HIROSHIMA UNIVERSITY

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"Happy City" in Yokohama

Promoting active transportation for health and wellness

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Lifestyle diseases rank high as cause of deaths in Japan

Japanese use too much Walk (and train)

But, many policy failed

Environment

Economically

I have no interest

Need for new policy

Understand Japanese travel behavior

What is Happy City?

Happiness has 6 parameters (World Happiness Report):

- GDP
- Social support
- Healthy life
- Degree of freedom
- Tolerance
- Social corruption

We want to make Yokohama citizens more happy.

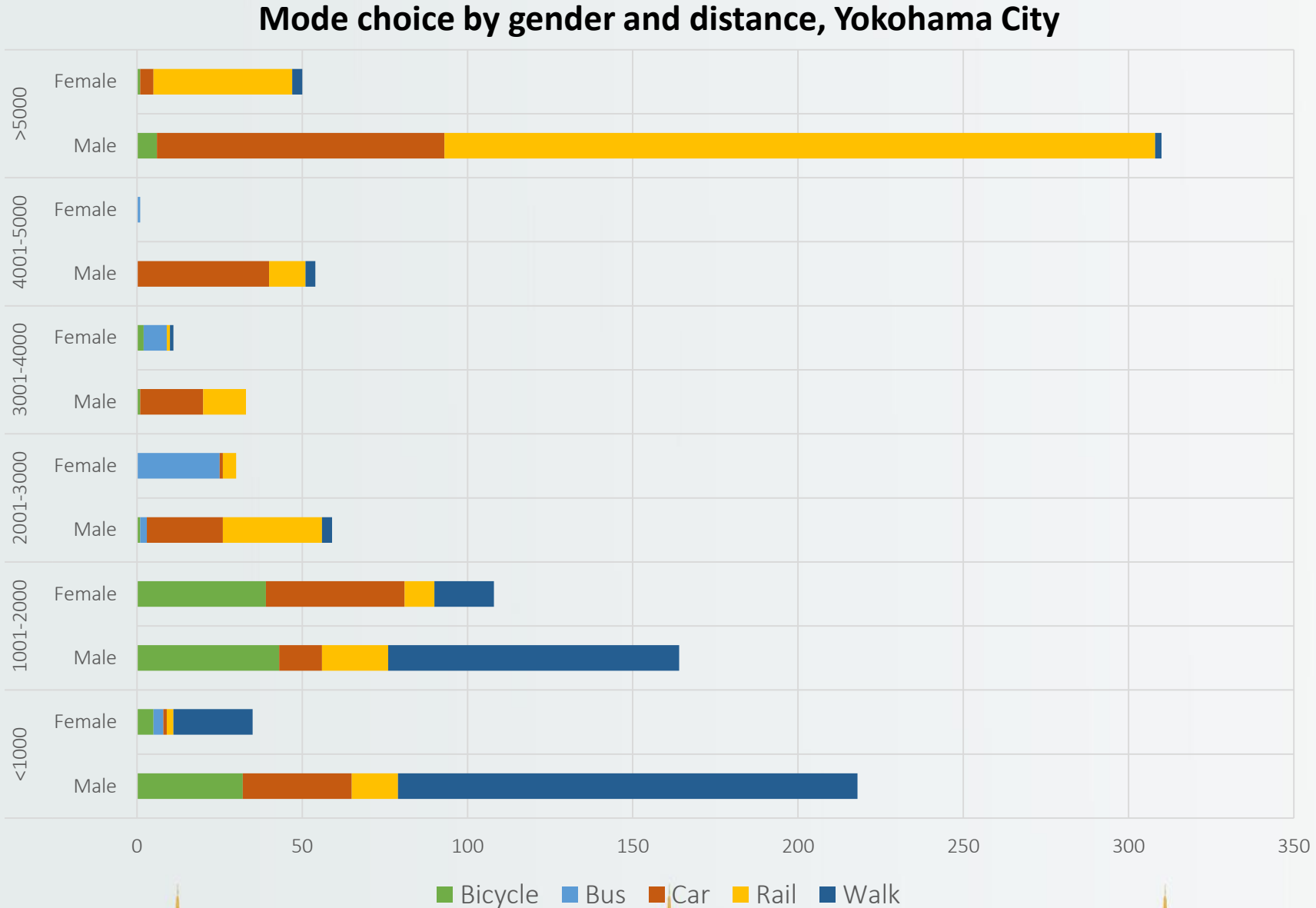
Good health = Happiness

Promote bike use and walking for commuting in Yokohama

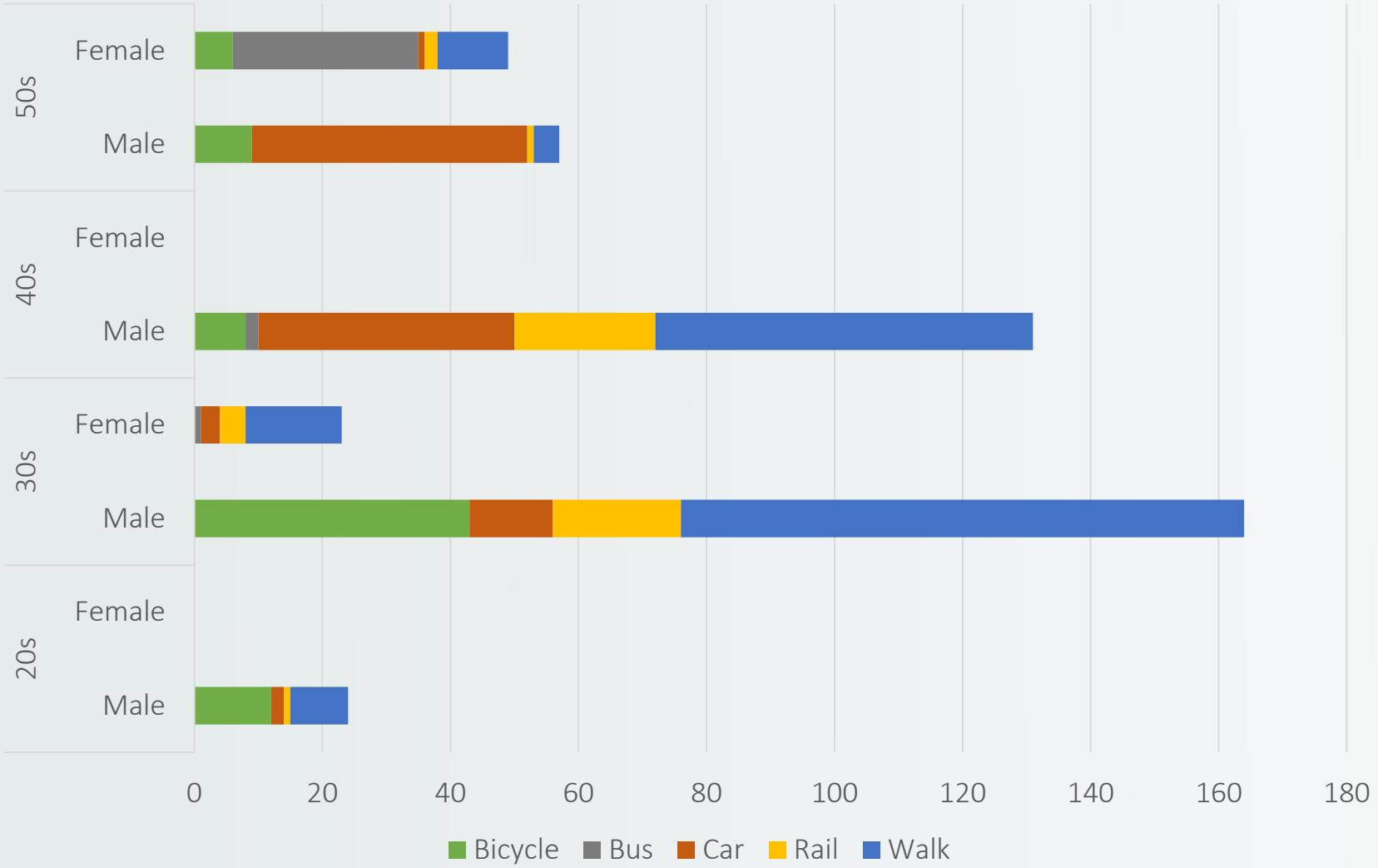
→Yokohama citizens walk an average of 3 km when commuting

Our goal, to generate data on travel behavior differences:

