Reduce, Reuse, & Recycle: Going "Green" with Atlas Reusables

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2) SimulStat, Inc. Solana Beach, CA, USA
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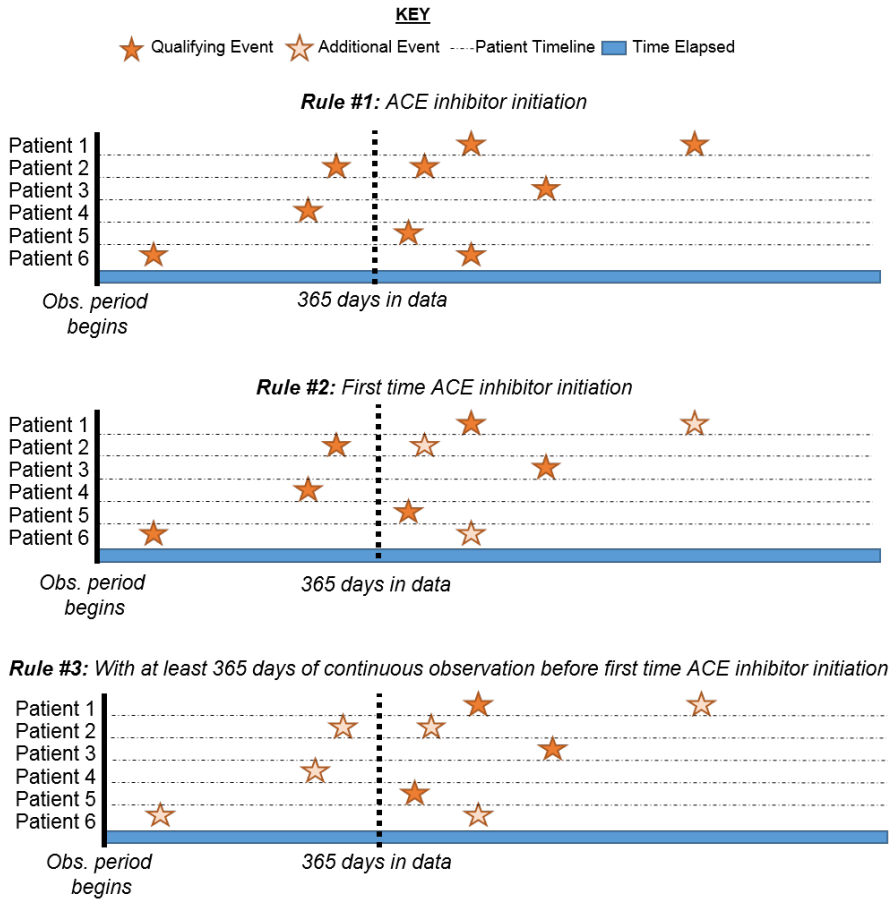
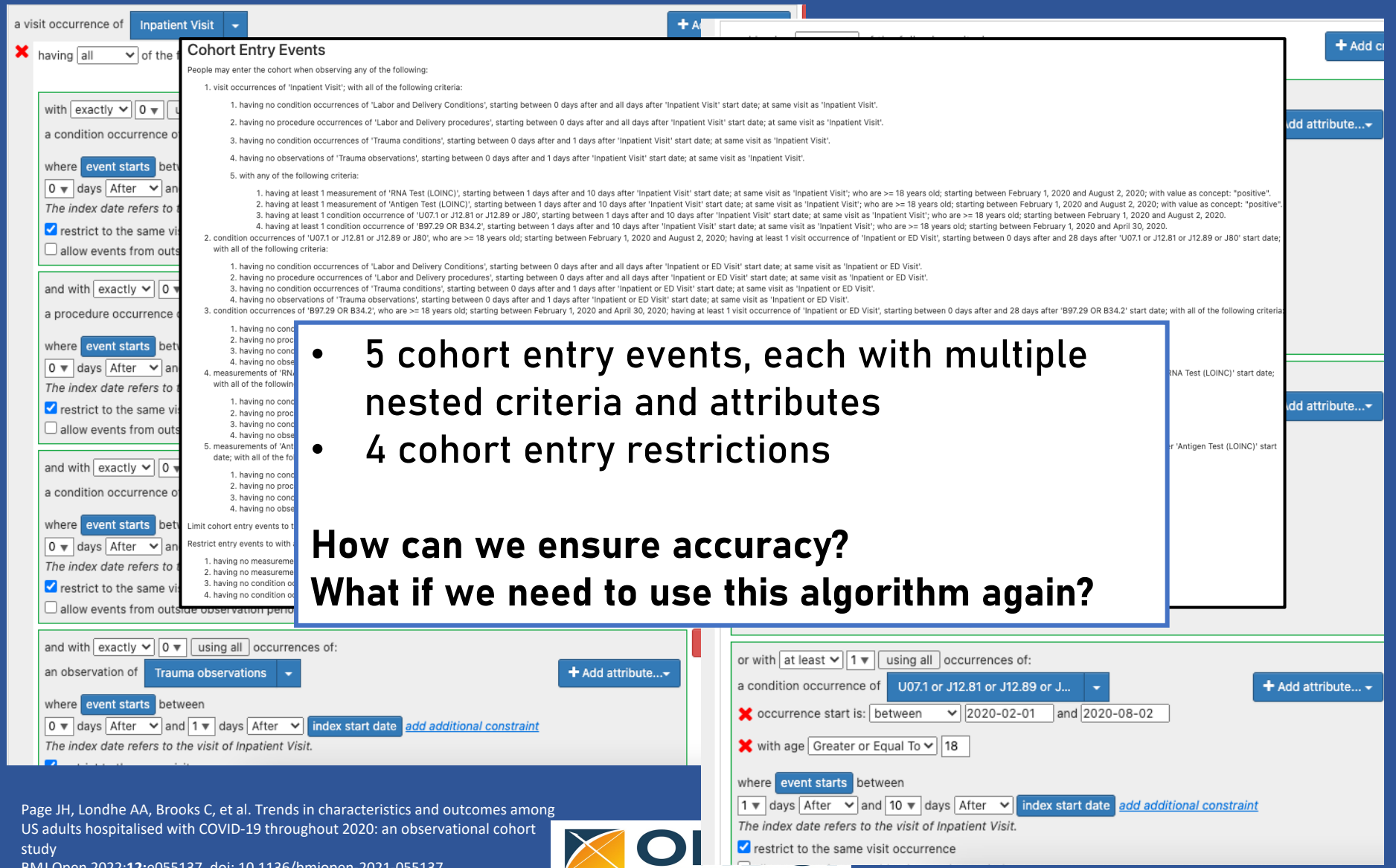
4) Observational Health Data Sciences and Informatics (OHDSI), New York, NY, USA

