Coincidence Analysis: An Introduction

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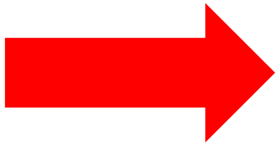
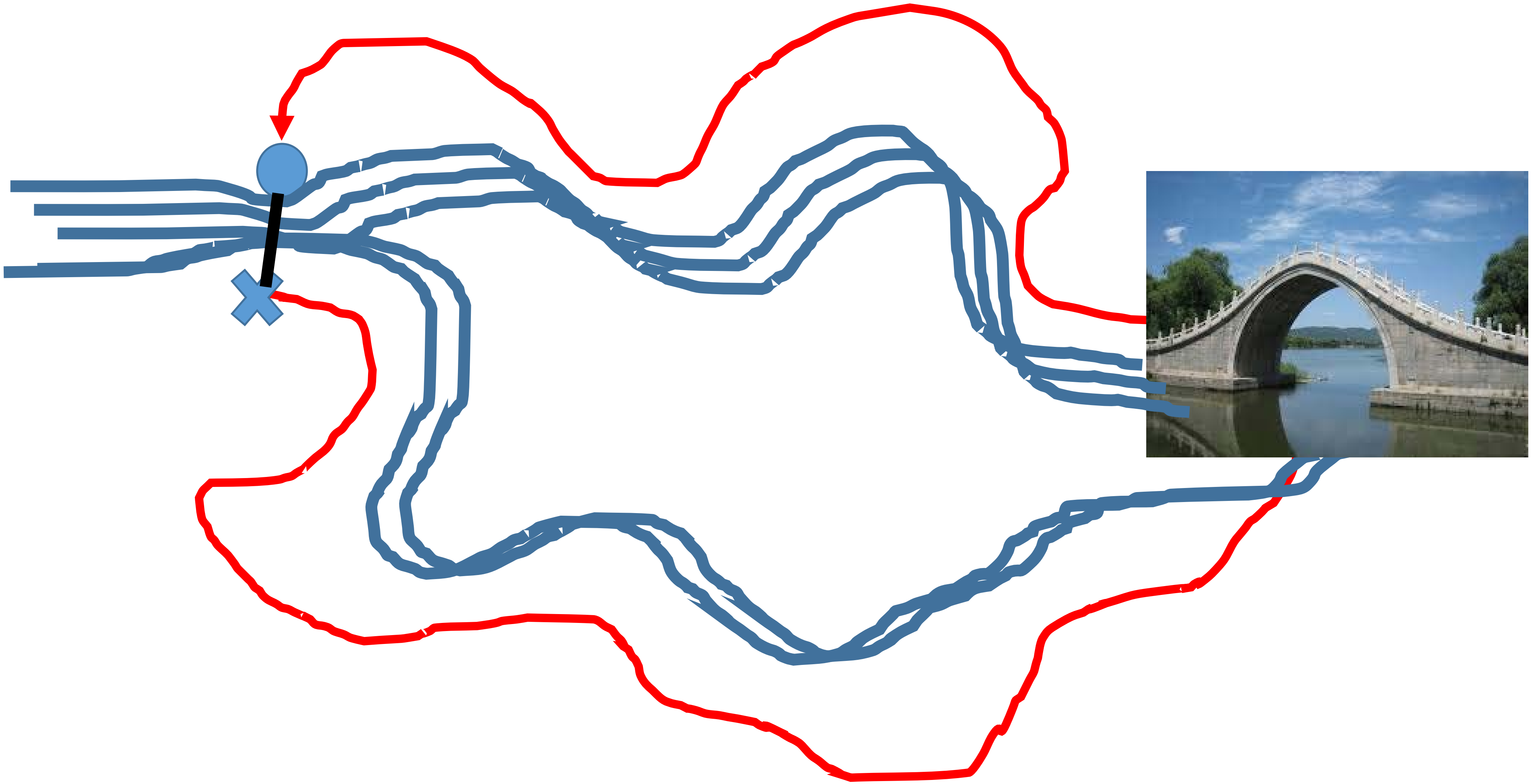
Which strategies facilitate cancer programs' implementation of survivorship care plans?



+1 day

+10%!!!

Strategy	β
Facilitation	.1 *
Training	.05*
Audit and feedback	.2
Incentives	.02
Prepare champions	.03*



What you can expect

The WHAT and WHY of coincidence analysis

(......but not the HOW*)

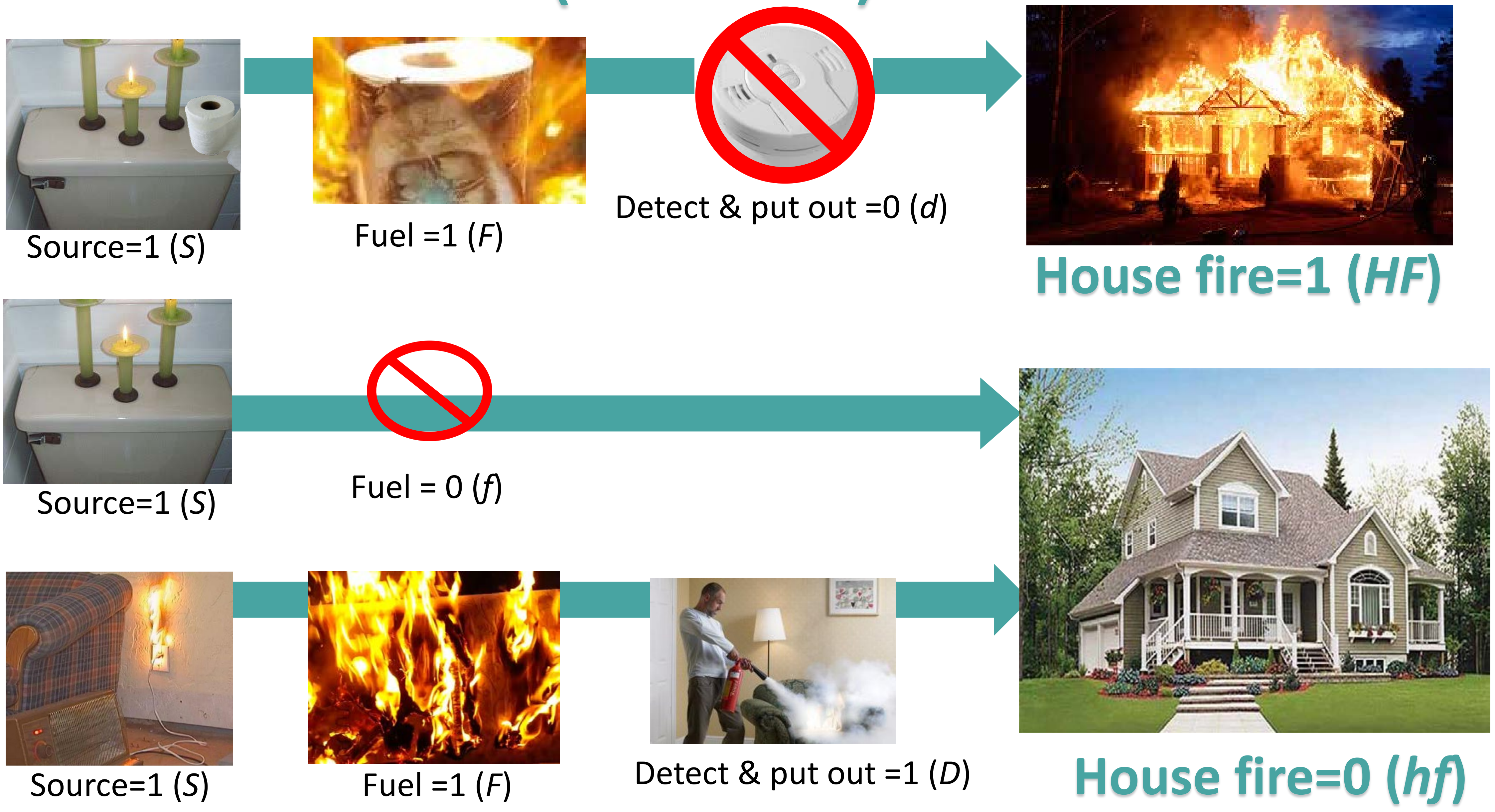
**Join us for a weeklong training in Indianapolis in September 2020!*

Agenda

- Introduction
- Boolean Algebra
- Consistency and Coverage in CNA
- Hands-On Exercises #1 and #2
- The CNA Algorithm
- Hands-On Exercise #3
- Results and Interpretation in CNA
- Hands-On Exercise #4
- Q&A and Future Directions

