

# California Statewide Travel Demand Model (CSTDMD)

Tier 2 Training

Unit 7

Model Inputs

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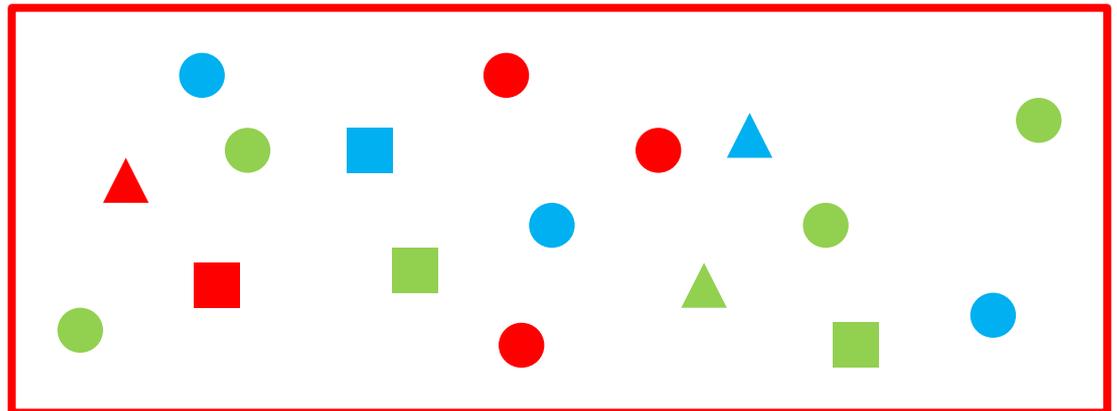
# Nonnetwork Inputs

- Synthetic Population (Persons / Households)
- TAZ level Data:
  - Employment by Industry Type
  - Employment by Occupation Type
  - School Enrolment by Type
  - Additional Parking Cost
  - Other Zonal Properties

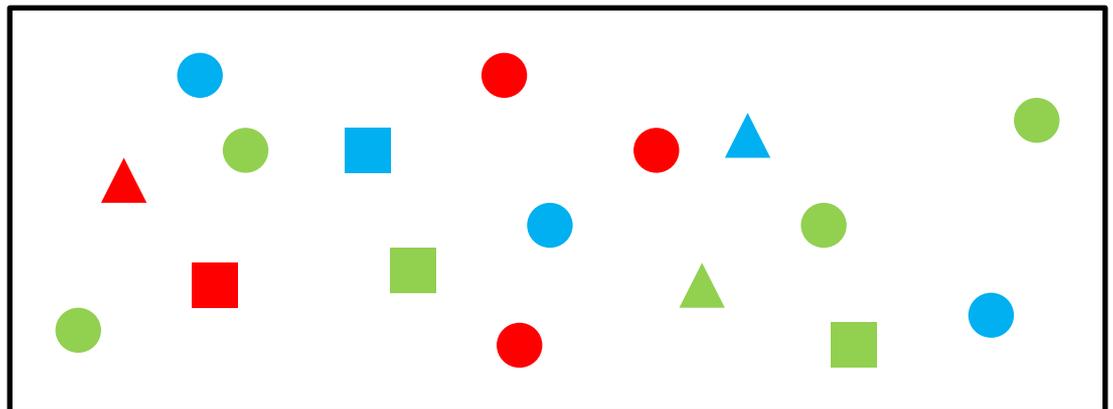
# Synthetic Population

- Aggregate totals for households/persons by properties – “targets”
- Detailed information about actual households and persons – “samples”
- Synthetic population is built from samples to match the targets
- A population of actual households that matches the aggregate totals we know

	▲ : 5	● : 30	■ : 15
☹ : 10			
☹ : 15			
☹ : 25			



	▲ : 5	● : 30	■ : 15
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# Public Use Microdata Sample (PUMS)

- Actual Census “long form” records
- 5% Sample (650K HH, 1.7M people)
- Housing unit table (113 fields):
  - Residence (age, number of bedrooms, mortgage, fuel)
  - Income, numbers of people/workers/vehicles
- Person table (163 fields):
  - Age, sex, education, work, disabilities
  - Linked to their households

# Aggregate zonal targets

- Household targets:
  - Households by size 7
  - Households by income 7
  - Households by housing type 5
- Person targets:
  - Persons by age 10
  - Workers by occupation 6
  - Students by level 3