OHDSI
OBSERVATIONAL HEALTH DATA SCIENCES AND INFORMATICS

Criteria logic and attributes are building blocks of cohort analyses



Constructing a COVID-19 cohort in 2020



- 5 cohort entry events, each with multiple nested criteria and attributes
- 4 cohort entry restrictions

How can we ensure accuracy?
What if we need to use this algorithm again?

Page JH, Londhe AA, Brooks C, et al. Trends in characteristics and outcomes among US adults hospitalised with COVID-19 throughout 2020: an observational cohort study
BMJ Open 2022;**12:**e055137. doi: 10.1136/bmjopen-2021-055137

OBSERVATIONAL HEALTH DATA SCIENCES AND INFORMATICS

From complex to simple, algorithms are utilized frequently within and across studies

Section 1: Vascular Lab Criteria

Ankle brachial index <0.9 at rest or post exercise; ankle systolic blood pressure >255 mmHg, or any ABI >1.4

Exclude non-atherosclerotic causes of PAD:

≥2 occurrences of the following codes

747.22, 237.7, 443.1, 446.0, 446.4, 446.5, 446.6, 446.7, 447.6, 710.1, 747.1, 747.64.

Section 2: ICD-9-CM Diagnosis Codes For PAD

440.2×, 440.3×, or 440.8×.

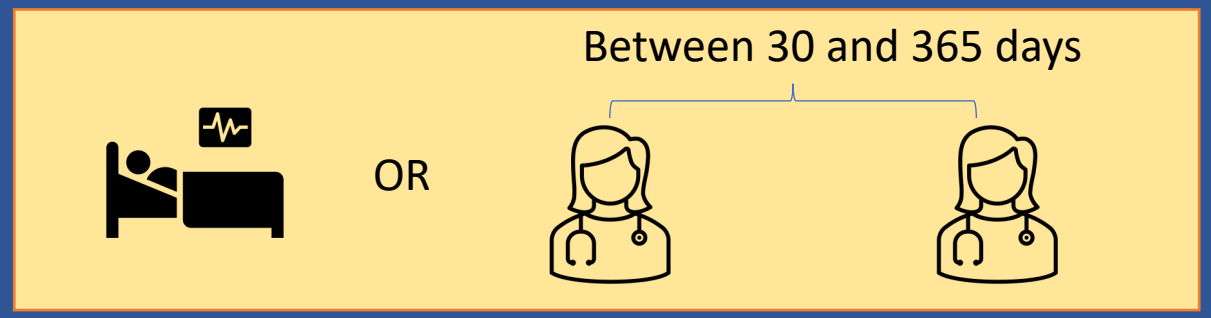
Section 3: Procedure Codes Related To PAD

***One of the ICD-9-CM/CPT-4 procedure codes for lower extremity artery angiography**: 88.48, 75710, 75711, 75712, 75716, 75717, 75718, 75630, 75631. **PLUS** one **(concurrent)** of the codes below for non coronary vessel stents: 39.50, 39.90, 37205, 37206, 37207, 37208, 37184, 37185, 37186.*