More than one cause of a house fire

Conditions (Factors) Outcome

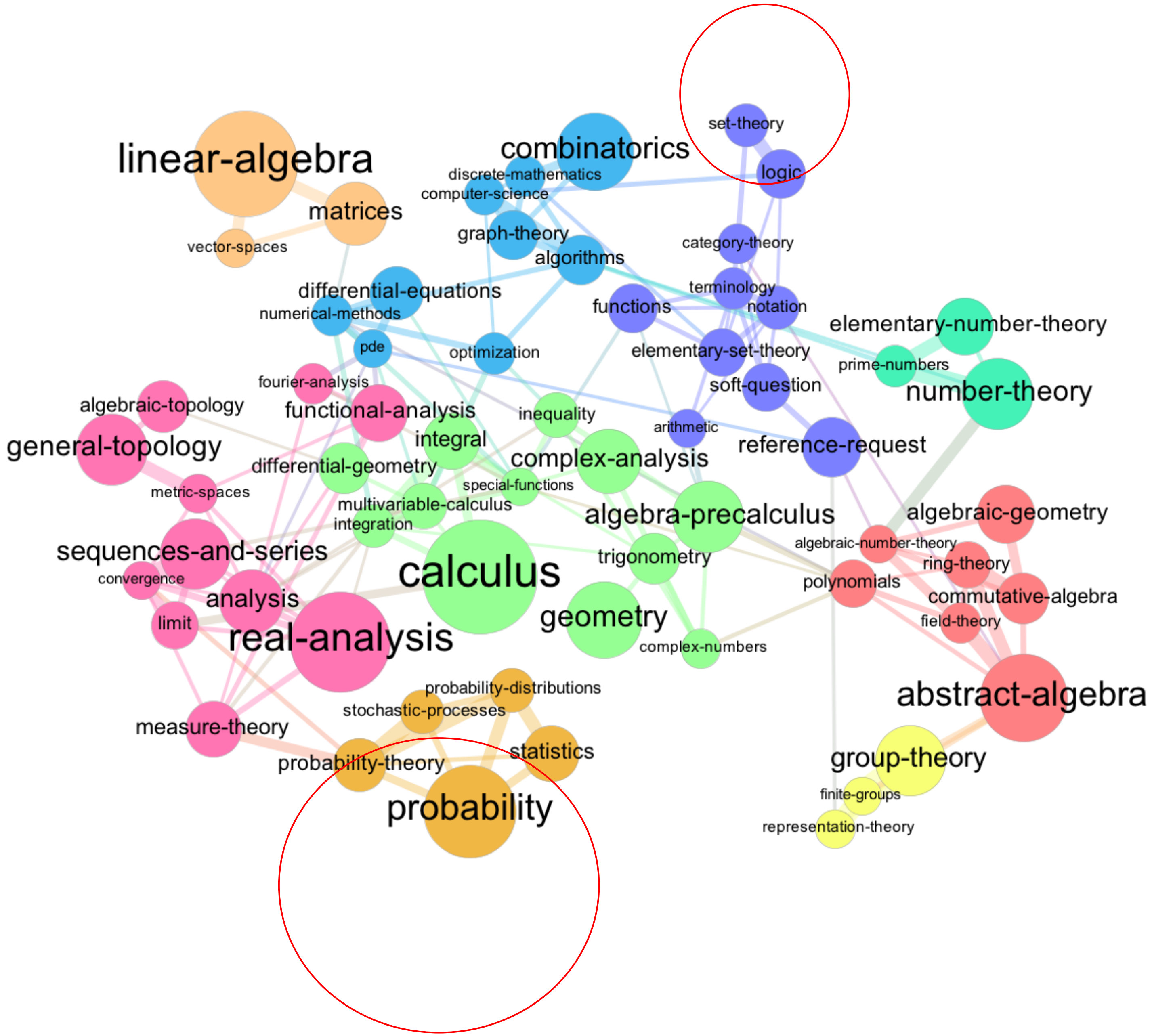


BOOLEAN ALGEBRA

How Does It Work?

- Fundamentally different kind of math
- Fundamentally different search target

The mathematical world

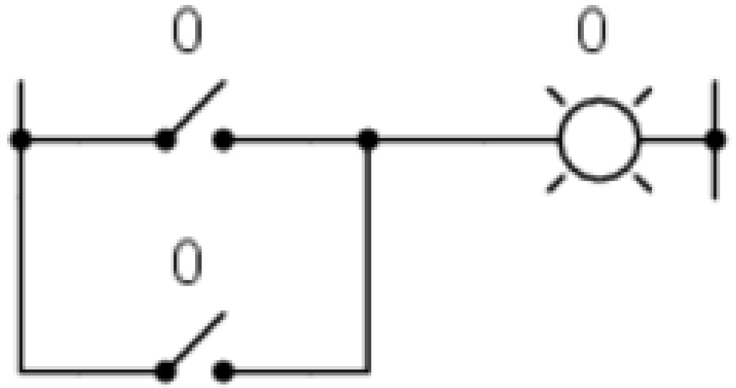


Illustration

In Boolean algebra….

$$1 + 1 = 1$$

A light bulb in a circuit board

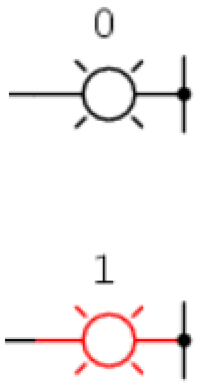


A light bulb in a circuit board

Light Bulb = outcome

It can be **OFF** or **ON**

Off = 0; On = 1

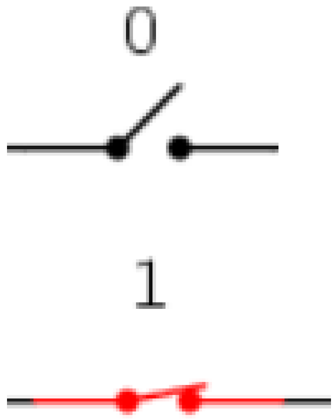


OFF = 0

ON = 1

A light bulb in a circuit board

Switches can be OPEN or CLOSED

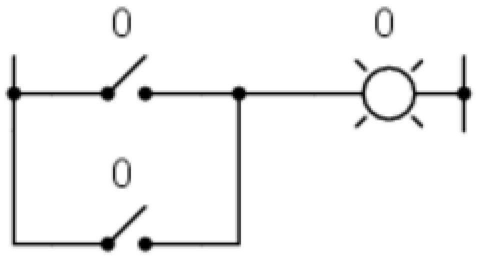


Open= 0

Closed = 1

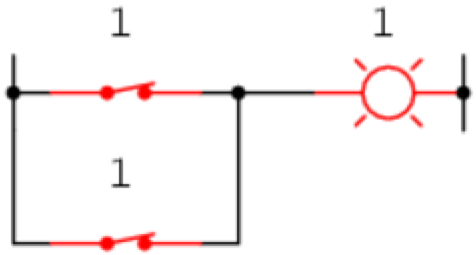
Boolean addition

0 + 0 = 0



Boolean Algebra

$$1 + 1 = 1$$



Search Targets

CNA Search target =

Find e.g., configurations of switches in on or off position that are linked to "light bulb being on"

We want to find in configurations of conditions that lead to outcome

Versus:

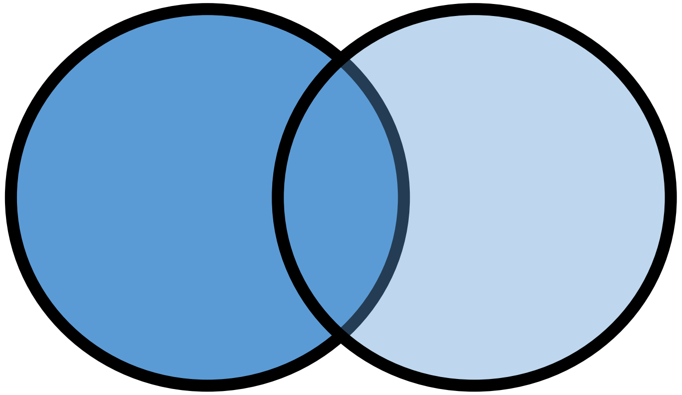
Correlation analysis search target =

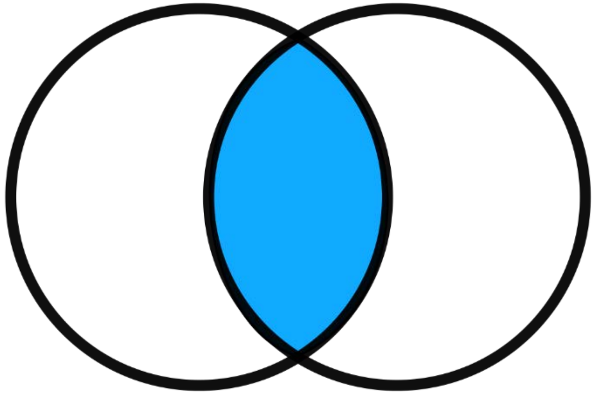
Find how "more/less of X" relates to "more/less of Y"

(when controlling for all other variables)

