



RUOKAVIRASTO
Livsmedelsverket • Finnish Food Authority

Exposure Assessment for Microbiological Risk Assessment

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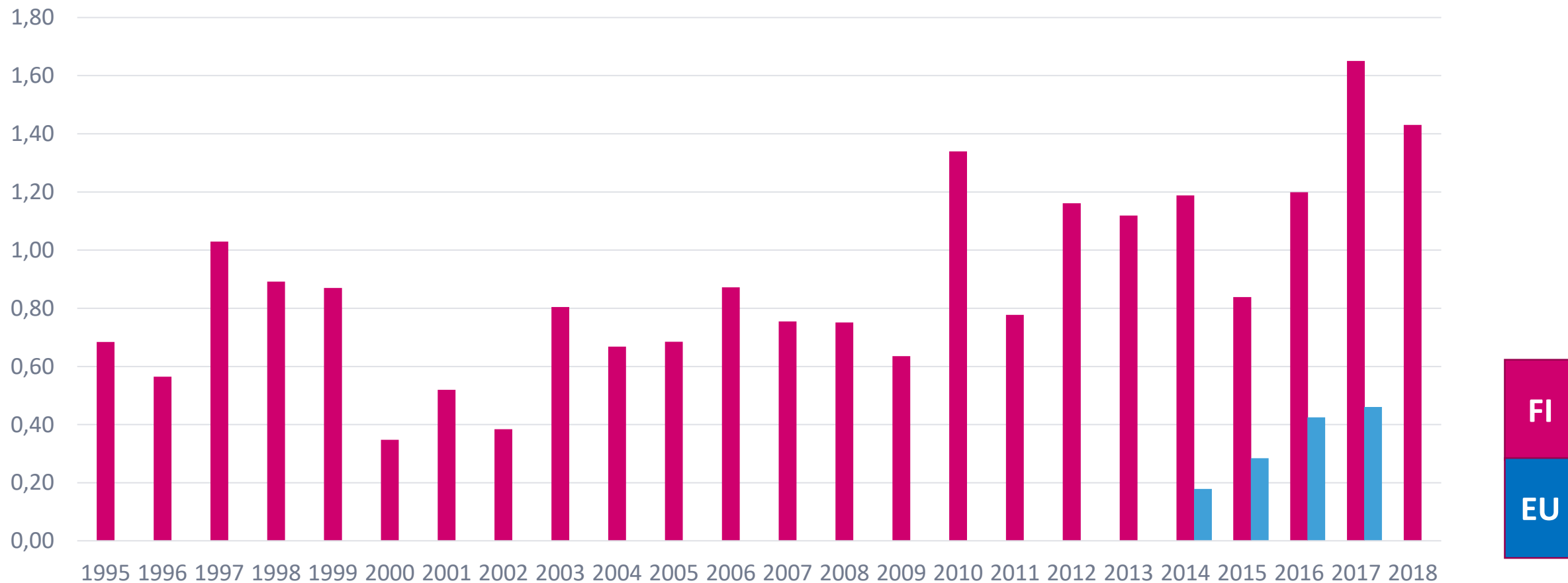
Listeria monocytogenes in RTE
Workshop