- across generations
- between gender

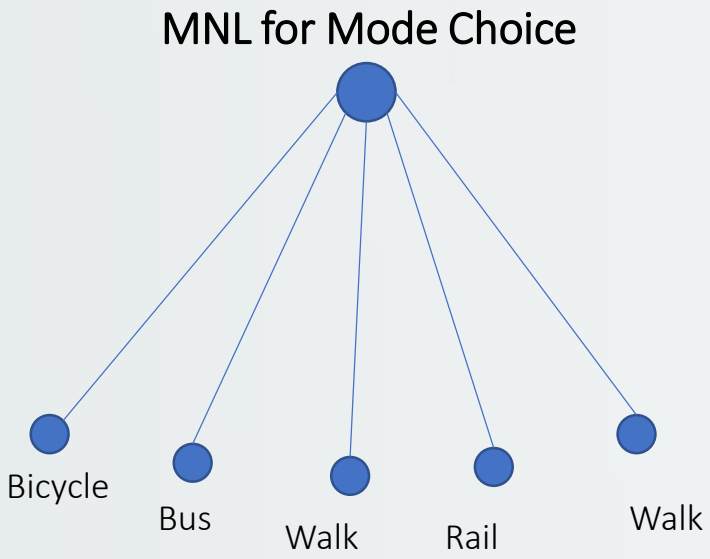

Mode choice by gender and distance, Yokohama City
>5000
4001-5000
3001-4000
2001-3000
1001-2000
<1000
Female
Male
0
50
100
150
200
250
300
350
Bicycle
Bus
Car
Rail
Walk

Mode choice by age in 3 km trips, Yokohama City



Objective:

- to determine travel behavior differences across generations and between gender.



Our Model

Utrain = θ1(time train) + b1(age) + $b$train + εtrain

Ubus = θ1(time bus) + b2(age) + $b$bus + εbus

UWalk = θ1(timeWalk) + b3(age) + $bcar$ + εcar

Ubike = θ1(timebike) + b4(age) + $b$bike + εbike

Uwalk = θ1(timewalk) + $bwalk$ + $\varepsilon walk$

Utrain = θ1(time train) + b1(age) + e1(purpose) + $b$train + εtrain

Ubus = θ1(time bus) + b2(age) + e2(purpose) + $b$bus + εbus

UWalk = θ1(timeWalk) + b3(age) + e3(purpose) + $bcar$ + εcar

Ubike = θ1(timebike) + b4(age) + e4(purpose) + $b$bike + εbike

Uwalk = θ1(timewalk) + $bwalk$ + $\varepsilon walk$

→ Segmented into Male and Female

Estimation Result (MNL)

	Female		Male	
	parameter	t-statistic	parameter	t-statistic
B1 Constant (Train)	7.315	1.052	-3.562	-2.992
B2 Constant (Bus)	0.865	0.128	10.400	1.433
B3 Constant (Walk)	1.318	0.198	-0.055	-0.070
B4 Constant (Bike)	-3.108	-0.406	5.066	5.925
D1 Travel time	-11.661	-4.598	-9.972	-9.350
C1 Age (Train)	-0.075	-0.503	0.102	3.744
C2 Age (Bus)	0.060	0.425	-0.354	-1.641
C3 Age (Walk)	0.064	0.455	0.024	1.311
C4 Age (Bike)	0.099	0.623	-0.143	-6.375
Sample size	83		461	
L0	-127.957		-627.608	
LL	-72.538		-483.900	
rho-square	0.433		0.228	
adjusted rho-square	0.362		0.214	

Age especially for males is a significant factor for people's inclination to bike.

MNL (Purpose: Meal and shopping)

	Female		Male	
	parameter	t-statistic	parameter	t-statistic
B1 Constant (Train)	-0.387	-0.066	1.343	1.315
B2 Constant (Bus)	-0.216	-0.043	-0.190	-0.063
B3 Constant (Walk)	0.118	0.025	0.795	1.106
B4 Constant (Bike)	1.788	-0.341	1.913	1.926
D1 Travel time	-4.361	-2.049	-9.757	-10.016
C1 Age (Train)	-0.018	0.141	-0.006	-0.280
C2 Age (Bus)	0.071	0.665	-0.080	-1.195
C3 Age (Walk)	0.054	0.525	-0.0004	-0.024
C4 Age (Bike)	-0.038	-0.330	-0.083	-3.226
Purpose (Train)	2.258	1.480	0.422	1.746
Purpose (Bus)	-1.100	-0.831	3.486	2.569
Purpose (Walk)	0.103	0.081	0.738	2.741
Purpose (Bike)	1.911	1.763	-0.302	-0.612
Sample size	83		461	
LC	-100.57		-581.885	
L0	-127.957		-627.608	
LL	-87.191		-443.214	
rho-square	0.318		0.293	
adjusted rho-square	0.216		0.273	

Elderly male don`t prefer to bike. Positive effect on walking for males when purpose is meals and shopping. Female prefer to bike for shopping and meals.

Policy Implications:

Promote bike use and walking for commuting in Yokohama by:

- Connecting nodes through scenic paths or subways with plenty of rest stations;
- Mixed land use
- Separated bike lanes and foot paths
- Bike share program with options for carriers

Thank You!

We welcome comments and suggestions.

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