- e.g., dimmer switch

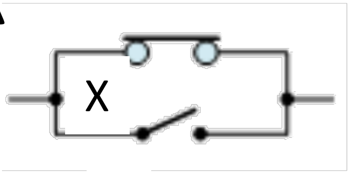
Boolean Laws



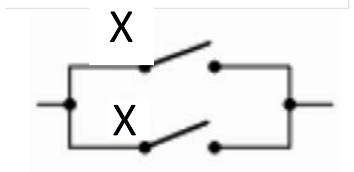


“+” → OR

X + 1 = 1

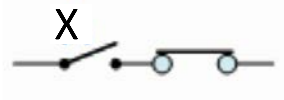


X + X = X



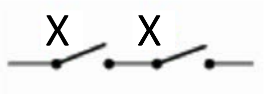
“*” → AND

X * 1 = X



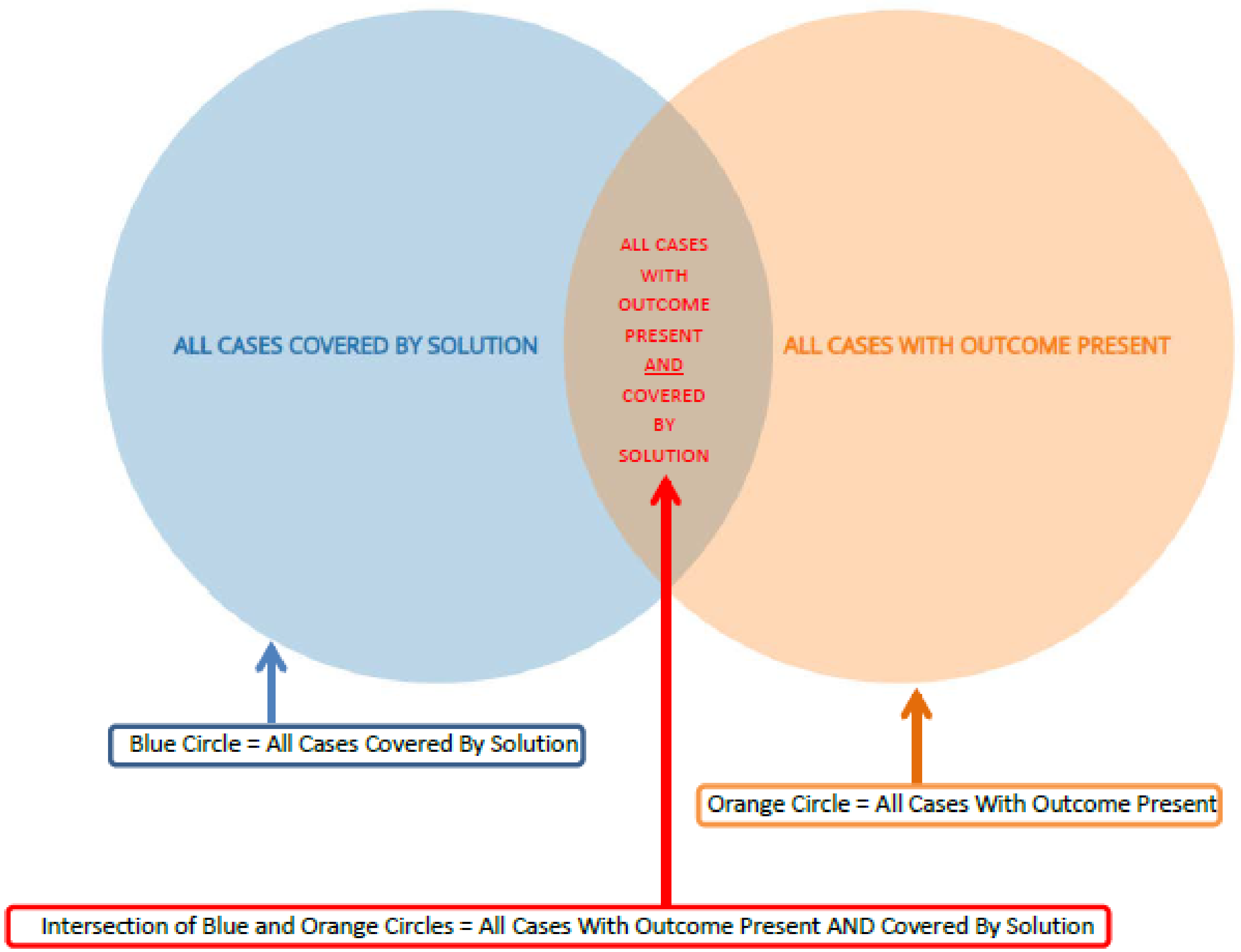
X * 0 = 0

X * X = X



CONSISTENCY AND COVERAGE IN CNA

Consistency and Coverage



$$\text{Consistency} = \frac{\text{ALL CASES WITH OUTCOME PRESENT AND COVERED BY SOLUTION}}{\text{ALL CASES COVERED BY SOLUTION}}$$

$$\text{Coverage} = \frac{\text{ALL CASES WITH OUTCOME PRESENT AND COVERED BY SOLUTION}}{\text{ALL CASES WITH OUTCOME PRESENT}}$$

Case	L	H	F	M	OUTCOME
1	1	1	1	1	1
2	1	1	1	0	1
3	1	1	1	1	1
4	0	0	1	0	1
5	0	0	1	0	1
6	0	1	0	0	1
7	1	1	0	1	1
8	0	1	1	0	1
9	0	0	1	1	1
10	0	1	1	1	1
11	0	0	1	1	1
12	1	0	0	0	0
13	1	0	1	0	0
14	0	1	0	0	0
15	1	0	0	0	0
16	1	0	0	1	0
17	0	0	0	0	0
18	0	0	0	0	0
19	1	0	1	0	0
20	1	0	0	0	0
21	1	0	0	0	0
22	1	1	1	0	0
23	1	0	1	1	0
24	0	1	1	0	0
25	0	0	0	0	0
26	0	0	0	1	0
27	0	0	1	0	0

data excerpted from:

Blackman T. Exploring explanations for local reductions in teenage pregnancy rates in England: an approach using qualitative comparative analysis. Social Policy and Society. 2013 Jan;12(1):61-72.

Case	L	H	F	M	OUTCOME
1	1	1	1	1	1
2	1	1	1	0	1
3	1	1	1	1	1
4	0	0	1	0	1
5	0	0	1	0	1
6	0	1	0	0	1
7	1	1	0	1	1
8	0	1	1	0	1
9	0	0	1	1	1
10	0	1	1	1	1
11	0	0	1	1	1
12	1	0	0	0	0
13	1	0	1	0	0
14	0	1	0	0	0
15	1	0	0	0	0
16	1	0	0	1	0
17	0	0	0	0	0
18	0	0	0	0	0
19	1	0	1	0	0
20	1	0	0	0	0
21	1	0	0	0	0
22	1	1	1	0	0
23	1	0	1	1	0
24	0	1	1	0	0
25	0	0	0	0	0
26	0	0	0	1	0
27	0	0	1	0	0

solution:

L*H + H*M + l*h*F <-> OUTCOME

Case	L	H	F	M	OUTCOME
1	1	1	1	1	1
2	1	1	1	0	1
3	1	1	1	1	1
4	0	0	1	0	1
5	0	0	1	0	1
6	0	1	0	0	1
7	1	1	0	1	1
8	0	1	1	0	1
9	0	0	1	1	1
10	0	1	1	1	1
11	0	0	1	1	1
12	1	0	0	0	0
13	1	0	1	0	0
14	0	1	0	0	0
15	1	0	0	0	0
16	1	0	0	1	0
17	0	0	0	0	0
18	0	0	0	0	0
19	1	0	1	0	0
20	1	0	0	0	0
21	1	0	0	0	0
22	1	1	1	0	0
23	1	0	1	1	0
24	0	1	1	0	0
25	0	0	0	0	0
26	0	0	0	1	0
27	0	0	1	0	0

Consistency:

ALL CASES WITH OUTCOME PRESENT AND COVERED BY SOLUTION

DIVIDED BY

ALL CASES COVERED BY SOLUTION

Case	L	H	F	M	OUTCOME
1	1	1	1	1	1
2	1	1	1	0	1
3	1	1	1	1	1
4	0	0	1	0	1
5	0	0	1	0	1
6	0	1	0	0	1
7	1	1	0	1	1
8	0	1	1	0	1
9	0	0	1	1	1
10	0	1	1	1	1
11	0	0	1	1	1
12	1	0	0	0	0
13	1	0	1	0	0
14	0	1	0	0	0
15	1	0	0	0	0
16	1	0	0	1	0
17	0	0	0	0	0
18	0	0	0	0	0
19	1	0	1	0	0
20	1	0	0	0	0
21	1	0	0	0	0
22	1	1	1	0	0
23	1	0	1	1	0
24	0	1	1	0	0
25	0	0	0	0	0
26	0	0	0	1	0
27	0	0	1	0	0

