

# Calculating Mode(s) across variables

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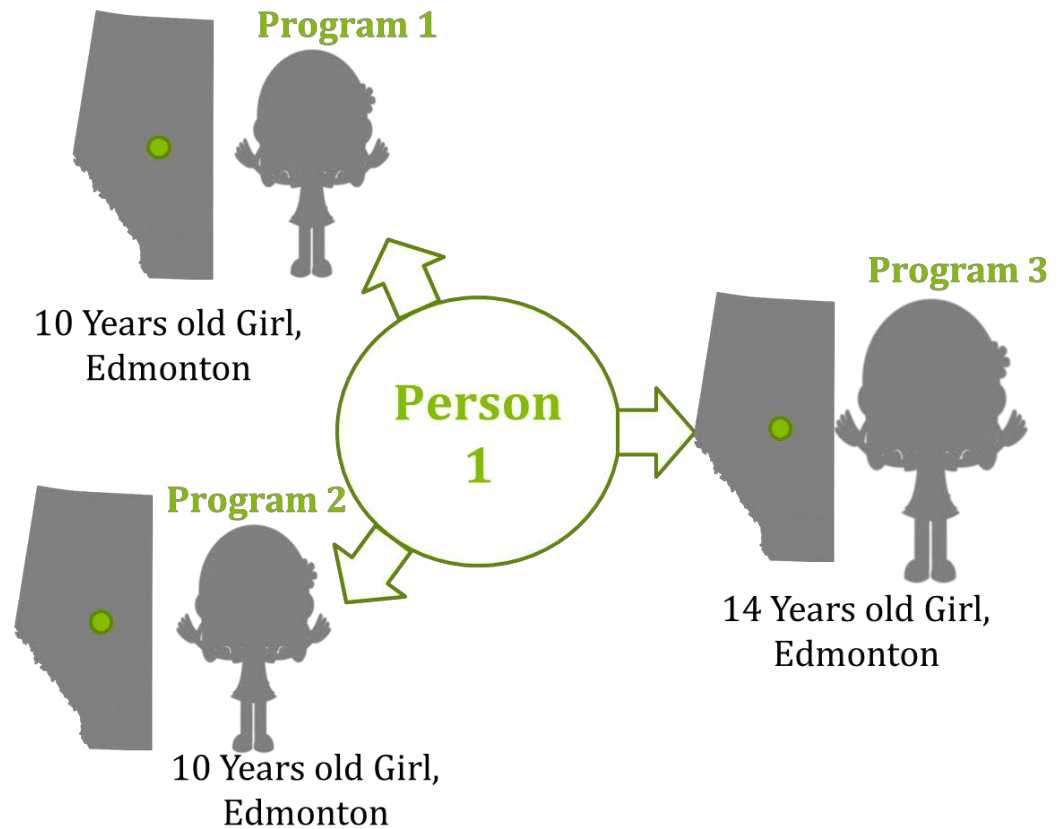
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# Context

- Anonymous Linkages



- Reasons for different values
  - Reporting error
  - Wrong Linkage
- Resolving Indicators (Age, Sex, Dissemination Area)
  - Select mode value, if exist
  - Select one mode randomly if multiple modes of same size
  - Select one value randomly if all values are different
- Why Mode Across Variables?



# Example

Link_ID	Age									
	Prog1	Prog2	Prog3	Prog4	Prog5	Prog6	Prog7	Prog8	Prog9	Prog20
AD005	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	.
BC135	10.5	.	.	10.5	.	.	11.5	.	.	.
AZC0678	6.1	6.1	.	9.3	9.3	9.3	.	.	.	.
OPXD123	6.1	6.1	6.1	.	9.3	9.3	9.3	.	6.4	.
UAL1R67	6.1	8.8	6.1	8.8	6.1	8.8	3	3	3	.
KJA981B	5.6	.	.	.	.	.	.	.	.	.
LKB2345GT	4.3	4.6	5.1	5.2	6.8	7.1	4.9	11.6	7.9	.



# SAS (Macro)

```
%Macro ResolveIndicator(dFile=, FinVar=, VarList=);  
*Create hash table and hash iterator to hold values across columns for each  
record;  
Data &dFile.Final (Drop=k ran count i max &VarList);  
    if _n_ eq 1 then do;  
        declare hash ha(); /*hash table for mode */  
        declare hiter hi('ha'); /*hash iterator loop */  
            ha.definekey('k');  
            ha.definedata('k','count');  
            ha.definedone();  
        declare hash random(ordered:'a');  
/*hash table for random selection*/  
            declare hiter hir('random');  
            random.definekey('ran');  
            random.definedata('k','count');  
            random.definedone();  
    end;  
    set &dFile;
```



```
*Creates array of values from columns;  
array x{*} &VarList;
```

```
*Reading only available values (Non-missing)and  
assigning to array elements,counting max  
and holding max number in hash table;
```

```
do i=1 to dim(x);  
  if not missing(x{i}) then do;  
    k=x{i};  
    if ha.find()=0 then do;  
      count+1;  
      ha.replace();  
    end;  
    else do;  
      count=1;  
      ha.add();  
    end;  
  end;  
end;  
end;
```



```

*Random selection from Modes or values;
    do while(hi.next()=0);
        ran=ceil(ranuni(-1)*1000000);
        random.add();
    end;
    max=0;

*Assigning value to the variable defined;
    do while(hir.next()=0);
        if count gt max then do;
            max=count;
            &finvar=k;
        end;
    end;

*Clearing hash tables for next record;
    ha.clear();
    random.clear();

    RUN;

%MEND ResolveIndicator;

```





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*Thanks !*