Athens 14.-15.2.2019

Human listeriosis incidence in Finland 1995-2018

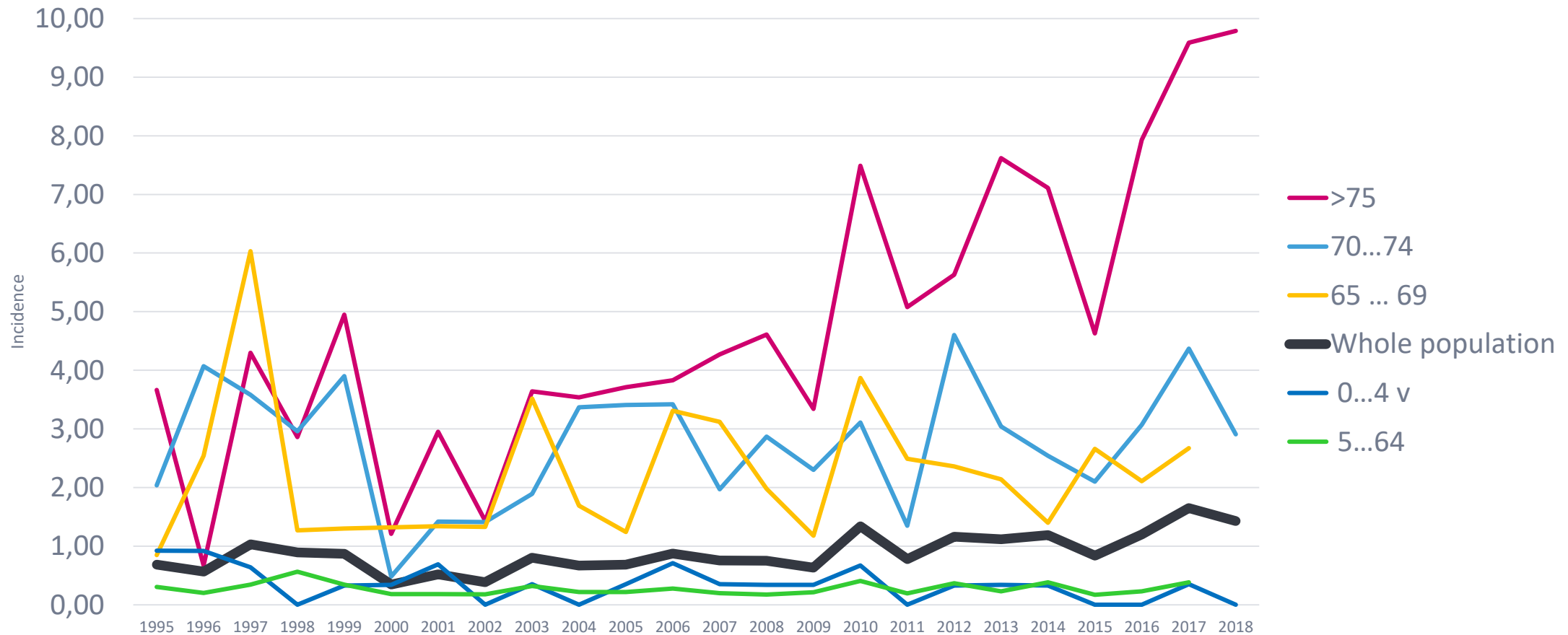


(no. of cases / 100,000 population)





Incidence of different age groups in Finland





Listeriosis profile in Finland

- >50% are aged
- About 0-2 pregnancy-related cases per year (0-0.04/100,000)
- Mostly acquired from domestic sources
- Source: vegetables and animal-derived products
- In Finland, vacuum-packed products are considered the most common source, especially cold-smoked or gravad fish and meat products
- Conditions: long-time storing (refridgerator) -> winning competitor
- Low concentrations, still high incidence; other potential sources should be investigated more



Public health protection

- National legislation
 - > 2005 Microbiological criteria for foodstuffs (EC) No 2073
- Selling time for (vacuum packed) fish and meat products
- Recommendations for safe use of foods

Recommendations for the safe use of food (related to Listeria)



- **General recommendations:** eat no raw meat or fish; wash-peel-wash vegetables; keep fresh separated from cooked or RTE; refrigerator temperature ≤ 6 °C, for fish ≤ 3 °C; do not use products after expiratory date; use the opened products asap.
- **Special instructions** for risk groups (the elderly, pregnant and the persons with impaired resistance): eat only properly cooked meat and fish products, no raw milk or products thereof (e.g. soft cheeses), cook all frozen vegetables, reheat to boil hot convenience foods and cooked foods already chilled, use or freeze RTEs well before the expiratory date.
- Hospitals, nursing home and nursery kitchens have been advised to follow the instructions targeted to the risk groups.