ALL CASES COVERED BY SOLUTION

L*H + H*M + l*h*F <-> OUTCOME

Case	L	H	F	M	OUTCOME
1	1	1	1	1	1
2	1	1	1	0	1
3	1	1	1	1	1
4	0	0	1	0	1
5	0	0	1	0	1
6	0	1	0	0	1
7	1	1	0	1	1
8	0	1	1	0	1
9	0	0	1	1	1
10	0	1	1	1	1
11	0	0	1	1	1
12	1	0	0	0	0
13	1	0	1	0	0
14	0	1	0	0	0
15	1	0	0	0	0
16	1	0	0	1	0
17	0	0	0	0	0
18	0	0	0	0	0
19	1	0	1	0	0
20	1	0	0	0	0
21	1	0	0	0	0
22	1	1	1	0	0
23	1	0	1	1	0
24	0	1	1	0	0
25	0	0	0	0	0
26	0	0	0	1	0
27	0	0	1	0	0

ALL CASES COVERED BY SOLUTION

L*H

Case	L	H	F	M	OUTCOME
1	1	1	1	1	1
2	1	1	1	0	1
3	1	1	1	1	1
4	0	0	1	0	1
5	0	0	1	0	1
6	0	1	0	0	1
7	1	1	0	1	1
8	0	1	1	0	1
9	0	0	1	1	1
10	0	1	1	1	1
11	0	0	1	1	1
12	1	0	0	0	0
13	1	0	1	0	0
14	0	1	0	0	0
15	1	0	0	0	0
16	1	0	0	1	0
17	0	0	0	0	0
18	0	0	0	0	0
19	1	0	1	0	0
20	1	0	0	0	0
21	1	0	0	0	0
22	1	1	1	0	0
23	1	0	1	1	0
24	0	1	1	0	0
25	0	0	0	0	0
26	0	0	0	1	0
27	0	0	1	0	0

ALL CASES COVERED BY SOLUTION

L*H + H*M

Case	L	H	F	M	OUTCOME
1	1	1	1	1	1
2	1	1	1	0	1
3	1	1	1	1	1
4	0	0	1	0	1
5	0	0	1	0	1
6	0	1	0	0	1
7	1	1	0	1	1
8	0	1	1	0	1
9	0	0	1	1	1
10	0	1	1	1	1
11	0	0	1	1	1
12	1	0	0	0	0
13	1	0	1	0	0
14	0	1	0	0	0
15	1	0	0	0	0
16	1	0	0	1	0
17	0	0	0	0	0
18	0	0	0	0	0
19	1	0	1	0	0
20	1	0	0	0	0
21	1	0	0	0	0
22	1	1	1	0	0
23	1	0	1	1	0
24	0	1	1	0	0
25	0	0	0	0	0
26	0	0	0	1	0
27	0	0	1	0	0

ALL CASES COVERED BY SOLUTION

L*H + H*M + l*h*F

Case	L	H	F	M	OUTCOME
1	1	1	1	1	1
2	1	1	1	0	1
3	1	1	1	1	1
4	0	0	1	0	1
5	0	0	1	0	1
6	0	1	0	0	1
7	1	1	0	1	1
8	0	1	1	0	1
9	0	0	1	1	1
10	0	1	1	1	1
11	0	0	1	1	1
12	1	0	0	0	0
13	1	0	1	0	0
14	0	1	0	0	0
15	1	0	0	0	0
16	1	0	0	1	0
17	0	0	0	0	0
18	0	0	0	0	0
19	1	0	1	0	0
20	1	0	0	0	0
21	1	0	0	0	0
22	1	1	1	0	0
23	1	0	1	1	0
24	0	1	1	0	0
25	0	0	0	0	0
26	0	0	0	1	0
27	0	0	1	0	0

ALL CASES COVERED BY SOLUTION

n=11

Case	L	H	F	M	OUTCOME
1	1	1	1	1	1
2	1	1	1	0	1
3	1	1	1	1	1
4	0	0	1	0	1
5	0	0	1	0	1
6	0	1	0	0	1
7	1	1	0	1	1
8	0	1	1	0	1
9	0	0	1	1	1
10	0	1	1	1	1
11	0	0	1	1	1
12	1	0	0	0	0
13	1	0	1	0	0
14	0	1	0	0	0
15	1	0	0	0	0
16	1	0	0	1	0
17	0	0	0	0	0
18	0	0	0	0	0
19	1	0	1	0	0
20	1	0	0	0	0
21	1	0	0	0	0
22	1	1	1	0	0
23	1	0	1	1	0
24	0	1	1	0	0
25	0	0	0	0	0
26	0	0	0	1	0
27	0	0	1	0	0

ALL CASES WITH OUTCOME PRESENT AND COVERED BY SOLUTION

n=9

Case	L	H	F	M	OUTCOME
1	1	1	1	1	1
2	1	1	1	0	1
3	1	1	1	1	1
4	0	0	1	0	1
5	0	0	1	0	1
6	0	1	0	0	1
7	1	1	0	1	1
8	0	1	1	0	1
9	0	0	1	1	1
10	0	1	1	1	1
11	0	0	1	1	1
12	1	0	0	0	0
13	1	0	1	0	0
14	0	1	0	0	0
15	1	0	0	0	0
16	1	0	0	1	0
17	0	0	0	0	0
18	0	0	0	0	0
19	1	0	1	0	0
20	1	0	0	0	0
21	1	0	0	0	0
22	1	1	1	0	0
23	1	0	1	1	0
24	0	1	1	0	0
25	0	0	0	0	0
26	0	0	0	1	0
27	0	0	1	0	0

L*H + H*M + l*h*F

<u>Consistency</u>

ALL CASES COVERED BY MODEL

DIVIDED BY

ALL CASES WITH OUTCOME PRESENT
AND
COVERED BY MODEL

= 9/11 = .82= 82%

Case	L	H	F	M	OUTCOME
1	1	1	1	1	1
2	1	1	1	0	1
3	1	1	1	1	1
4	0	0	1	0	1
5	0	0	1	0	1
6	0	1	0	0	1
7	1	1	0	1	1
8	0	1	1	0	1
9	0	0	1	1	1
10	0	1	1	1	1
11	0	0	1	1	1
12	1	0	0	0	0
13	1	0	1	0	0
14	0	1	0	0	0
15	1	0	0	0	0
16	1	0	0	1	0
17	0	0	0	0	0
18	0	0	0	0	0
19	1	0	1	0	0
20	1	0	0	0	0
21	1	0	0	0	0
22	1	1	1	0	0
23	1	0	1	1	0
24	0	1	1	0	0
25	0	0	0	0	0
26	0	0	0	1	0
27	0	0	1	0	0

ALL CASES WITH OUTCOME PRESENT

n=11

Case	L	H	F	M	OUTCOME
1	1	1	1	1	1
2	1	1	1	0	1
3	1	1	1	1	1
4	0	0	1	0	1
5	0	0	1	0	1
6	0	1	0	0	1
7	1	1	0	1	1
8	0	1	1	0	1
9	0	0	1	1	1
10	0	1	1	1	1
11	0	0	1	1	1
12	1	0	0	0	0
13	1	0	1	0	0
14	0	1	0	0	0
15	1	0	0	0	0
16	1	0	0	1	0
17	0	0	0	0	0
18	0	0	0	0	0
19	1	0	1	0	0
20	1	0	0	0	0
21	1	0	0	0	0
22	1	1	1	0	0
23	1	0	1	1	0
24	0	1	1	0	0
25	0	0	0	0	0
26	0	0	0	1	0
27	0	0	1	0	0

COVERAGE

ALL CASES WITH OUTCOME PRESENT AND COVERED BY SOLUTION

DIVIDED BY

ALL CASES WITH OUTCOME PRESENT

$= 9/11 = .82 = 82\%$

Hands-On Activity #1:

Calculating Consistency and Coverage in CNA

Hands-On Activity #2:

Calculating Consistency and Coverage in CNA (continued)

THE CNA ALGORITHM

CNA Algorithm

- Unlike QCA, CNA uses a bottom-up algorithm designed for research applications
- Custom-built algorithm designed for research applications
- Decomposes your dataset into “building blocks” based on consistency
  - You set desired consistency level (usually between 80-100%)

CNA Algorithm

- Begins by assessing smallest possible “blocks” = one condition
- Next assesses slightly larger “blocks” = two conditions
- Among all possible combinations, CNA algorithm identifies those “configuration blocks” that meet your consistency specifications
- CNA then proceeds to build models using these selected blocks
- CNA finds models that meet your coverage specifications for overall solution
    - You set coverage threshold (usually between 80-100%)

CNA Algorithm

<u>Multiple Advantages to Bottom-Up Approach</u>

- uses actual values in your dataset (no counterfactual data needed)
- outcome does not need to be pre-specified (CNA will find it)
- identifies models with causal chains
- users set both consistency and coverage thresholds
- additional benefits