# Combinatorial Optimization

- Internal algorithm for synthesis
- Based on “swapping” households into a trial population
- Allows household and person targets
- Allows targets that span multiple zones
- Runs quickly, produces an excellent fit

# Enrolment and Employment

- At school / work location
- Specified at zonal level
- Enrolment by school level:
  - Grade school K-8, Grade school 9-12
  - Post secondary education
- Employment in two dimensions:
  - Industry (8 categories)
  - Occupation (8 categories)
  - + military employment

# Employment by Industry

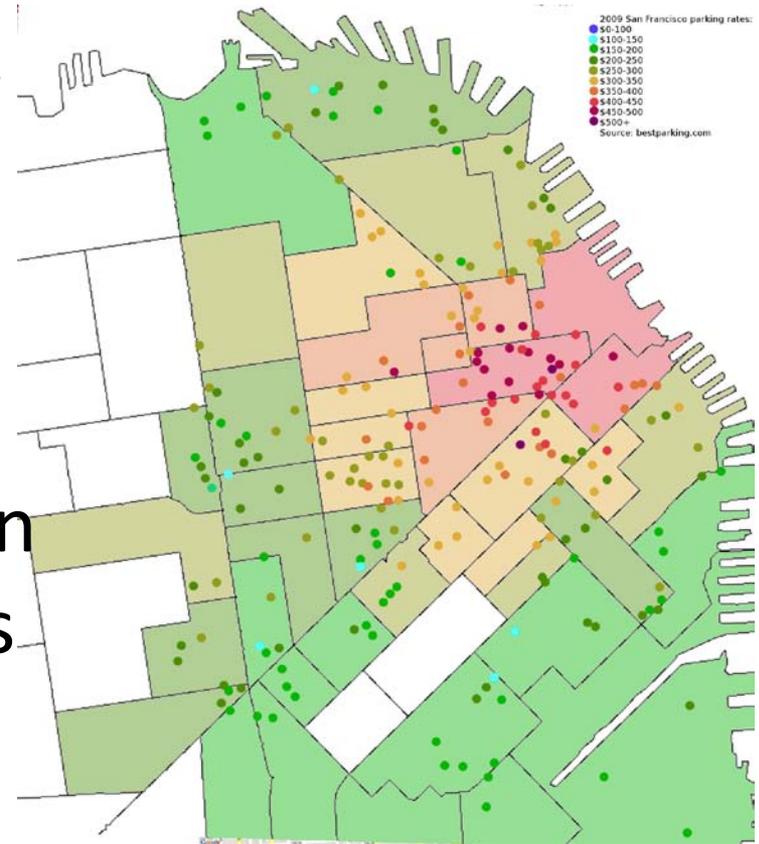
NAICS group	Name	Group
11, 21	Agriculture & Mining	Prim_Sec
23	Construction	
31-33	Manufacturing	
42	Wholesale	Whole
22, 48-49	Transport. & Utilities	Tran_U
44-45	Retail	Retail
51	Information	Office
52-53	Financial, Insurance, RE	
54-56	Prof., Sci., Admin.	
92	Government	
61-62	Health & Education	EduMed
71-72	Arts/Rec./Accom./Food	LeisHosp
81	Other Services	OthServ

# Employment by Occupation

SOC group	Full	Short
11, 13	Managerial and Business	ManBus
15, 17, 19, 21, 23	Professional and Technical	ProfTech
25	Education	Education
27, 35, 41	Sales, Food and Entertainment	SalesFE
29, 31	Health	Health
33, 37, 39	Non Sales Service	ServNS
43	Clerical and Administrative	Clerical
45, 47, 49, 51, 53	Blue Collar	BluCol

# Parking Costs

- CSTDM has a model that produces “market” parking costs in CBDs
  - Monthly, daily and hourly
  - Based primarily on density
- Additional parking costs can be specified for other areas
  - Airports, campuses, etc.
  - Policy tests



# Zonal Properties Preparation Script

- One input file for zonal properties
- Standard .csv format file
- Everything specified in only one place
- Script prepares specific input files needed for each of the models

# Zonal Properties File

- TAZ number (1)
- Employment by industry (9)
- Employment by occupation (8)
- School enrolment (3)
- Additional parking costs (2)
- Zone properties (5) – area, latitude, longitude
- Region codes (10) – county, district, etc.