

Research Center for Childhood Accidents – Graz, Austria

CHILDREN ON WHEELS

MOBILE ON WHEELS with MUSCLE + ELECTRIC + MOTOR POWER

Peter Spitzer



Walking with 1.670km/h



Share of Falls

- Children 24% (StISS)
- All age groups 23% (IDB)



Somewhere on Earth...

5.000 Years ago...



Children on Wheels

Design of the Study

Objective

- ✓ Are children and teenagers attracted by mobility devices on wheels, which are electrical powered or motor-driven, or do they prefer muscle powered wheelers?
- ✓ Which preferences can we find in hospital injury data?

Data Sources

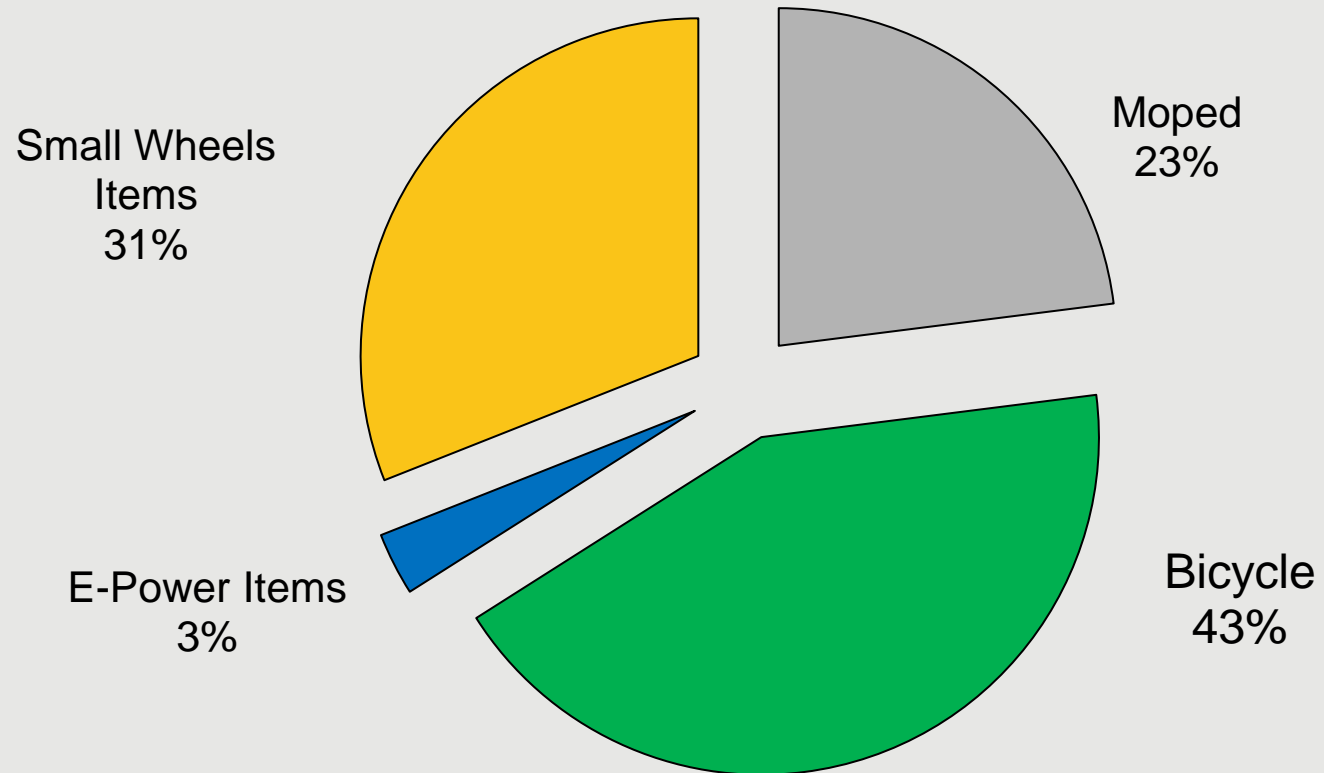
- ✓ StISS: Styrian Injury Surveillance System
- ✓ Injury Data Base: Dept. Paediatric & Adolescence Surgery Graz

Method

- ✓ Qualitative Analysis of Hospital Data and Injury Data Base
- ✓ Space of Time: 2017 – 2019 (3 years)
- ✓ Age Group: 0 to 16 years of age