A	B	C	OUTCOME
1	1	1	1
0	1	1	1
1	0	1	1
0	0	1	1
1	1	0	1
0	1	0	0
1	0	0	0
0	0	0	0

Data Table

Factor A
Factor B
Factor C

OUTCOME

A	B	C	OUTCOME
1	1	1	1
0	1	1	1
1	0	1	1
0	0	1	1
1	1	0	1
0	1	0	0
1	0	0	0
0	0	0	0

Let’s set consistency threshold at 100%

Now CNA algorithm decomposes dataset into smallest possible “configuration blocks”

A: 3/4, 75%
a: 2/4, 50%
B: 3/4, 75%
b: 2/4, 50%
C: 4/4, 100%
c: 1/4, 25%

A	B	C	OUTCOME
1	1	1	1
0	1	1	1
1	0	1	1
0	0	1	1
1	1	0	1
0	1	0	0
1	0	0	0
0	0	0	0

Next the CNA algorithm decomposes dataset into “configuration blocks” of two conditions (except for C=1, as C=1 alone is sufficient for outcome with 100% consistency):

AB: 2/2, 100%
Ab: 1/2, 50%
aB: 1/2, 50%
ab: 1/2, 50%
Bc: 1/2, 50%
bc: none
Ac: 1/2, 50%
ac: none

consistency threshold = 100%

"building blocks" of one condition:

A: 3/4, 75%
a: 2/4, 50%
B: 3/4, 75%
b: 2/4, 50%
C: 4/4, 100%
c: 1/4, 25%

"building blocks" of two conditions:

AB: 2/2, 100%
Ab: 1/2, 50%
aB: 1/2, 50%
ab: 1/2, 50%
Bc: 1/2, 50%
bc: 0/2, 0%
Ac: 1/2, 50%
ac: 0/2, 0%

blocks to use in model-building (because they meet 100% consistency specification): C, AB

A	B	C	OUTCOME
1	1	1	1
0	1	1	1
1	0	1	1
0	0	1	1
1	1	0	1
0	1	0	0
1	0	0	0
0	0	0	0

Now let's set coverage threshold at 100%. CNA algorithm uses selected "configuration blocks" that meet consistency specifications to build models that satisfy coverage requirements for overall solution

selected blocks to use in model-building: C, AB

A	B	C	OUTCOME
1	1	1	1
0	1	1	1
1	0	1	1
0	0	1	1
1	1	0	1
0	1	0	0
1	0	0	0
0	0	0	0

Presence of C (i.e., C=1) explains 4 of 5 cases with outcome present

- C alone is sufficient

Remaining unexplained case covered by A*B

Final Solution:

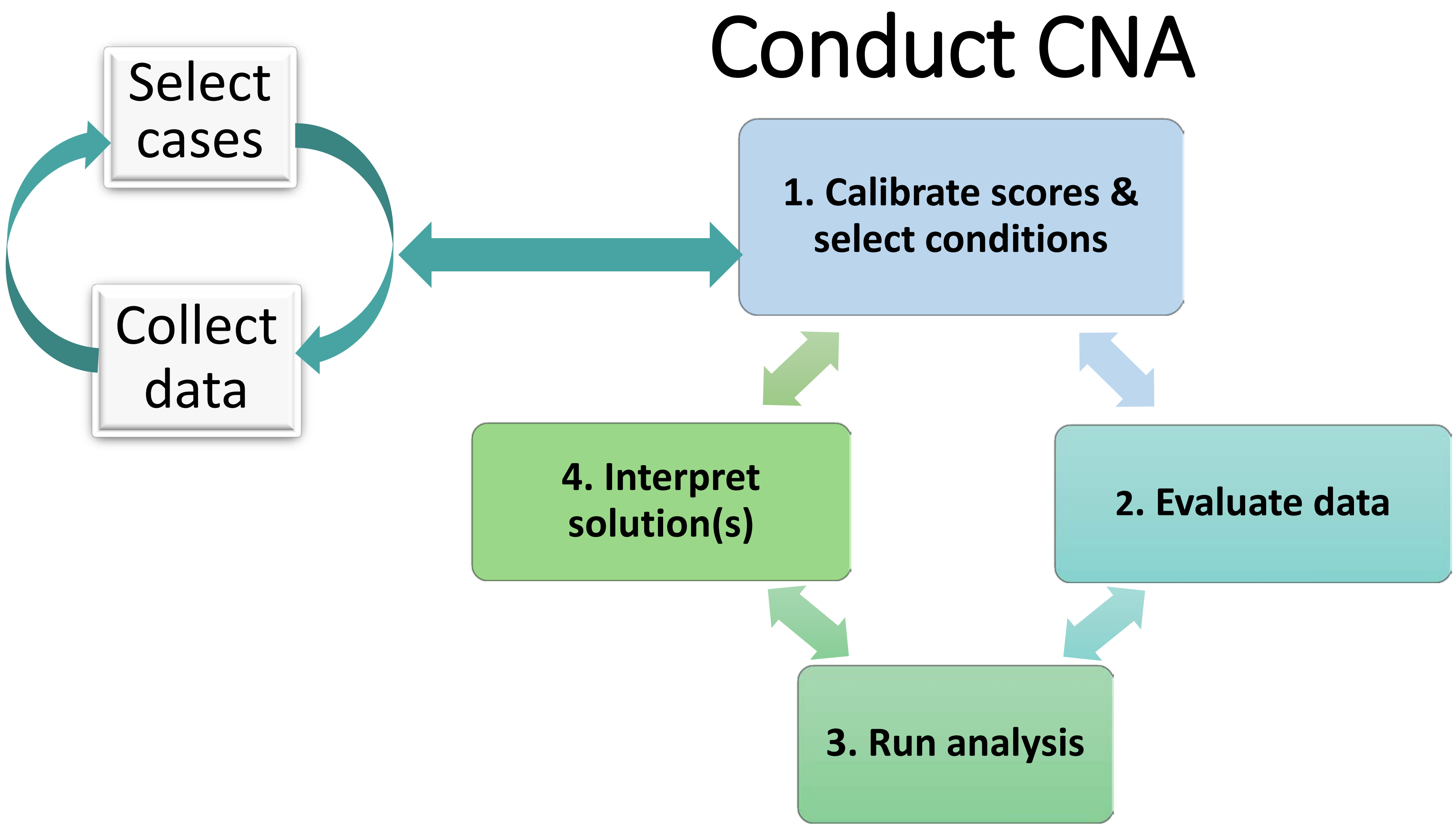
C + (A*B) ↔ OUTCOME =1

- consistency = 100%
- coverage = 100%

Hands-On Activity #3:

The CNA Algorithm

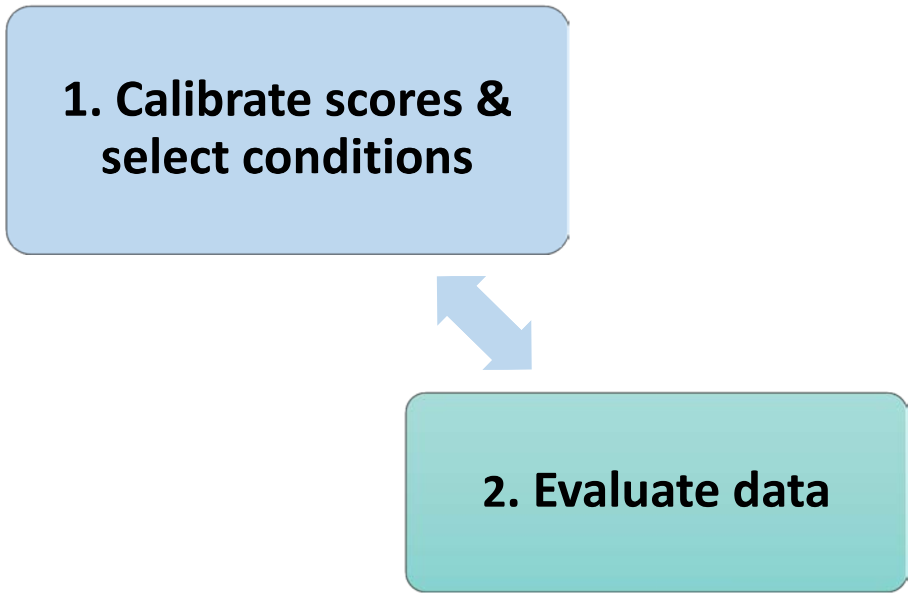
RESULTS AND INTERPRETATION IN CNA


Conduct CNA
Select cases
Collect data
1. Calibrate scores & select conditions
2. Evaluate data
3. Run analysis
4. Interpret solution(s)

