Technical Report for Binary Choice Between Usual and Unusual Work Location

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Model Description

This model will predicate whether an agent with an usual work location will go to usual work location or not for a particular work tour. It should be noted this choice is only for those that has a fixed work location. For those with out fixed work location, the choice is not necessary. The result of this model will determine if it is necessary to predicate work tour location.

Choice Set

To go to usual work location and not to go, for a work tour.

Model Structure

For this model, I have removed the betas that are fixed to zero, so its associate variables are no longer needed to generate.

```
V1 = 0

#V2 for usual
V2 = cons_usual +
beta_fixedtime_usual * fixed_work_hour +
beta_female_usual*Female_dummy +
beta_distance_log_usual * log(distance) +
beta_employment_full_usual * employment *full_time_dummy +
beta_employment_part_usual * employment *part_time_dummy +
beta_employment_self_usual * employment*self_employed_dummy +
```

```
beta_work_home_usual * work_from_home_dummy +
beta_first_work_usual * first_of_multiple +
beta_sub_work_usual * subsequent_of_multiple




cons_usual = Beta('cons for usual',0,-10,10,0) = 1.86
beta_fixedtime_usual=Beta('Beta for fixed time dummy in usual',0,-10,10,0) = 0.153
beta_female_usual=Beta('Beta for female dummy in usual',0,-10,10,0) = 0.235
beta_distance_log_usual=Beta('Beta for log(distance) in usual',0,-10,10,0) = -0.0740

beta_employment_full_usual=
Beta('Beta for log(1+employment)*full in usual',0,-10,10,0) = 0.0474

beta_employment_part_usual=
Beta('Beta for log(1+employment)*part in usual',0,-10,10,0) = 0.0230

beta_employment_self_usual=
Beta('Beta for log(1+employment)*self in usual',0,-10,10,0) = 0.0773

beta_work_home_usual=
Beta('Beta for work from home dummy in usual',0,-10,10,0) = 0.806

beta_first_work_usual=
Beta('Beta for first of multiple work tours dummy in usual', 0,-10,10,0)= -0.663

beta_sub_work_usual=
Beta('Beta for sub of multiple work tours dummy in usual', 0,-10,10,0)= -0.978
```

Variables

```
fixed_work_hour = 1 * (worktime_flex==1)
full_time_dummy =1 *(person_type_id==1)
part_time_dummy= 1*(person_type_id==2)
self_employed_dummy= 1*(person_type_id==3)

walk_distance1= AM[(origin,destination)]['AM2dis']
walk_distance2= PM[(origin,destination)]['PM2dis']
# origin is home mtz, destination is usual work location mtz
distance=max(walk_distance1+walk_distance2,0.1)

#first of multiple =1 if this work tour is the first work tour
#of many work tours modeled for an agent, else first of multiple =0
```

```
#subsequent of multiple =1 if this work tour is the subsequent work
#tour of many work tours modeled for an agent, else first of multiple =0

#work_from_home_dummy is get from population table
```

Availability of Alternatives

No Constrains.