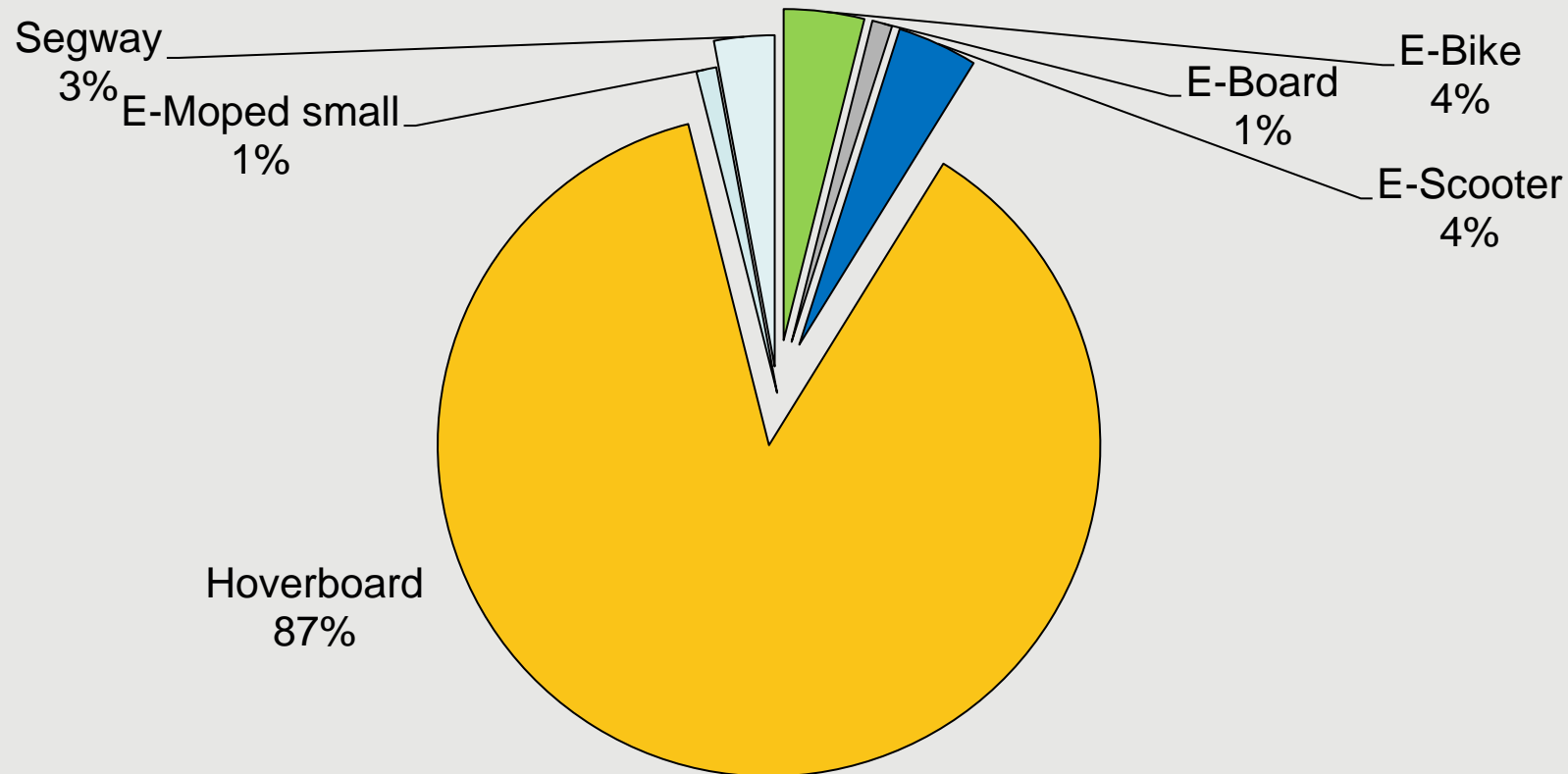
Children on Wheels

Mode of Power (n=3,538)