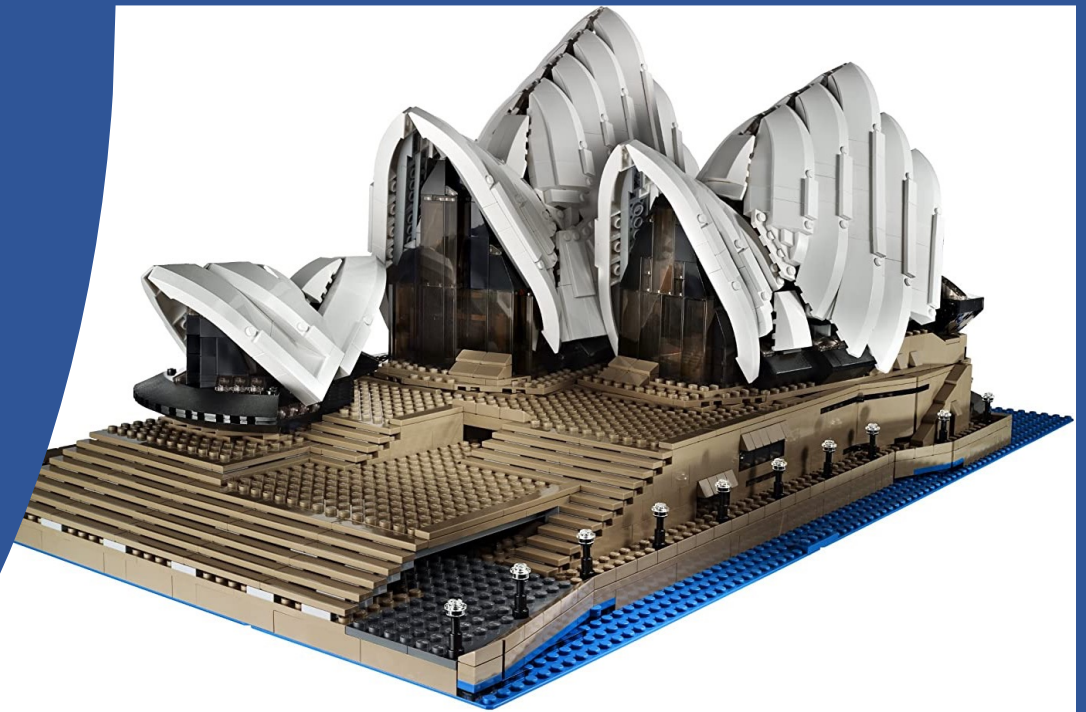
OR

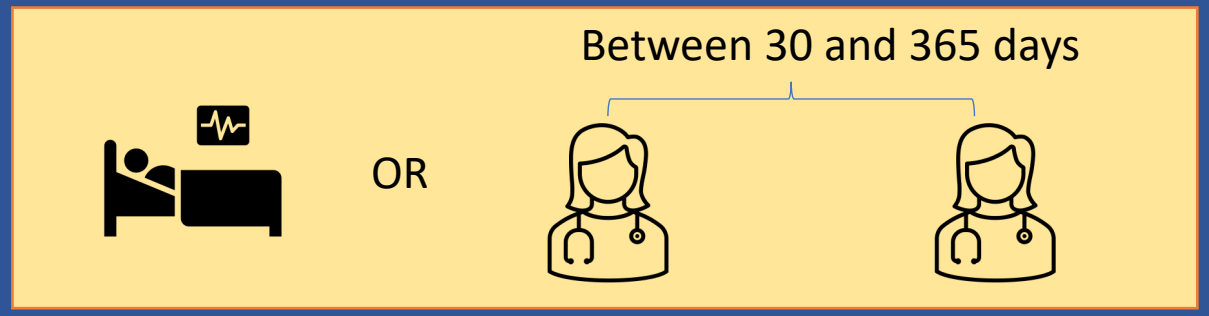
***One of the ICD-9-CM/CPT-4 procedure codes for lower extremity artery surgical and percutaneous vascular interventions:** 38.18, 39.50, 39.25, 39.29, 38.08, 38.38, 38.48, 39.49; 39.56, 39.57, 39.58, 39.90, 35302, 35303, 35304, 35305, 35306, 35331, 35351, 35355, 35361, 35363, 35371, 35372, 35381, 35452, 35454, 35456, 35459, 35470, 35472, 35473, 35474, 35481, 35482, 35483, 35485, 35491, 35492, 35493, 35495, 35521, 35533, 35537, 35538, 35539, 35540, 35541, 35546, 35548, 35549, 35551, 35556, 35558, 35563, 35565, 35566, 35571, 35582, 35583, 35585, 35587, 35621, 35623, 35637, 35638, 35641, 35646, 35647, 35651, 35654, 35656, 35661, 35663, 35665, 35666, 35671, 35226, 35256, 35286, 35700, 35721, 35741, 35876, 35879, 35881, 35883, 35884, 37184, 37185, 37186, 37205, 37206, 37207, 37208.*

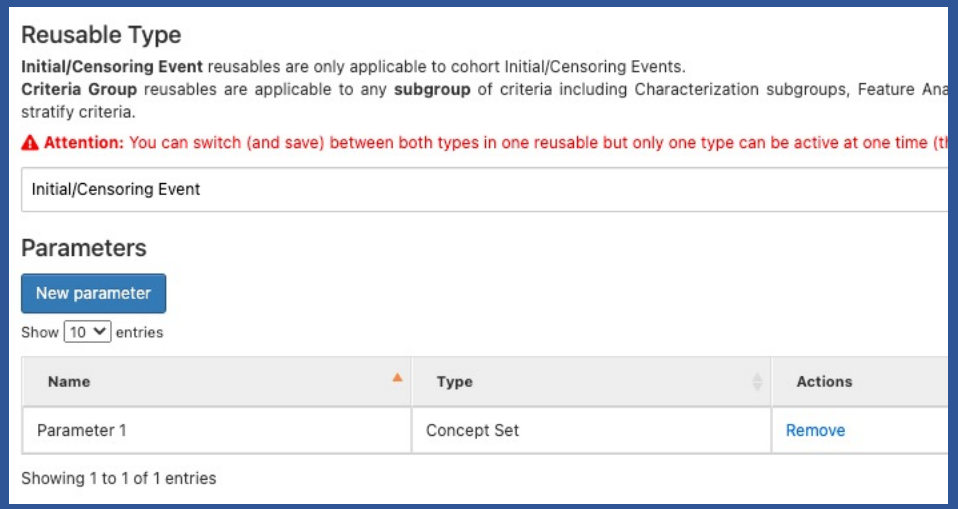
Exclude if one of the following ICD-9-CM codes for alternate reasons for surgery is also present:

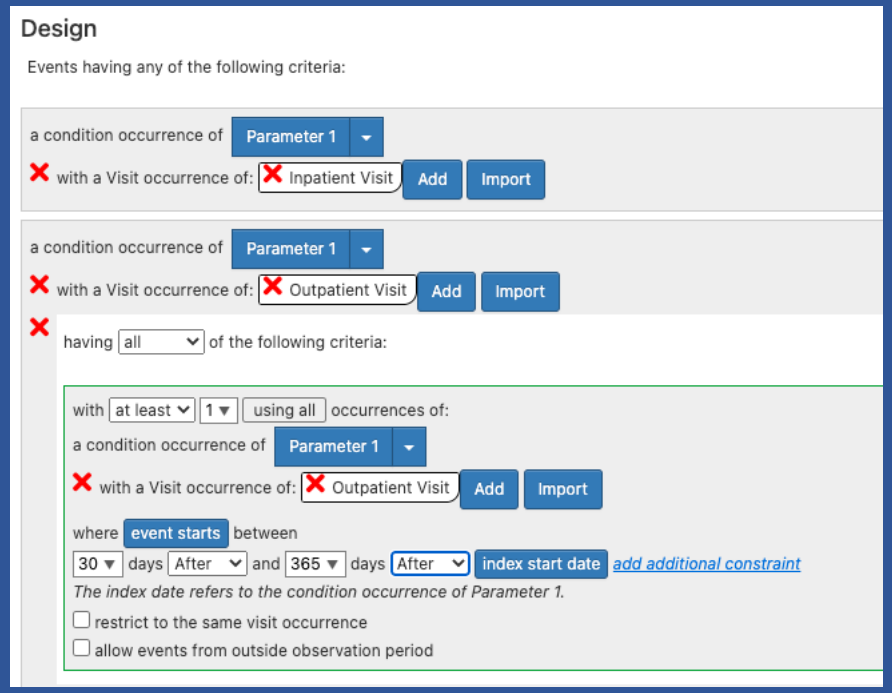


How do we scale algorithms?



