Efficiency of email communication

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Introduction

In this report we describe an interactive email efficiency dashboard created for Good Directions. The dashboard enables Good Directions management to explore current and future email communications.

Deliverables

Objectives

- Report that describes the email communication model, including methodologies used, exemplar outcomes, description of the dashboard and illustrations of outputs from the dashboard (approximately 10 pages)
- Interactive email efficiency dashboard (software tool)

Methodology

In this section, we describe the formula used to derive the key outputs of the dashboard:

- number of emails recieved
- total reading time
- staff cost

First, let there be N employees in the company, where each employee sends an average number of emails per day. Any given email falls into one of three *types* such that the number of emails a single person sends in a specified period (e.g., one day) is equal to

$$S_1 + S_2 + S_3 = S_T,$$

where S_1 is the average number of emails of type 1 sent. Moreover, for a given email of type t, we represent the average number of recipients as R_t.

For each type, the average read time, T_t, and probability of being relevant, P_t, are varied.

To derive the total number of emails recieved by a single employee, we simply multiple the the number of emails sent by each person by the number of recipients. This procedure is complete separately for each type and then summed.

$$TotalEmails = (S_1R_1) + (S_2R_2) + (S_3R_3)$$

Next, the number of emails recieved for each type is multiplied by the reading time for the given type. This procedure is complete separately for each type and then summed to derive the total reading time for the specified period.

$$TotalReadingTime = (T_1S_1R_1) + (T_2S_2R_2) + (T_3S_3R_3)$$

Consider the following example:

- $N = 15$
- $T_1, T_2, T_3 = 10$ seconds
- $S_1, S_2, S_3 = 10$
- $R_1, R_2, R_3 = 10$

In this instance:

$$TotalEmails = 3(10 * 10) = 300$$

$$TotalReadingTime(mins) = 3(10 \times 10 \times 10)/60 = 50$$

Describe the methodology of your research or analysis.

```python
# Python code chunk for data analysis or other calculations
import numpy as np
data = np.random.rand(100)
print(data)
```

```
[0.43773994 0.34115122 0.21078784 0.67953269 0.81810093 0.25473479
 0.55236904 0.30748925 0.14624608 0.27703855 0.45054331 0.16998803
 0.9085952  0.33170658 0.76302027 0.51861369 0.51705158 0.39149733
 0.21109181 0.31959546 0.07742162 0.02756259 0.90855877 0.1501129
 0.82990903 0.91105256 0.16745877 0.55612478 0.96636864 0.11814411
 0.53246165 0.577208   0.43762112 0.63124711 0.19227301 0.71533473
 0.63922925 0.95828511 0.45807742 0.202955   0.63846816 0.31064712
```

```
0.62746137 0.93445886 0.11815396 0.81021302 0.3883361  0.85116274
0.82642949 0.79404407 0.58172894 0.02280997 0.7606398  0.18182407
0.32229042 0.14009725 0.37190291 0.54386046 0.42072798 0.94867649
0.53815255 0.80765386 0.01606989 0.83424743 0.56584137 0.60613566
0.15310971 0.29591594 0.27010471 0.08397546 0.19529445 0.83016937
0.98605661 0.70120223 0.2494722  0.64975568 0.83084477 0.30094849
0.37133989 0.89551973 0.36851488 0.83904985 0.8232683  0.79083468
0.58109167 0.83633823 0.05180197 0.29122839 0.80470501 0.62087475
0.94893363 0.11590594 0.48117649 0.90695926 0.56084175 0.36901381
0.03627539 0.85788475 0.48251148 0.61599279]
```

Dashboard

Exemplars and scenarios

Recommendations