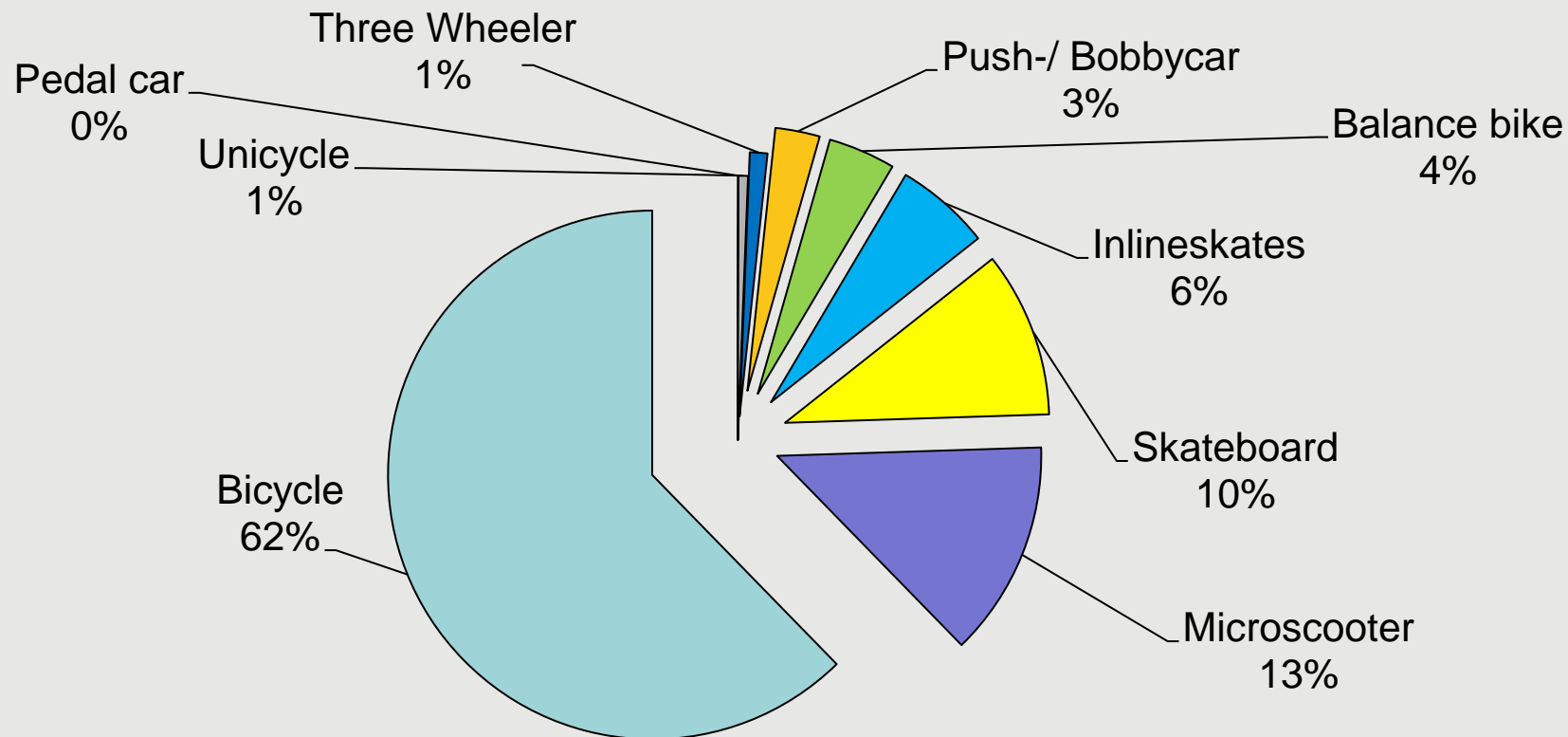
Children on Wheels

Mode of Power: E-Power (n=102)