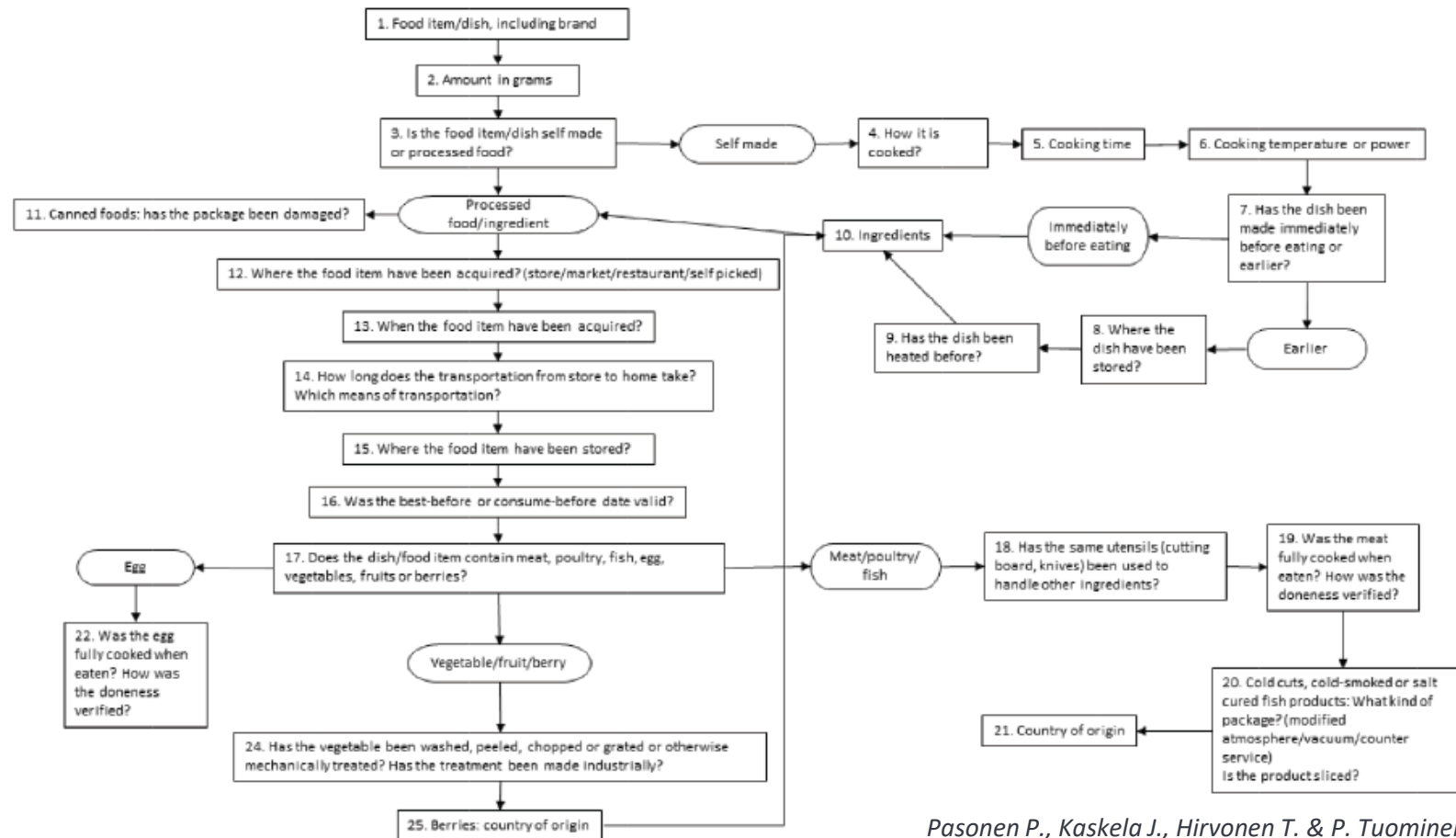
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Current efforts to study and manage listeria in Finland



