Alvira Ardiana, 2018. **Rancangan Grafik Standar Pertumbuhan Tinggi Badan Balita di Jawa Timur Berdasarkan Pendekatan Regresi Semiparametrik *Spline Truncated* sebagai Penentu Status Gizi Stunting.** Skripsi dibawah bimbingan Dr. Nur Chamidah, M.Si dan Ir. Elly Anna, M.Si. Program Studi S1-Statistika, Departemen Matematika, Fakultas Sains dan Teknologi, Universitas Airlangga, Surabaya.

ABSTRAK

Balita memerlukan gizi yang baik untuk menunjang perkembangan fisik dan psikologisnya sehingga diperlukan standar pemantauan status gizi untuk melihat status gizi balita. Salah satu indeks atropometri yang digunakan adalah tinggi badan menurut usia (TB/U). Tahun 2008, Indonesia mengacu pada Standar Antropometri WHO 2005 yaitu bila dibandingkan dengan standar baku WHO-MGRS tahun 2005 dengan nilai z-scorenya kurang dari -2SD/standar deviasi (*stunted*) dan kurang dari – 3SD (*severely stunted*). Standar Antropometri WHO 2005 merupakan standar pengukuran fisik anak – anak di dunia dengan sampel yang berasal dari Brazil, Ghana, India, Norwegia, Oman, dan Amerika Serikat. Adanya fakta perbedaan karakterisitik ukuran fisik manusia disetiap negara memungkinan mengakibatkan ketidaksesuaian Standar Antropometri WHO 2005 dalam menentukan status gizi balita, terutama di Indonesia. Penelitian ini bertujuan untuk merancang grafik standar pertumbuhan tinggi badan balita berdasarkan kondisi balita di Provinsi Jawa Timur menggunakan pendekatan regresi semiparametrik *spline truncated*. Perilaku kurva pertumbuhan balita pada setiap umur tidak sama sehingga pendekatan regresi nonparametrik cocok digunakan karena memiliki fleksibilitas yang tinggi sedangkan variabel prediktor jenis kelamin dapat didekati dengan regresi parametrik sebagai variabel *dummy*. *Spline truncated* memiliki titik – titik knot yang menunjukkan terjadinya perubahan pola perilaku data dan sangat baik digunakan untuk menangani data yang perilakunya berubah–ubah pada sub-bab interval tertentu. Pada hasil perancangan grafik standar pertumbuhan tinggi badan dengan menggunakan *software* R memperoleh hasil terbaik dengan nilai R^2 sebesar 99,9%, GCV minimum 27,40061, dan nilai MSE sebesar 0,184. Berdasarkan perbandingan grafik, diperoleh kesimpulan disimpulkan bahwa grafik standar pertumbuhan tinggi badan balita Jawa Timur lebih rendah daripada grafik standar WHO 2005. Selisih rata-rata pertumbuhan tinggi badan antara grafik rancangan balita Jawa Timur dengan grafik standar WHO 2005 sebesar 3,956 cm untuk balita laki-laki dan 3,772 cm untuk balita perempuan.

Kata Kunci : Balita, Grafik Standar Pertumbuhan, Tinggi Badan, Regresi Semiparametrik, *Spline Truncated*.

Alvira Ardiana, 2018. **Design of Children Under Age Five Years Old Growth Chart Height Standard in East Java Based on Spline Truncated Semiparametric Regression Approach for Stunting Nutritional Status.** This final project is under supervised by Dr. Nur Chamidah, M.Si and Ir. Elly Anna, M.Si. . S1 Statistics Study Program, Mathematics Department, Faculty of Science and Technology, Airlangga University, Surabaya.

ABSTRACT

Children under five years old need good nutrition to support their physical and psychological development so that standard nutrition status monitoring is required. One of the atropometric indexes used is height by age (TB / U). In 2008, Indonesia referred to the WHO 2005 Anthropometric Standards with z-scores less than -2SD / standard deviation is stunted and less than -3SD is severely stunted. The WHO 2005 Anthropometric Standard is the world's physical measurement standard for children in the world which the children under five years old from Brazil, Ghana, India, Norway, Oman and the United States were taken as its samples. The fact is that differences in the physical characteristic of human height in each country may result in the non-conformity of the WHO-2005 Anthropometric Standards in determining the nutritional status of children under five years old, especially in Indonesia. This study aims to design a growth chart standart of under five years old children based on their condition in East Java using spline truncated semiparametric regression approach. Children under five years old growth curve at every age is different so that nonparametric regression approach suitable for use because it has high flexibility whereas gender predictor variable can be approached with parametric regression as dummy variable. The truncated spline has knot dots that indicate the occurrence of changes in data behavior patterns and is best used to handle data that is variable in sub-chapters of certain intervals. In the design result of growth chart standard by using software R get best result with value of R^2 equal to 99,9%, minimum GCV is 27.40061 and MSE is 0.184. Based on the graph comparison, it can be concluded that the growth chart standart of East Java under five years old children is lower than WHO 2005 standard chart. The difference of the average height between the East Java under five years old children design chart with WHO 2005 standard graph is 3,956 cm for male under five years old children and 3.772 cm for female under five years old children.

Kata Kunci : Under Five Years Old Children, Standart Growth Chart, Height, Semiparametric Regression, *Spline Truncated.*