**In-Class Activity #14: Computing Support, Confidence, and Lift**

Here are the baskets from eight shoppers:

|  |  |
| --- | --- |
| **Basket** | **Items** |
| 1 | Coke, Pop-Tarts, Donuts  |
| 2 | Cheerios, Coke, Donuts, Napkins |
| 3 | Waffles, Cheerios, Coke, Napkins |
| 4 | Bread, Milk, Coke, Napkins |
| 5 | Coffee, Bread, Waffles |
| 6 | Coke, Bread, Pop-Tarts |
| 7 | Milk, Waffles, Pop-Tarts |
| 8 | Coke, Pop-Tarts, Donuts, Napkins |

Compute the support, confidence, and lift for the following rules:

|  |  |  |  |
| --- | --- | --- | --- |
| **Rule** | **Support** | **Confidence** | **Lift** |
| 1 | {Coke, Pop-Tarts} 🡪{Donuts} |  |  |  |
| 2 | {Coke} 🡪 {Pop-Tarts, Donuts} |  |  |  |
| 3 | {Coffee} 🡪 {Bread, Waffles} |  |  |  |
| 4 | {Coke} 🡪 {Donuts} |  |  |  |

1. Which rule has the strongest association? How do you know?

1. Consider a customer who is walking through the store with only a bottle of coke in their shopping cart. You then see them put pop-tarts in their cart. Do you become more or less sure than you were before that they will buy donuts? Explain.

***Computing lift based on aggregate purchase numbers***

1. Consider two products, the Squishee and the Peanut Butter Bowl. Here’s a profile of 18,500 customers:

|  |  |  |
| --- | --- | --- |
|  | Squishee |  |
| Peanut Butter Bowl |  | No | Yes |  |
| No | 10000 | 2000 |  |
| Yes | 1500 | 5000 |  |
|  |  |  |  | Total: 18500 |

What is the lift for the rule {Peanut Butter Bowl} 🡪 {Squishee}?
(Are people who bought a Peanut Butter Bowl more likely than chance to buy a Squishee too?)

1. Consider two products, Potato Chips and Krusty-O’s. Here’s a profile of 10,500 customers:

|  |  |  |
| --- | --- | --- |
|  | Krusty-O’s |  |
| Potato Chips |  | No | Yes |  |
| No | 5000 | 1000 |  |
| Yes | 4000 | 500 |  |
|  |  |  |  | Total: 10500 |

What is the lift for the rule {Potato Chips} 🡪 {Krusty-O’s}?
(Are people who bought Potato Chips more likely than chance to buy Krusty-O’s too?)