Purpose: To investigate the dose deviation caused by respiratory motion pattern variation during and between treatment deliveries with respect to those obtained from the regular and 4D inverse planning. **Method and Materials:** Motion PDFs obtained during the treatment course for each of total ten lung patients were used in the study. Only the motion in superior-inferior direction was considered to evaluate the dosimetric effect. For each patient, the PDF measured from the first beam during the first daily treatment delivery was used as the reference for treatment planning. Dose profiles with different 'horn' shapes and gradients (penumbra) were used for dose accumulation and evaluation. The maximum target dose deduction between the planned dose calculated using the reference PDF and the treatment dose calculated using the treatment PDF was determined with respect to the prescription dose at 70% isodose level. Two comparisons were performed. The first one, assuming the mean target position correction, used the reference of each patient to generate a set of simulated treatment PDFs with a given pattern variation (ΔSD).The cumulative doses were then calculated and compared. In second comparison, we use the actually measured treatment motion PDFs in the evaluation. **Results:** In first comparison, the maximum dose deduction (mean$\pm$SD) for ΔSD$\geq$1.5mm was 6.5%$\pm$0.5%, 2.8%$\pm$0.5% and 1.4%$\pm$0.3% for dose profiles without 'horn' with respect to the penumbra of 5mm, 10mm and 15mm separately; in second comparison, the maximum dose deduction was 1.7%$\pm$1.9%, 0.6%$\pm$0.8% and 0.3%$\pm$0.4% for dose profiles without 'horn' with respect to the penumbra of 5mm, 10mm and 15mm, all results are slightly lager for dose profiles with 'horn'. **Conclusion:** Target dose deduction caused by the variation of motion PDF is highly dependent on the dose gradient at the edge of the treatment volume, but slightly dependent on the 'horn' shape obtained from 4D inverse planning.