1. Calibrate scores & select conditions

Conditions

	Factor A	Factor B	Factor C	OUTCOME
CASE 01	1	1	1	1
CASE 02	1	1	0	0
CASE 03	1	0	1	1
CASE 04	1	0	0	1
CASE 05	0	1	1	1
CASE 06	0	1	0	0
CASE 07	0	0	1	1
CASE 08	0	0	0	0
CASE 09	1	1	1	1
CASE 10	0	1	0	0
CASE 11	1	1	0	0
CASE 12	0	1	1	1
CASE 13	1	1	0	0
CASE 14	1	1	1	1
CASE 15	0	0	0	0
CASE 16	1	0	0	1



	Factor A	Factor B	Factor C	OUTCOME
CASE 01	1	1	1	1
CASE 02	1	1	0	0
CASE 03	1	0	1	1
CASE 04	1	0	0	1
CASE 05	0	1	1	1
CASE 06	0	1	0	0
CASE 07	0	0	1	1
CASE 08	0	0	0	0
CASE 09	1	1	1	1
CASE 10	0	1	0	0
CASE 11	1	1	0	0
CASE 12	0	1	1	1
CASE 13	1	1	0	0
CASE 14	1	1	1	1
CASE 15	0	0	0	0
CASE 16	1	0	0	1

Bottom-up Algorithm Used to Build Model

Calculates consistency scores for each configuration (i.e., each condition and then each combination of conditions)

3. Run analysis

	Factor A	Factor B	Factor C	OUTCOME
CASE 01	1	1	1	1
CASE 02	1	1	0	0
CASE 03	1	0	1	1
CASE 04	1	0	0	1
CASE 05	0	1	1	1
CASE 06	0	1	0	0
CASE 07	0	0	1	1
CASE 08	0	0	0	0
CASE 09	1	1	1	1
CASE 10	0	1	0	0
CASE 11	1	1	0	0
CASE 12	0	1	1	1
CASE 13	1	1	0	0
CASE 14	1	1	1	1
CASE 15	0	0	0	0
CASE 16	1	0	0	1

Run Analysis Using R software (CNA package)

```
library(cna)
options(max.print=999999)
setwd("/home/debi/Dropbox/Debi's/")
BottomUp <- read.csv("ExampleBottomUp.csv", row.names=1)

BottomUp2 <- BottomUp [,c("A", "B", "C","OUTCOME")]
cna(BottomUp2, con=1,cov=1)
```

3. Run analysis

CNA Output

4. Interpret solution(s)

--- Coincidence Analysis (CNA) ---

Factors: A, B, C, OUTCOME

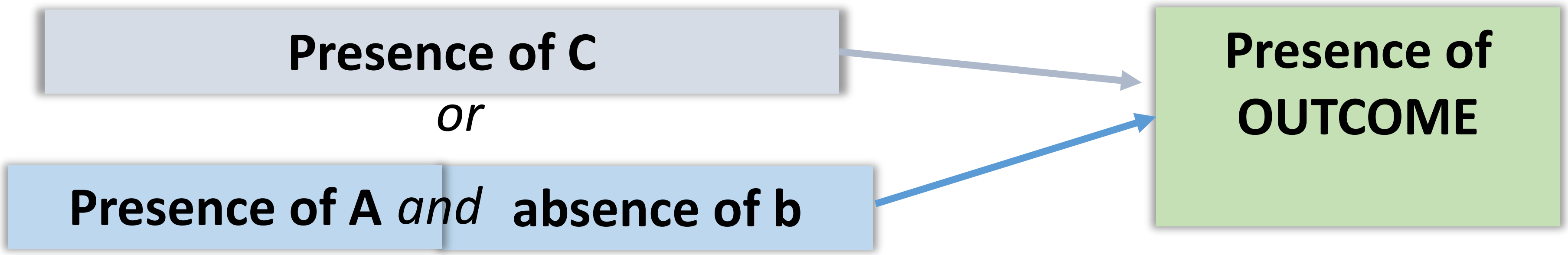
Atomic solution formulas:

Outcome OUTCOME:

solution

C + A*b <-> OUTCOME

2 “causal” configurations of conditions

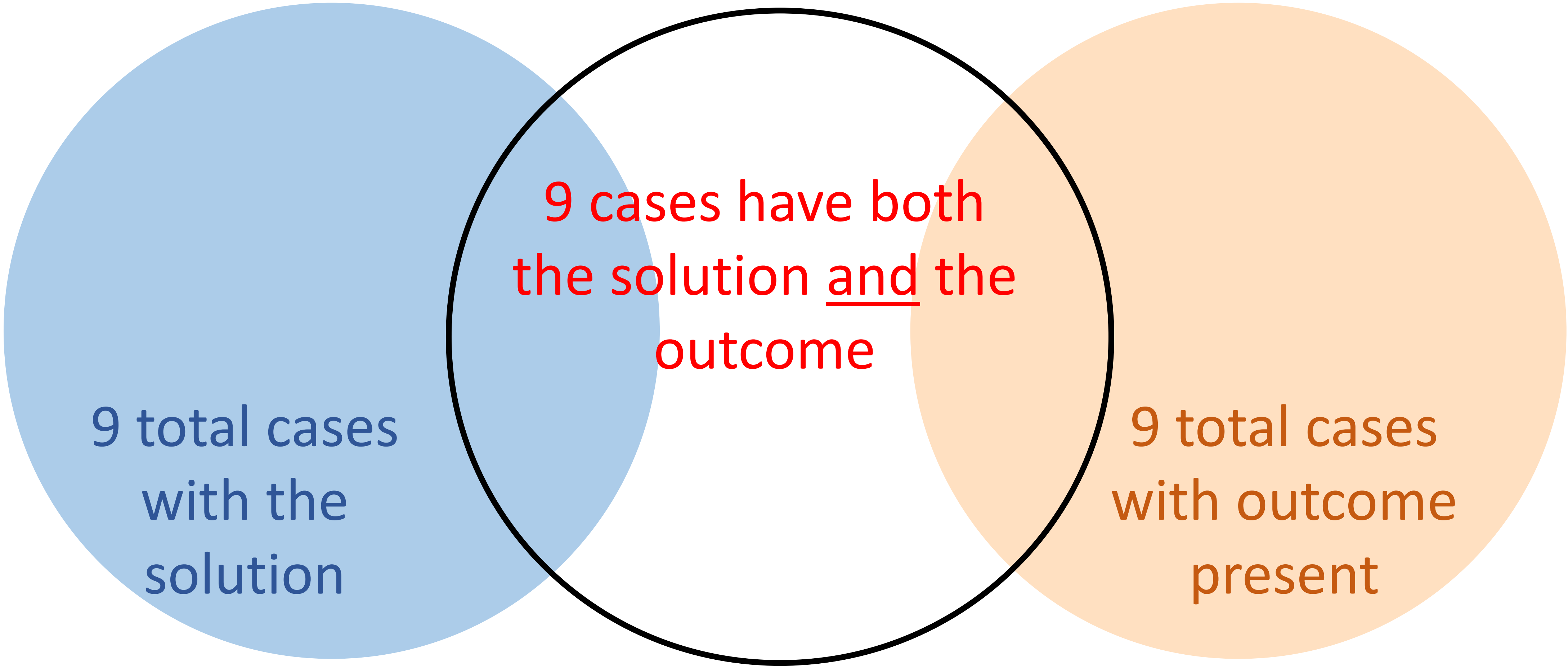


solution
C + A*b <-> OUTCOME

consistency
1

coverage
1

4. Interpret solution(s)



Note: Consistency and coverage are interpreted differently with fuzzy set data

Hands-On Activity #4:

Causal Chains in CNA

Activity: Interpret Causal Chain
A Hypothetical Example

Conditions

Highly **C**ollaborative Group (C)

Peer Pressure From Competing Hospitals (P)

Negative **A**ttitude Among Key Person (A)

Aware of **E**xternal policy Recommendation (E)

Strong Communication **N**etworks (N)

Outcome

Highly **S**uccessful Implementation (S)

Hypothetical Data

Configur-ation	Conditions				Outcome	Cases
	A	N	E	C	S	Hospitals (N=30)
c1	0	1	1	1	1	LU, UR, SU, OW, NW, AR, AI
c2	0	1	0	1	1	GL, UG, SO, SG, AG
c3	0	1	1	1	1	GR, TG
c4	1	1	0	1	1	UH
c5	1	1	1	1	1	BE
c6	1	1	0	1	1	SH
c7	1	0	0	1	1	BL
c8	0	0	0	1	1	TI
c9	0	0	1	0	1	VS
c10	0	0	1	0	1	FR, EU
c11	1	0	1	0	1	JU
c12	1	0	0	0	0	VD, NE, GE, PP
c13	1	0	0	0	0	BS, KP, GP

Conditions

Highly **C**ollaborative Group (C)

Peer Pressure from Competing Hospitals (P)

Strong Communication **N**etworks (N)

Negative **A**ttitude Among Key Person (A)

