OBJECTIVES: Prostate cancer (PCA) is the most common cancer in men worldwide. Therapeutic options are contingent on the extent of clinical progression and risk. This is mainly due to low specificity of currently utilized biomarkers. This can lead to both inappropriate medical treatment and increasing costs of care. For the future, many biotechnological developments are promising, but not all will be affordable for all. The aim of this study was to (1) estimate the costs of prostate-specific antigen (PSA)–test may cost which would be avoided to avoid biopsy-specific positive results. METHODS: Conduct of a hybrid discrete–event and system-dynamics simulation model using expert opinion and published knowledge. Hypothesis testing. RESULTS: In Germany, annual screening would be recommended for 18.8 × 10^6 men aged 45 years. Assuming a lifetime screening period and expert knowledge, a hypothetical PSA screening workflow was developed and supplemented by a proposed innovative biomarker. Demographic and patient behavior information, disease related data on incidence as well as sensitivity and specificity of PSA, digital rectal examination and prostate biopsy were further included in the model. Economic consequences were calculated by considering costs for examinations, biopsy diagnosis and complications. RESULTS: In Germany, annual screening would be recommended for 18.8 × 10^6 men aged 45 years. Assuming a lifetime screening period and expert knowledge, a hypothetical PSA screening workflow was developed and supplemented by a proposed innovative biomarker. Demographic and patient behavior information, disease related data on incidence as well as sensitivity and specificity of PSA, digital rectal examination and prostate biopsy were further included in the model. Economic consequences were calculated by considering costs for examinations, biopsy diagnosis and complications. RESULTS: In Germany, annual screening would be recommended for 18.8 × 10^6 men aged 45 years. Assuming a lifetime screening period and expert knowledge, a hypothetical PSA screening workflow was developed and supplemented by a proposed innovative biomarker. Demographic and patient behavior information, disease related data on incidence as well as sensitivity and specificity of PSA, digital rectal examination and prostate biopsy were further included in the model. Economic consequences were calculated by considering costs for examinations, biopsy diagnosis and complications. RESULTS: In Germany, annual screening would be recommended for 18.8 × 10^6 men aged 45 years. Assuming a lifetime screening period and expert knowledge, a hypothetical PSA screening workflow was developed and supplemented by a proposed innovative biomarker. Demographic and patient behavior information, disease related data on incidence as well as sensitivity and specificity of PSA, digital rectal examination and prostate biopsy were further included in the model. Economic consequences were calculated by considering costs for examinations, biopsy diagnosis and complications. RESULTS: In Germany, annual screening would be recommended for 18.8 × 10^6 men aged 45 years. Assuming a lifetime screening period and expert knowledge, a hypothetical PSA screening workflow was developed and supplemented by a proposed innovative biomarker. Demographic and patient behavior information, disease related data on incidence as well as sensitivity and specificity of PSA, digital rectal examination and prostate biopsy were further included in the model. Economic consequences were calculated by considering costs for examinations, biopsy diagnosis and complications. RESULTS: In Germany, annual screening would be recommended for 18.8 × 10^6 men aged 45 years. Assuming a lifetime screening period and expert knowledge, a hypothetical PSA screening workflow was developed and supplemented by a proposed innovative biomarker. Demographic and patient behavior information, disease related data on incidence as well as sensitivity and specificity of PSA, digital rectal examination and prostate biopsy were further included in the model. Economic consequences were calculated by considering costs for examinations, biopsy diagnosis and complications.