimated difference (without demographics)	Estimated difference (with demographics)
Total spending ($/month)	-117. (59.1)	-135. (94.6)
Drug Spending	-26.6 (26.8)	-26.3 (26.9)
Office Spending	15.0 (7.37)	11.5 (7.34)
Hospital Spending	-103. (45.9)	-114. (45.6)
Nonzero Medical Spending	0.0610 (0.0131)	0.0518 (0.0128)

Table 3

III. Conclusion

~draws lessons for employers who may be considering adopting a wellness program in the workplace~

[Conclusion to be completed]