Aware of **E**xternal policy recommendation (E)

Outcome

Highly **S**uccessful Implementation (S)

Atomic solution formulas:

Outcome C:

solution	consistency	coverage
N + a*e <-> C	1	0.947

Outcome S:

solution	consistency	coverage
C + E <-> S	1	1

Activity: Interpret Causal Chain

Complex solution formulas:

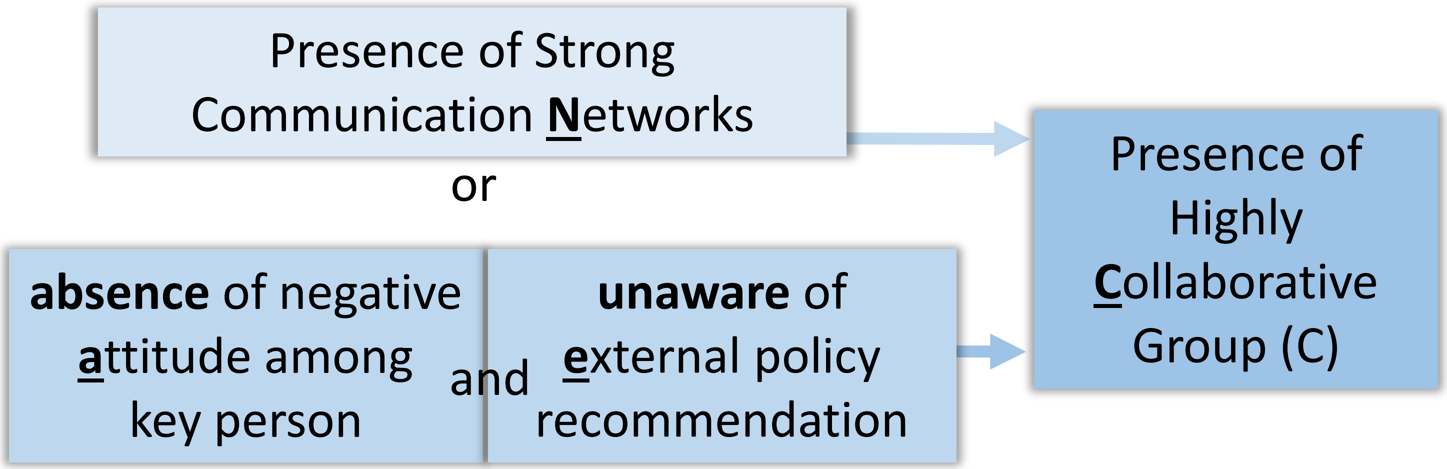
----

outcome	solution	consistency	coverage
C,S	(N + a*e <-> C)*(C + E <-> S)	1	0.947

4. Interpret solution(s)

outcome solution

C **(N + a*e <-> C)**

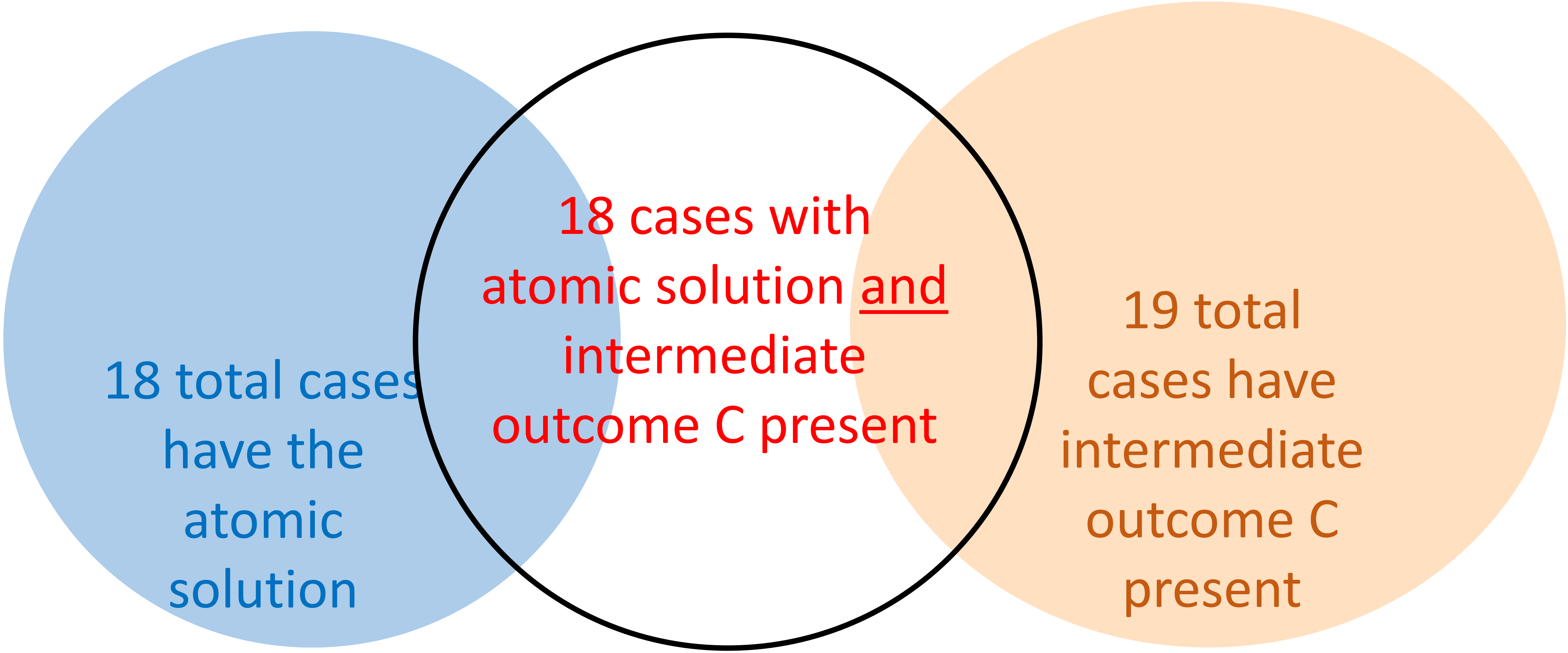


Atomic solution formulas:

Outcome C:

solution	consistency	coverage
N + a*e <-> C	1	0.947

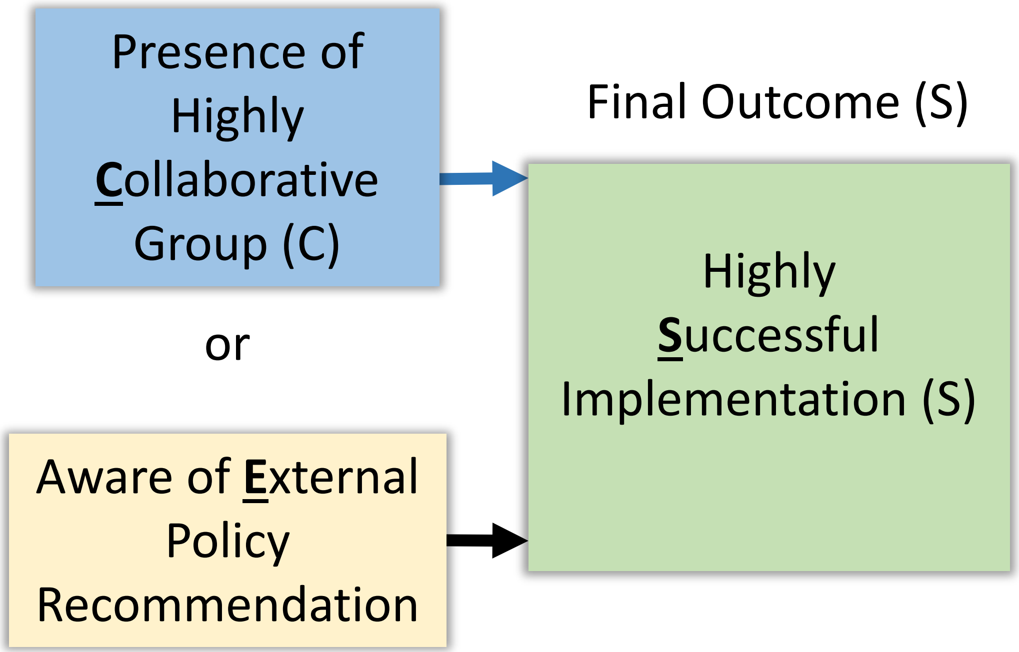
4. Interpret solution(s)