1. Mapping food handling measures

CoHa Extended 24-hour Dietary Recall Method for Microbiological Risk Assessment



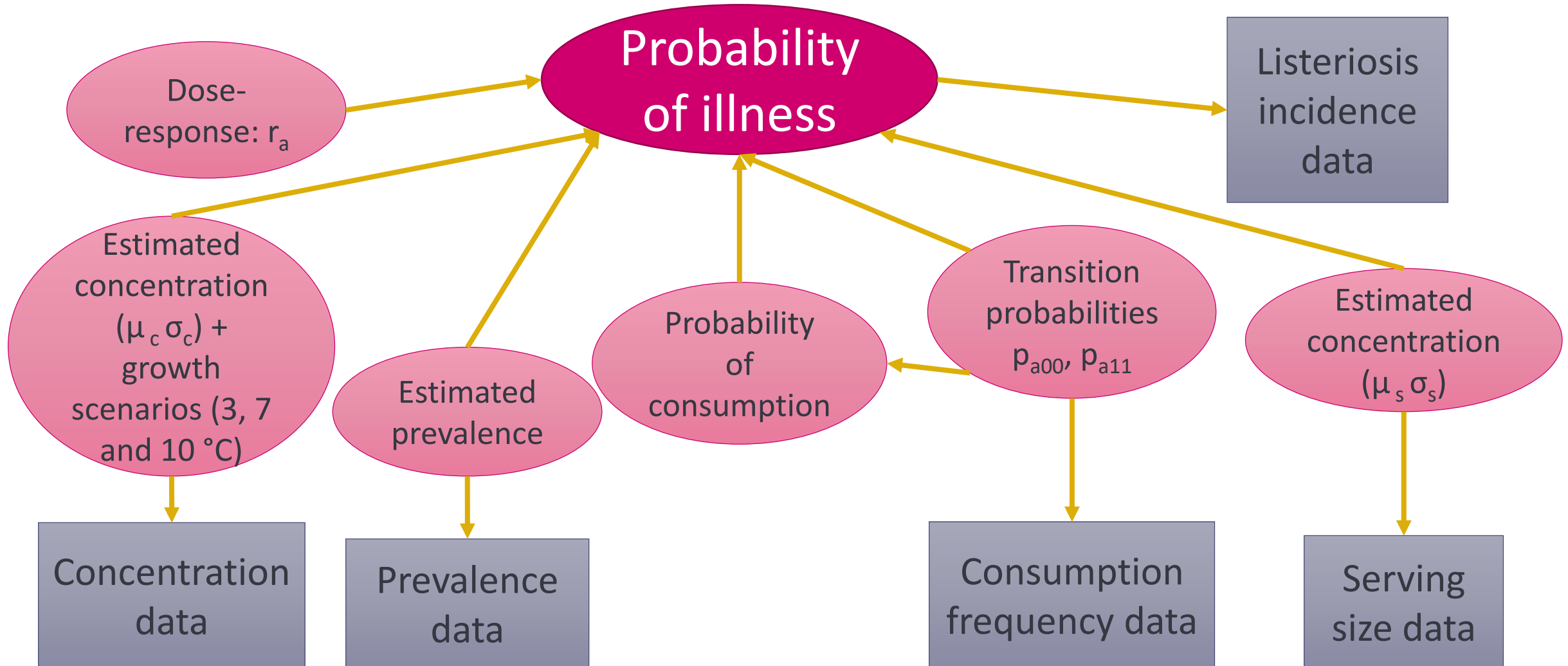
CoHa for the elderly (pilot)

- 42 prs, 65-89 yr, mean 77 yrs
- Living at home, eating home cooked meals
- Educationally not representative, most of the the interviewed were highly educated, but still
 - Fish eaters
 - Cross-contamination risk
 - Refrigerator temp.
 - Labels are not read
 - Expiratory date not recognized

• We also know that

- most (>80%) cold-smoked and gravad fish eaten at home
- The elderly eat more of these products than the younger population (tradition, feast)
- Most of the products on sale are packed in vacuum

2. An exposure model for listeriosis prediction: the model outline





An exposure model for listeriosis prediction

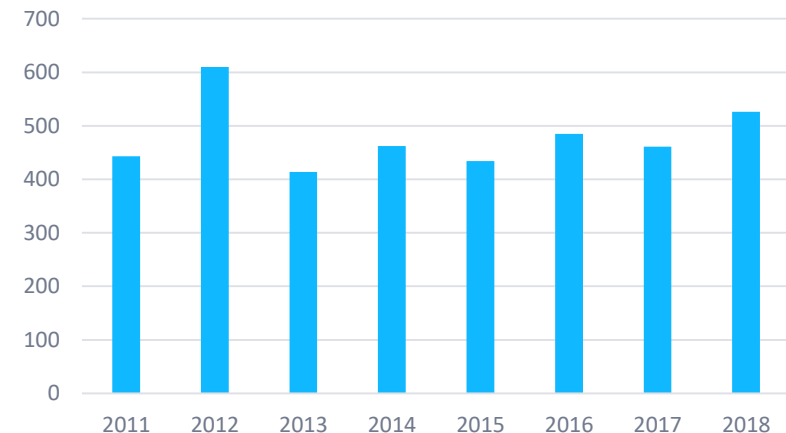
- The model predicts annual listeriosis cases in different age-groups
- Cumulative exposure of repeated consumption during seven consecutive days: likelihood of continuing consumption and growth of LMO
- The model was carried out using R + OpenBUGS
- Three linked modules
 - Occurrence model
 - Consumption model
 - Predictive model for the total number of cases in the population
- The model is modifiable and, depending on available data, it can quantify different factors constituting the total risk



3. Laboratory analyses

- All food-related *Listeria* strains from local laboratories must be sent to Finnish Food Authority (national reference laboratory)
- Information from pulse field (PFGE) analyses saved in a 'library' → comparison with human strains in the event of an outbreak → more accurate typing → traceback of the source/processing plant/...
- sequencing of *L. monocytogenes* samples from outbreaks have started in 2019 → more accurate results and followup
- Cooperation with EU reference lab: strains linked to international epidemics are compared with the strains in FI library.
→ More broad and accurate information for ra.

Annual number of *L.m.* strains sent to FFA





Thank you!

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&

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