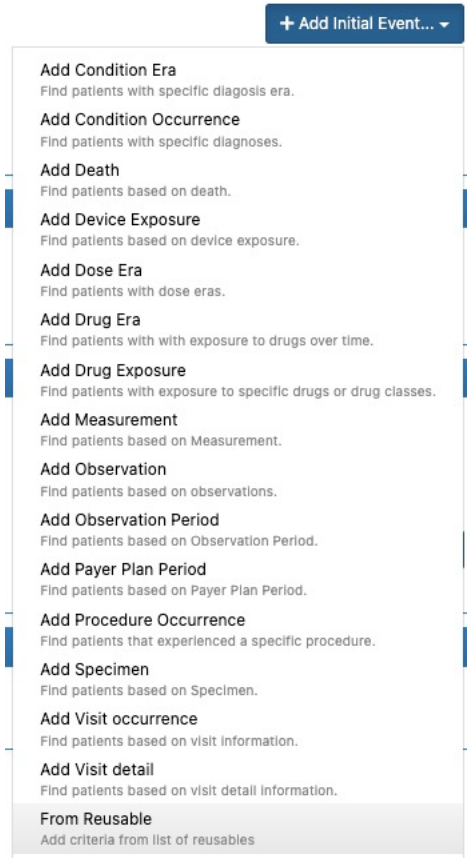


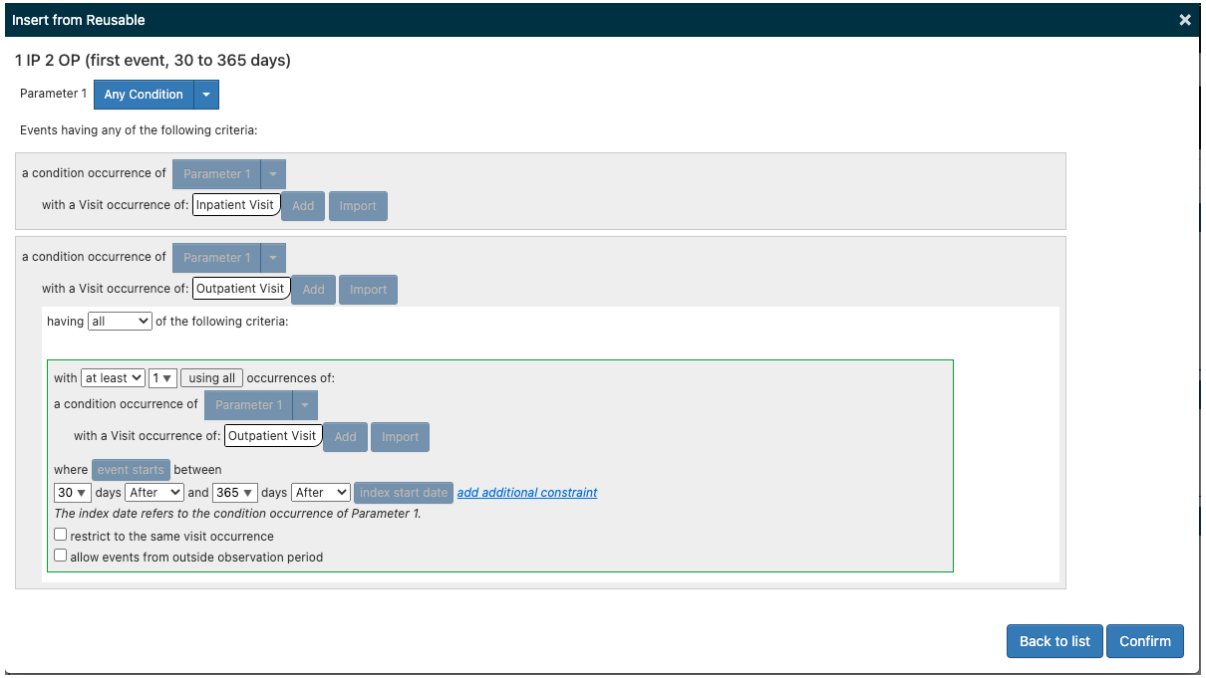




Atlas Reusables: Write Once, Use Many

Import Into All Study Designs





Cohort definitions, characterization subgroups or custom features, incidence rate strata

Reusables Features

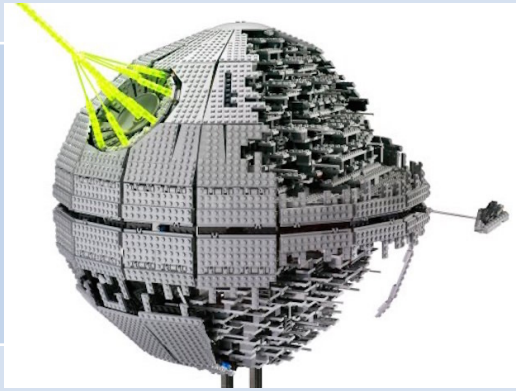
An imported Reusable acts like a manually created set of logic

Compatible with all existing versions of Atlas

Can create parameterized algorithms with design-time tokenization

Can string together 1 or more Reusables, leading to multi-part algorithms with more modularity

Conclusions



Reusables are a powerful new method in Atlas for streamlined design and reproducibility

Reduces design complexity and improve study design accuracy

Thank You!

- Co-Authors
  - Simulstat
    - Brad Rechkemmer
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