Note: Consistency and coverage are interpreted differently with fuzzy set data

4. Interpret solution(s)

outcome	solution
S	**(C + E <-> S)**

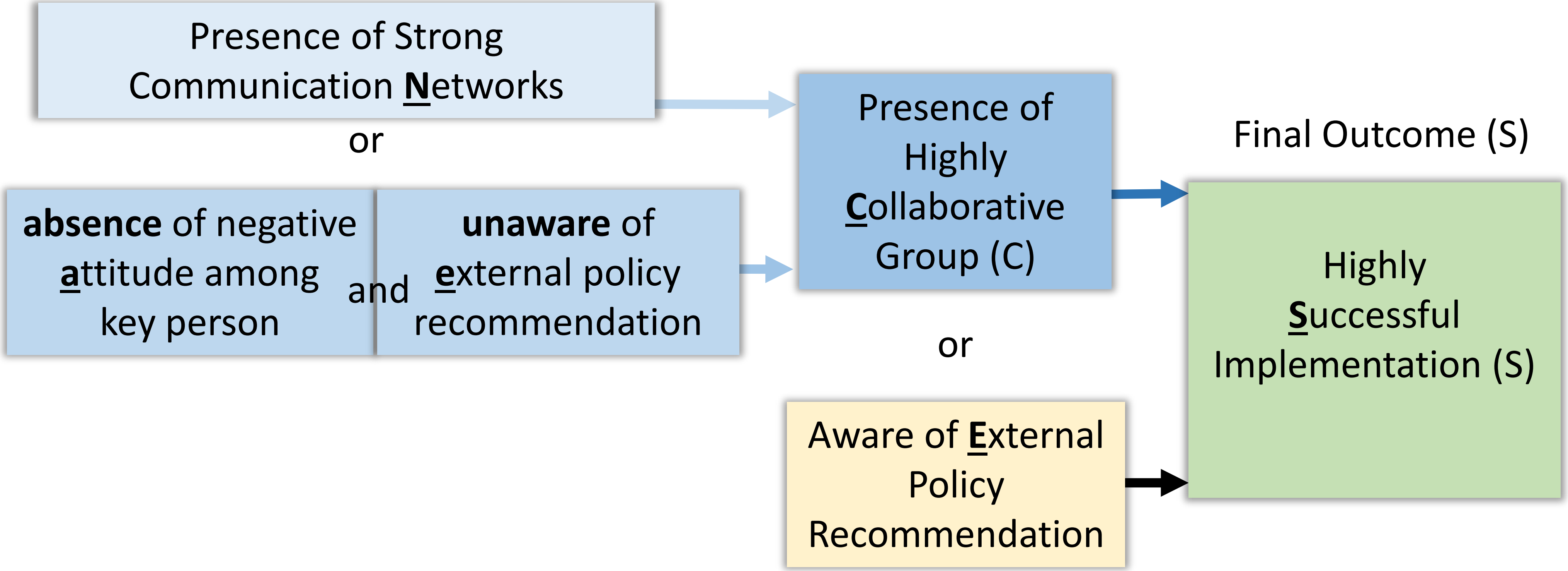


4. Interpret solution(s)

Complex solution formula:

----

outcome	solution
C,S	**(N + a*e <-> C)*(C + E <-> S)**



4. Interpret solution(s)

Solution consistency

- 23 cases match the configuration of "causal conditions" from the complete solution <u>and</u> had both outcomes present (C) and (S)
- These same 23 were the only ones that match the "causal configuration" from the solution

Complex solution formulas [complete solution]:

----

outcome	solution	**consistency**	coverage
C,S	(N + a*e <-> C)*(C + E <-> S)	**1**	0.947

Note: Consistency is interpreted differently with fuzzy set data

Solution Coverage

- The complete solution is only as good as the "weakest link"
- Recall that the atomic solution for C had coverage of 0.947

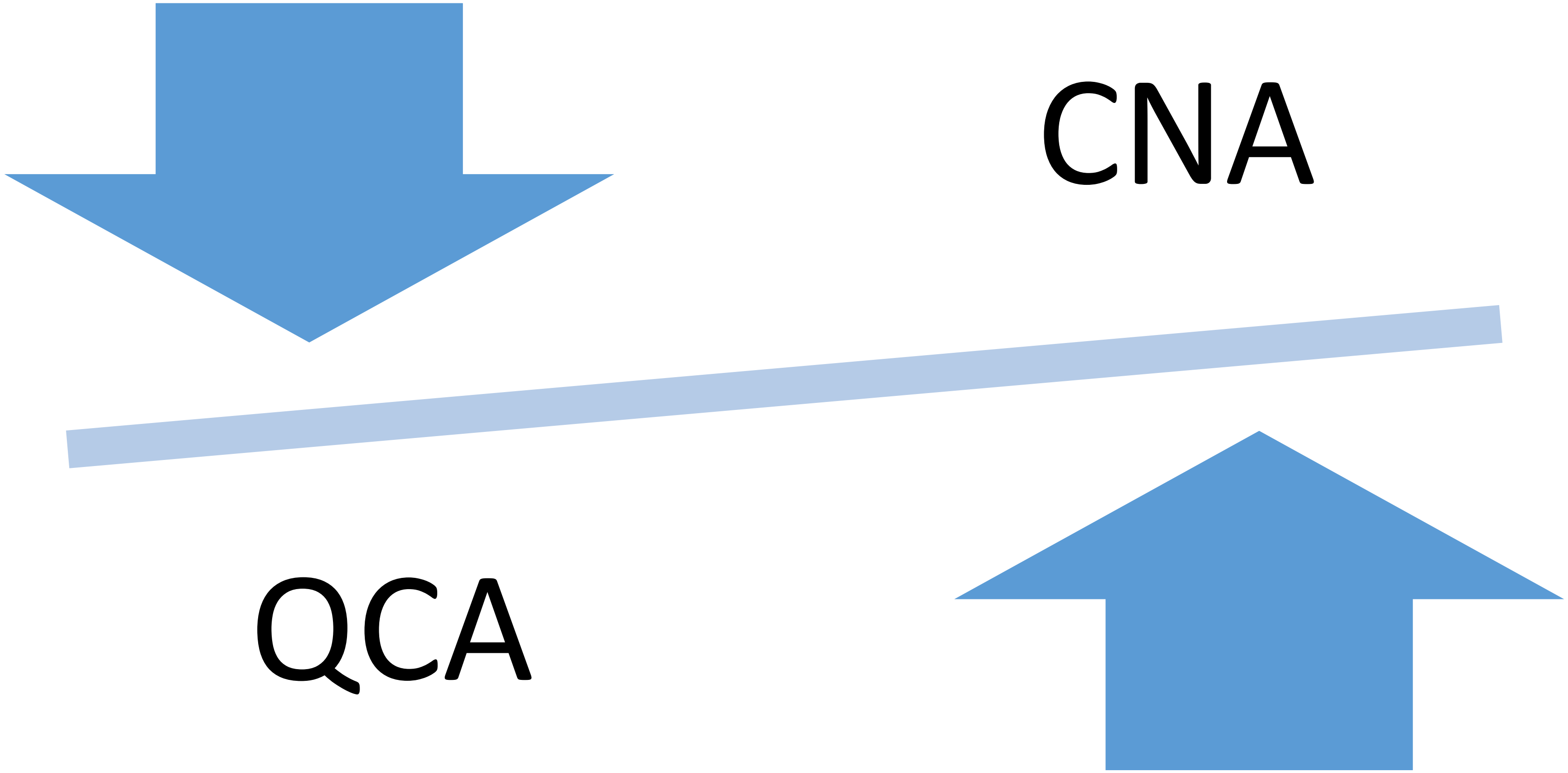
Complex solution formulas [complete solution]:

----

outcome	solution	consistency	**coverage**
C,S	(N + a*e <-> C)*(C + E <-> S)	1	**0.947**

Note: Coverage is interpreted differently with fuzzy set data

Considerations



Q&A and Future Directions

- Building capacity
- What about you?

Resources

All Things Configured:

- Founded in February 2019
- National community of practice focused on configurational research
- Monthly 1-hour calls, each with a lead presenter
- Over 60 members (including all 4 co-presenters at this CNA workshop)
  - Represent all 4 time zones in continental United States
  - Includes investigators, faculty, analysts, fellows, CDAs, graduate students, etc.
  - Most members have at least some prior experience with approach (e.g., QCA, CNA)
  - Primary focus: sharing information and "talking shop" re: configurational methods
- To join (or get more information)
  - send email message to Edward.Miech@va.gov

5-day training

Regenstrief Institute
50 years

ABOUT US RESEARCH IMPLEMENTATION NEWS TRAINING RESOURCES PARTNER

EWS & EVENTS > EVENTS > 5-DAY METHODOLOGY SEMINAR: CONFIGURATIONAL...

CONFERENCE

5-Day Methodology Seminar: Configurational Research with Qualitative Comparative Analysis and Coincidence Analysis

Statistical packages

Ambuehl M, Baumgartner M. cna: Causal Modeling with Coincidence Analysis. R package version 2.1.1. 2018. https://CRAN.R-project.org/package=cna

Baumgartner M. (2012). Detecting Causal Chains in Small-n Data. Field Methods. https://journals.sagepub.com/doi/10.1177/1525822X12462527R QCAPro package

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