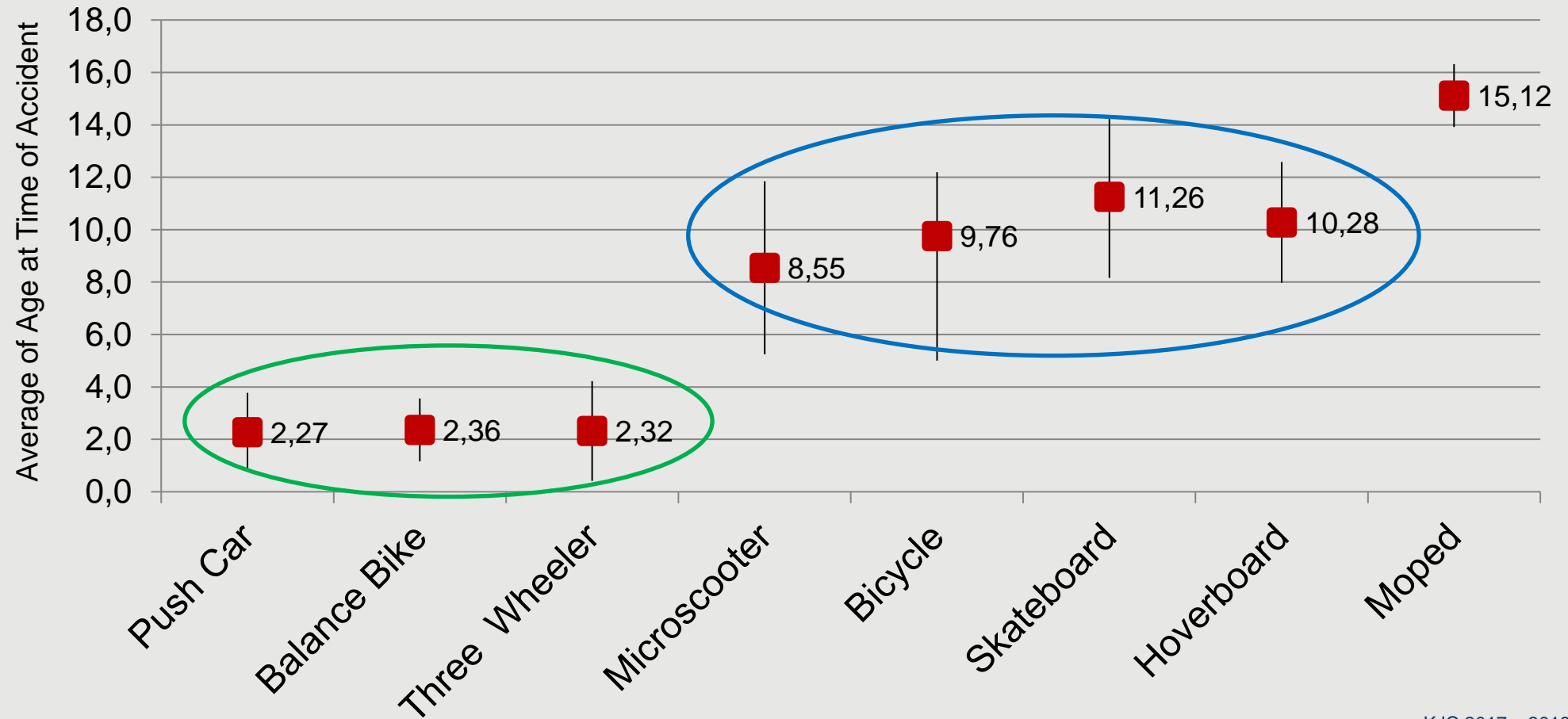
Children on Wheels

Mode of Power: Muscle-Power (n=2,605)



Children on Wheels

Device and Age of Accident



Children on Wheels

Injured Body Region and Handling Style of Device

Body Region / Handling	Steering & Be seated	Steering & Standing upright	Standing upright
Head	24,9	32,2*	13,8**
Upper Extremities	32,4**	37,3	59,7*
Lower Extremities	27,0	23,6	21,3**
Trunk / Torso	8,8*	2,8**	3,8**
Multiple Body Regions	5,3*	1,7**	0,4**
Body region undefined	1,6	2,3	1,0

*significant more within column

**significant less within column

Children on Wheels

Cluster Analysis

Type 1

- children up to 10 years of age
- steering and standing handling, driven by pushing movements
- small “wheelers”: rollers (41%), micro scooters (21%), bicycles (19%), ride on cars (bobby cars) (13%)

Type 3

- children and adolescents
- standing handling and no steering
- small “wheelers”: skateboards (50%), hoverboards (17%), roller skates (15%), inline skates (14%)

Type 2

- male children up to 14 years of age
- propelled by muscle power by pedalling, steering and sitting handling
- two-wheeled vehicle: bicycles (94%), mountain bikes (6%)

Type 4

- people aged 15 and 16
- road accident
- riding a moped (94%), motorbike (4%)

Children on Wheels

Prevention

- ✓ Correct environment
- ✓ Do not provide children with age-inappropriate devices
- ✓ Correct device size
- ✓ Protective equipment
- ✓ Correct device maintenance
- ✓ Learn how to use the device properly
- ✓ Parents themselves use the device and set an example

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